SEVENTEENTH

# ANNUAL REPORT

OF THE PRESIDENT OF THE

# Johns Hopkins University

Baltimore, Maryland

1892

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# REPORT.

To the Trustees of the Johns Hopkins University:—

*Gentlemen:*

I have the honor to present to you, and through you to the public, a report of the progress of this institution during the academic year which closed on the first of September, 1892.

I may begin by saying in general that the University has made steady progress in the principal departments of its activity. Notwithstanding the rapid advances made by other institutions, both new and old, and the attractions held out by strong and prosperous foundations in the West and in the East, we have abundant reason to be encouraged by the large number of students who resort here for instruction, and by the recognition which is given to the scientific work that is here in progress. It has been a source of great gratification that the strong inducements offered to some of our most distinguished colleagues to go elsewhere have been in nearly every case declined. This foundation cannot pay such salaries as are given by richer universities. It would not have been strange if many of our associates had accepted invitations to other institutions, and their decision to remain in Baltimore may be regarded as an indication of their interest in the work to which their lives are devoted, their liking for it, and their confidence that the public will come to the support of the

Trustees in an enlargement of the foundations that have here been laid, and in a more complete development of the plans that have been adopted.

It gives me pain to record the fact that death has again invaded our ranks and removed one of the original Trustees selected by the founder to organize and carry forward the two institutions that bear his name. Mr. Francis T. King died on the eighteenth day of December, 1891,—after a brief illness,—in the seventy-third year of his age. His varied and arduous services to the University and the Hospital were appropriately commemorated at a meeting held by his colleagues, at the Hospital, soon after his death. The addresses delivered at that time were printed in the official Circulars, and the minute then adopted is given at the close of this report. His enthusiastic devotion to these two foundations will always be remembered, and particularly when the origin of the Hospital is studied in years to come his influence and determination in the formation of its plans will be more and more apparent. To the University his counsels were also given,—although he was to a less extent familiar with its operations. He was one of the first to respond three years ago to the call for an emergency fund and to make a generous contribution to it. In many other philanthropic institutions he was also an efficient officer, upon whose sympathy and coöperation his fellow-citizens were accustomed to rely.

The vacancies occasioned by the death of Judge Dobbin and Mr. King have been filled by the election of Messrs. William T. Dixon and William Graham Bowdoin to be members of the Board. The charter of the University has been amended by an act of the legislature, and the President of the University has been made, ex-officio, a member of the

Board of Trustees. This change is in accordance with long-continued and wide-spread usage in kindred institutions.

The most important transaction of the Trustees within the year has been the decision to proceed to the construction of an academic building, applying to it the bequest of the late John W. McCoy. This conclusion was not reached hastily. Every dollar of income is required for the maintenance of current work, and an addition of several thousand dollars annually to the resources of the University would have been most welcome. But there were other considerations which had weight with the authorities. Commodious buildings have been constructed in former years for the laboratories of chemistry, physics and biology; meanwhile the classes in languages, history, philosophy and other non-laboratory subjects have had quite inadequate rooms. They have met under eight different roofs. The changes from building to building, in bad weather, have been very disadvantageous. Ventilation has been poor. Supervision has been difficult. The quiet and repose that are essential to study have been secured with great difficulty. Moreover, there has not been for years a single hall in the University of sufficient capacity for an assembly of the students. The Library has far outgrown the space allotted to it. Clearly, those temporary arrangements which were made when the number of students was much smaller are ill adapted to our present and prospective wants.

The Trustees were not unmindful of another fact. The bequest of Mr. McCoy, including his dwelling-house and his library and the residuary interest in his estate, amounted to a sum far beyond what has thus far been received from any source except the foundation. The University desires to commemorate this great bequest. The new hall, so urgently

required for our daily work, can be made a permanent and honorable memorial of our generous benefactor.

For these reasons the Trustees decided to construct upon the land which had been acquired on the north of Little Ross street, between Hopkins Hall and the Physical Laboratory, a building to be known as McCoy Hall. Plans have been adopted for this hall, and the foundations are now in progress. Some delay has been caused by the removal of Levering Hall from its original position to a site at the corner of Eutaw and Little Ross streets, an engineering feat watched with interest by architects and builders.

McCoy Hall will be one hundred and seventy-six feet in length, with a front of ninety-five feet on Monument street and a front of one hundred and twelve feet on Little Ross street. It will have four floors besides the basement. On the first there will be an assembly room, which may hold seven or eight hundred persons, a lecture room for perhaps two hundred persons, together with rooms suitable for the meetings of the Trustees and the Faculty. The second and third stories will be divided into many rooms adapted to lectures, seminaries and studies, to be occupied by the various departments of language, history and philosophy. Upon the upper floor, approached by elevators, the central library and reading room will be placed. Abundant wall space can there be secured, because the light may chiefly come from skylights. The interior arrangements have not as yet been completely decided.

Much consideration has been given during the year to the needs of the electrical department. The number of students devoted to this branch of physics has rapidly increased. A very large amount of space is required for the dynamos and other great pieces of apparatus. Only the lack of money has

prevented the University from proceeding to erect and equip a suitable building. It is a great pity that a department in which the capital of Baltimore is so much interested, and for which there is such a demand on the part of young men who have the talent and the knowledge requisite in the difficult pursuit of electrical engineering, should suffer for the want of seventy-five or one hundred thousand dollars; and yet for the want of this sum, Baltimore is in danger of losing the prestige which it might readily secure and retain. As a temporary relief, the Trustees have decided to erect a simple building, at a very moderate cost, on a lot directly opposite the Physical Laboratory, on Garden street. This will ease the pressure which has been so severe during the last two or three years, but it is far from being all that is desirable.

As an appendix to the report of last year a statement was printed in respect to the gifts that have been received by this University during the first fifteen years of its existence. If this record seemed to some of our friends an encouraging report, it seemed to others quite discouraging. The aggregate amount for this decade and a half is less than the usual annual contribution, in recent years, to each of the two great institutions of New England. It is a trifle compared with the gifts bestowed upon the youngest foundation in Chicago.

I feel compelled to remind our friends that the income of the University, from the securities given to it by the founder, is less than it was by the sum of $75,000 annually. This diminution was not due to any fault of the Trustees, or to any error of judgment on their part in the making of investments. They held what the founder gave them. Nevertheless the needs of the University have become greater every year.

It would indeed be a misfortune if the University did not

grow. If it only holds its own, newer institutions with larger resources and with wider scope will soon surpass it. But in order that it may grow it must have more money. Those who appreciate the liberal and catholic spirit of its plans, who have observed its influence upon higher education in the United States, who desire to see its future more successful than its past, are therefore invited to coöperate in an effort to enlarge our resources.

Among the various ways in which the efficiency of this University may be greatly extended, I name, first, the endowment of a medical school. The original plans of the University were formed with reference to the establishment of this department as soon as the Hospital should be opened. The Hospital has now been in active operation for three years and the medical school is yet to come. Notwithstanding a gift from ladies to the amount of $111,625, and the very generous offer from a lady of $100,000 more, toward a fund of $500,000, the subscription absolutely halts. It can readily be demonstrated that a generous gift for this purpose would be of the highest possible advantage, not to Maryland only but to the entire country.

Second, the school of electricity needs endowment. Its growth within the last few years has surpassed our expectations. It needs a large equipment in a separate building.

Third, the collections in geology and mineralogy have increased so much that there is not room enough to display them. A separate building is urgently needed.

Fourth, there is no end to the requirements of the Library. Any additions to its funds are most welcome. Here is a place where small sums as well as large may be expended with great advantage.

Fifth, scholarships and prizes for the encouragement of meritorious students are most desirable.

These statements are made in order that those who are willing, in their wills or by their gifts, to manifest their interest in the promotion of advanced education, may know how, at the present time, to make their coöperation most effective. After all, untrammelled funds, like those received from the late John W. McCoy, are the most efficient means of building up a university.

The following statistics have been prepared, as in former years, by the Registrar, Mr. T. R. Ball.

The academic staff numbered during the year sixty-five teachers, including seven physicians and surgeons attached to the Johns Hopkins Hospital. The number of students enrolled was five hundred and forty-seven, of whom two hundred and seventy-three were residents of Maryland, and two hundred and fifty-five came here from thirty-five other States of the Union, and nineteen from foreign countries. Among the students were three hundred and thirty-seven already graduated, coming from one hundred and forty-six colleges and universities; there were one hundred and forty matriculates (or candidates for the degree of Bachelor of Arts); and there were seventy admitted as special students, to pursue courses of study for which they seemed fitted, without reference to graduation. The degree of Bachelor of Arts was conferred upon forty-one candidates, and thirty-seven candidates were promoted to the degree of Doctor of Philosophy.

The following table indicates the enrolment of students in each year since the University was opened in the autumn of 1876:

| | Total Enrolled. | Graduates (incl. Fellows). | Matriculates. | Non-Matriculates. |
|---|---|---|---|---|
| 1876–77 | 89 | 54 | 12 | 23 |
| 1877–78 | 104 | 58 | 24 | 22 |
| 1878–79 | 123 | 63 | 25 | 35 |
| 1879–80 | 159 | 79 | 32 | 48 |
| 1880–81 | 176 | 102 | 37 | 37 |
| 1881–82 | 175 | 99 | 45 | 31 |
| 1882–83 | 204 | 125 | 49 | 30 |
| 1883–84 | 249 | 159 | 53 | 37 |
| 1884–85 | 290 | 174 | 69 | 47 |
| 1885–86 | 314 | 184 | 96 | 34 |
| 1886–87 | 378 | 228 | 108 | 42 |
| 1887–88 | 420 | 231 | 127 | 62 |
| 1888–89 | 394 | 216 | 129 | 49 |
| 1889–90 | 404 | 229 | 130 | 45 |
| 1890–91 | 468 | 276 | 141 | 51 |
| 1891–92 | 547 | 337 | 140 | 70 |
| *1892–93 | 513 | 313 | 132 | 68 |

*At the opening of the year.

During sixteen years, two thousand and eleven individuals have been enrolled as students, of whom eight hundred and eighty are registered as from Maryland (including seven hundred and fourteen from Baltimore), and eleven hundred and thirty-one from fifty-four other States and countries. Eleven hundred and forty-five persons entered as graduate students, and eight hundred and sixty-six entered as undergraduates. Of the undergraduates, one hundred and ninety-four have continued as graduate students, many of them proceeding to the degree of Doctor of Philosophy. It thus appears that thirteen hundred and thirty-nine persons have followed graduate studies here.

The following table indicates the geographical distribution of the students each year since the opening, as shown by the Annual Registers:

| | *Of Maryland.* | *Not of Maryland.* |
|---|---|---|
| 1876-77 | 59 | 30 |
| 1877-78 | 71 | 33 |
| 1878-79 | 76 | 47 |
| 1879-80 | 97 | 62 |
| 1880-81 | 95 | 81 |
| 1881-82 | 97 | 78 |
| 1882-83 | 106 | 98 |
| 1883-84 | 123 | 126 |
| 1884-85 | 130 | 160 |
| 1885-86 | 130 | 184 |
| 1886-87 | 162 | 216 |
| 1887-88 | 199 | 221 |
| 1888-89 | 183 | 211 |
| 1889-90 | 215 | 189 |
| 1890-91 | 235 | 233 |
| 1891-92 | 273 | 274 |
| *1892-93 | 248 | 265 |

*At the opening of the year.

The attendance upon the courses given in some of the principal subjects has been as follows during the last five years :—

| | 1887-88. | 1888-89. | 1889-90. | 1890-91. | 1891-92. |
|---|---|---|---|---|---|
| Mathematics and Astronomy, | 84 | 82 | 83 | 85 | 98 |
| Physics, | 85 | 74 | 85 | 98 | 138 |
| Chemistry, | 119 | 124 | 137 | 114 | 135 |
| Mineralogy and Geology, | 25 | 38 | 33 | 30 | 27 |
| Biology, | 61 | 81 | 64 | 59 | 72 |
| Pathology, | 15 | 24 | 34 | 40 | 44 |
| Greek, | 61 | 58 | 55 | 61 | 59 |
| Latin, | 74 | 69 | 69 | 70 | 73 |
| Sanskrit, etc., | 40 | 39 | 38 | 35 | 46 |
| Semitic Languages, | 18 | 43 | 35 | 26 | 22 |
| German, | 130 | 119 | 116 | 104 | 121 |
| French, Italian, etc., | 72 | 69 | 88 | 84 | 91 |
| English, etc., | 84 | 94 | 90 | 84 | 94 |
| History and Political Science | 137 | 162 | 142 | 143 | 165 |
| Psychology, Ethics, etc., | 81 | 48 | 60 | 72 | 61 |

Since degrees were first conferred, in 1878, three hundred and forty-one persons have attained the Baccalaureate degree, and two hundred and forty-nine have been advanced to the degree of Doctor of Philosophy, as appears from the following table,—the whole number of individuals graduated being five hundred and forty-five:

| | *Bachelors of Arts.* | *Doctors of Philosophy.* |
|---|---|---|
| 1877–78 | 0 | 4 |
| 1878–79 | 3 | 6 |
| 1879–80 | 16 | 5 |
| 1880–81 | 12 | 9 |
| 1881–82 | 15 | 9 |
| 1882–83 | 10 | 6 |
| 1883–84 | 23 | 15 |
| 1884–85 | 9 | 13 |
| 1885–86 | 31 | 17 |
| 1886–87 | 24 | 20 |
| 1887–88 | 34 | 27 |
| 1888–89 | 36 | 20 |
| 1889–90 | 37 | 33 |
| 1890–91 | 50 | 28 |
| 1891–92 | 41 | 37 |
| | 341 | 249 |

The University, as a body, has held three assemblies in the course of the year,—the first at the opening of the academic session, when an address was made by the President, followed by a social gathering in the Gymnasium.

The second was held on Commemoration Day, the twenty-second of February, when addresses were delivered by Hamilton W. Mabie, Esq., Litt. Dr., of New York, on "The University and Literature," and by Professor George H. Williams, on "The University and its Natural Environment." The large hall of the Peabody Institute, which was opened to us by the courtesy of the Trustees, was completely filled. The addresses were subsequently printed in the University Circulars No. 96.

The third assembly was held at the close of the academic year, Commencement Day, when the candidates for degrees were presented and graduated. The Doctors of Philosophy were addressed by Professor Gildersleeve, and the Bachelors of Arts by Mr. C. Morton Stewart, President of the Board of Trustees. The exercises were held in the Associate Reformed Church, Rev. W. D. Ball, Pastor, by the kind permission of the authorities of that church.

A celebration commemorating the services of Professor Virchow, the eminent pathologist of Berlin, was organized by the medical professors of the University on the thirteenth of October. The chair was taken by Professor Remsen, and discourses were read by Professor Osler and Professor Welch of the University, by Professors Chew and Friedenwald of Baltimore, and by Professor Jacobi of New York. The leading physicians of Baltimore were present on this occasion. The speeches were printed in University Circulars No. 93.

At the opening of the session of 1892–93 an historical discourse commemorative of Christopher Columbus and the discovery of America was delivered by Professor H. B. Adams. A few days later Professor Wood delivered a discourse on the same theme before the German citizens of Baltimore. Both of these addresses have been printed in the Historical Studies, Tenth Series, Numbers X–XI.

The second course of lectures on the foundation which commemorates the late Percy Graeme Turnbull, was delivered in March and April last by Professor R. C. Jebb, LL. D., Regius Professor of Greek in the University of Cambridge. The subject was "The Growth and Influence of Classical Greek Poetry," and the special themes, discussed in eight lectures, were these:—The distinctive qualities of the Greek

Race as expressed by Homer, Epic Poetry, Lyric Poetry, Pindar, the Attic Drama, and the permanent power of Greek Poetry.

While this is not a suitable place for extended comment upon these lectures, it is fitting to record the high appreciation which they received from the members of this University. The lecturer left important duties at home (recently augmented by his election to be one of the representatives of his university in Parliament), and crossed the ocean in an inclement season, solely for the purpose of delivering this course. The number of those who wished to hear him far exceeded the capacity of our largest lecture room, and the Trustees of the Peabody Institute kindly gave us the use of one of their halls. The doors were thus thrown open to a large number of persons not connected with the University, who shared with others the enjoyment of the course.

The lectures of the first course on this foundation, delivered by Mr. Edmund Clarence Stedman, of New York, having been subsequently delivered in other institutions, were presented to a large number of readers through the pages of the Century Magazine, and have now been published in a volume entitled "The Nature and Elements of Poetry." Arrangements are in progress for the publication of Professor Jebb's course, and the hope is entertained that in each successive year the lecturer on this foundation will give his lectures to the press. The third course of lectures will be given during the coming winter by Professor Tyrrell, of the University of Dublin, on subjects to be hereafter announced relating to the history of Latin Poetry.

Two courses of lectures, due to the liberality of Mr. Eugene Levering,—primarily designed for the Young Men's Christian Association, but open to all the members of the

University,—were delivered last winter. The first of these, on the histories and prophecies of the Old Testament, was given by President W. R. Harper, LL. D., of the University of Chicago. The second course was given by the Rev. R. S. Storrs, D. D., LL. D., of Brooklyn, N. Y. In three discourses, the character of St. Bernard of Clairvaux was vividly portrayed. These lectures, with others relating to the same theme, have recently been published in a volume entitled *Bernard of Clairvaux: The Times, The Man, and His Work*,—an historical study in eight lectures.

A course of lectures on the Donovan foundation was given in February by Professor C. T. Winchester of Wesleyan University, Conn. The subjects were the English poets of the first half of this century,—Burns, Wordsworth, Southey, Coleridge, Scott, Byron, Shelley and Keats.

Another course of instruction on this foundation was given by Mr. Oliver Elton, Lecturer on English Literature in the Owens College, Manchester, England. After three public lectures upon Elizabethan Poetry, Christopher Marlowe, and George Chapman, Mr. Elton gave a series of class-lectures before the advanced students of English Literature.

A course of three public lectures was given by Dr. C. L. Poor, now Associate in Astronomy, his subjects being Astronomy in Ancient Times, the Sun as a Star, and Systems of Stars.

Special courses (of ten lectures each) were given before the classes in Historical and Political Science by Dr. E. R. L. Gould on Social Science, Dr. Albert Shaw on Municipal and Social Problems, Dr. James Schouler on the History of American Politics, and Dr. Frederic Bancroft on American Diplomatic History.

For the guidance of advanced students proposing to become teachers, several members of the Faculty gave lectures on successive Saturday mornings from November to February. The special themes, it will be observed, were chosen so as to bring forward those subjects to which in their several stations the lecturers have given particular attention.

*Pedagogical Lectures.*

The Idea of a Liberal Education, D. C. GILMAN.
The Science of Indo-European Philology, M. BLOOMFIELD.
The Study of Modern German Literature in Germany, H. WOOD.
The Teaching of Mathematics, S. NEWCOMB.
Method of Out-of-door Instruction in Geology, G. H. WILLIAMS.
The Qualifications of a College Teacher, E. H. GRIFFIN.
The Study of Words and their Meanings, E. H. SPIEKER.
The English Universities, G. H. EMMOTT.
The Study of English, J. W. BRIGHT.
The Organization of Higher Education in Paris, A. M. ELLIOTT.

After the close of the course, on the three hundredth anniversary of the birth of Comenius, a lecture on his characteristics as a forerunner of modern education was delivered by the President.

Since the regulation went into force requiring the publication of every thesis accepted from candidates for the degree of Doctor of Philosophy, eighty-eight theses have been printed by the writers, who have deposited a certain number of copies with the Librarian for distribution, by exchange with other universities. Previously, when publication was optional, many such papers were sooner or later given to the press. Not a few of these memoirs, although of restricted interest, are important contributions to those departments of science to which they relate. They receive notice at once from those who are working in the same direction. It is interesting to classify these printed theses, and thus to notice the tendency of the advanced education now given here.

*Theses recently submitted for the degree of Ph. D.*

| | |
|---|---|
| Ancient Languages (Greek, Latin, Hebrew, Sanskrit, etc.), | 19 |
| Modern Languages (English, French and German), | 6 |
| Historical and Political Sciences, | 22 |
| Mathematics and Astronomy, | 6 |
| Physics, | 3 |
| Chemistry, | 22 |
| Biology (including Physiology, Morphology and Pathology), | 6 |
| Geology and Mineralogy, | 2 |
| Philosophy, | 2 |
| | 88 |

The periodicals issued under the auspices of this University have appeared as usual during the year. The Circulars have reached their one hundred and first number. The American Journal of Philology is in its thirteenth volume; the American Journal of Mathematics in its fourteenth volume; the American Chemical Journal in its fourteenth; the Historical Studies in their tenth; the Biological Studies in their fifth series. Of the series of Contributions to Assyriology the last part of the second volume is now in press. The Modern Language Notes, published by Professor Elliott, with the co-operation of other scholars, has reached its seventh volume.

There have been some important promotions and some important resignations since the last report was printed. The persons below named, whose services to the University have been varied and efficient during a long series of years, have been made Professors in the departments named:

*Pure Mathematics*, Thomas Craig, Ph. D.
*Romance Languages*, A. Marshall Elliott, Ph. D.
*Surgery*, William S. Halsted, M. D.

*Analytical Chemistry*, Harmon N. Morse, Ph. D.
*Latin*, Minton Warren, Ph. D.
*Inorganic Geology*, George H. Williams, Ph. D.
*Roman Law and Comparative Jurisprudence*, George H. Emmott, A. M.
*Mathematics*, Fabian Franklin, Ph. D.
*German*, Henry Wood, Ph. D.

Within the same period, Dr. Edward Renouf has been appointed Collegiate Professor of Chemistry, Dr. E. A. Andrews, Associate Professor of Biology, and Dr. William B. Clark, Associate Professor of Organic Geology.

The following promotions and appointments to the rank of Associate have also been made during the year:

*Biology*, G. P. Dreyer, Ph. D.
*Pathology*, Simon Flexner, M. D.
*Bacteriology and Hygiene*, George H. F. Nuttall, Ph. D.
*Astronomy*, Charles L. Poor, Ph. D.
*Greek*, C. W. Emil Miller, Ph. D.
*Latin*, Kirby W. Smith, Ph. D.
*History*, John M. Vincent, Ph. D.
*Political Economy*, Sidney Sherwood, Ph. D.

In looking over the list of preferments above recorded, it is not without interest to recall one of the original purposes of this foundation. At the very beginning a public announcement was made that the authorities would endeavor "to secure a strong staff of young men, appointing them because they have twenty years before them; selecting them on evidence of their ability; increasing constantly their emoluments, and promoting them because of their merit to successive posts as scholars, fellows, assistants, adjuncts, professors,

and university professors. This plan will give us an opportunity to introduce some of the features of the English fellowships and the German system of privat-docents; or, in other words, to furnish positions where young men desirous of a university career may have a chance to begin, sure at least of a support while waiting for promotion."

Four of those who are now professors in this University, Messrs. Adams, Brooks, Craig, and Morse, were among those first selected for fellowships in the year 1876, and their connection with this University has been unbroken. Professor H. C. Adams, who comes to us now as a lecturer, was also one of that company. Professor Franklin was appointed Fellow in 1877, and Professor Bloomfield in 1878. Twelve other teachers, now holding the position of associate professor or associate, previously received appointments to fellowships.

Near the close of the session, Dr. Richard T. Ely, who came to this University as an instructor in Political Economy in 1881, and who afterwards held the rank of Associate and Associate Professor, accepted the position of Professor of Political Economy in the University of Wisconsin, and he consequently tendered his resignation as a member of our academic staff. The place that he has held is so important, and his influence in it has been so extended, that the Trustees determined to take time for consideration before making a new permanent appointment. They have accordingly invited several scholars to give successive courses in Political and Social Science during the coming year. The Board expressed to Dr. Ely, on his departure, their appreciation of the learning, industry and enthusiasm which he had shown during his connection with this University for a period of eleven years.

Dr. William T. Councilman, Associate Professor of Anatomy, also tendered his resignation, in order to accept the chair of Anatomy in the Medical Department of Harvard University. The promise which he showed when a student of biology in this University has been amply fulfilled by his subsequent attainments, and the Trustees, as well as his colleagues, rejoiced in his promotion, although they were sorry that lack of funds for the promotion of medical education prevented them from retaining his services for a longer period. It is an interesting coincidence that he will have as an associate at Harvard one who was long his colleague here, Dr. William H. Howell, who was connected with this University as a student and an instructor from 1879 to 1889.

The Tercentenary of the University of Dublin was celebrated in July last with a brilliant series of ceremonials extending through several days. These exercises were attended by a large number of scholars from many states and countries. In accordance with the request of the Trustees, the Johns Hopkins University was represented by its President and by Professor Newcomb. It was a great pleasure to me to be present on that occasion and to enjoy the public and private hospitality which was most liberally extended to your representatives, and to be called upon to speak in behalf of American institutions of learning at the general reception of the delegates. It was an additional pleasure to observe the honors bestowed upon our colleague, the Professor of Mathematics and Astronomy, and upon four other Americans who, at different times, have been upon our staff as lecturers, namely, Dr. Billings, Dr. Farlow, President Walker, and Dr. I. H. Hall.

In accordance with the desire for an academic costume, expressed by many persons connected with the University,

the Trustees, after consulting the Board of University Studies, decided:

*First*, That every Doctor of Philosophy of the Johns Hopkins University shall be entitled to wear, on all fitting occasions, a gown of the prescribed shape, made of either black silk or black stuff, and a hood made of black silk, lined with scarlet silk and edged with gold.

*Second*, That every Bachelor of Arts of the Johns Hopkins University shall be entitled to wear, on all fitting occasions, a gown of the prescribed shape, made of black stuff, and a hood made of black stuff, lined with white silk and edged with dark blue.

Among the most important gifts to the Library during the past year must be mentioned the professional libraries of Dr. Christopher Johnston and Dr. Frank Donaldson, both of them, until recently, Professors in the University of Maryland, and both of them Consulting Physicians of the Johns Hopkins Hospital. Dr. Johnston, by his will, directed that his books and his medical and surgical instruments, with his cabinet of microscopical preparations and the cabinet of crystals prepared by him for optical purposes, should be given to this institution. Dr. Frank Donaldson, Jr., soon after his father's death, presented to us over eight hundred medical books, as a memorial of his father's professional life. These two libraries, with other medical books received from various sources, have been deposited in the Johns Hopkins Hospital, where they are accessible to members of the profession, awaiting the organization of the medical school.

Dr. J. S. Billings, U. S. A., has presented to the pathological laboratory, a valuable collection of photo-micrographs.

The Virchow Committee in Berlin have sent us, through Dr. Billings, a copy of the medal struck in commemoration of the services of Dr. Virchow.

From Professor Streng, of the University of Giessen, a small collection of German rocks and minerals has been received.

Another very gratifying gift was received from the holder of the Fellowship in Semitic languages, Dr. J. Dyneley Prince, now of the University of the City of New York. The emolument of the fellowship, five hundred dollars, he gave to the Library to be expended in the purchase of books for the use of the students of Oriental languages.

The Rev. Dr. E. A. Hoffman, of New York, made a gift of like amount, five hundred dollars, for the purchase of books pertaining to the science of Astronomy, a most welcome contribution to a growing department of the University.

The first award of the John Marshall Prize (a likeness in bronze of Chief Justice Marshall) was made at Commencement in the name of the Academic Council. The conditions of the prize are stated in the Circulars No. 87. In accordance with their provisions, the following papers, all of them written and published by former students of this University, were selected as most worthy of honor:

*John Marshall Prize Essays.*

Public Debts, by Professor H. C. Adams.
The Republic of New Haven, by Professor C. H. Levermore.
Congressional Government, by Professor Woodrow Wilson.

For 1892, the prize was awarded to John Martin Vincent, Ph. D., for his work entitled "State and Federal Government in Switzerland."

A prize of $100, given by a lady of Baltimore and designated at her request as the Scharf-Birney prize, was awarded to Professor F. W. Blackmar, now of the University of Kansas, for his book on "Spanish Institutions of the Southwest."

A prize of $50, given by a member of the Baltimore Bar for a contribution to institutional or legal history, was awarded to Professor C. M. Andrews, now of Bryn Mawr College, for his book on "The English Manor."

The efficient coöperation of the United States Geological Survey has enabled the Johns Hopkins Press to put forth, under the editorial direction of Professor George H. Williams, two valuable maps of the vicinity of Baltimore. One of these is a topographical map, the other a geological map. They include an area over four hundred square miles in extent. The scale is 1 : 62,500, or about one mile to the inch. The City of Baltimore is toward the eastern edge of the map, which shows the country as far north as the Worthington Valley, west to Sykesville, and south to Annapolis Junction. Considerable information has been added to that contained on the government sheets.

The topographic map exhibits the altitudes of the region by contour lines, which indicate the surface at intervals of twenty vertical feet. The water-courses are printed in blue, the roads in black, and the contours in brown.

The geological map is printed upon the topographic map to represent all the rock formations. Eighteen separate types are thus distinguished, and are further identified by letter-symbols printed upon them. Of special interest to geologists is the crystalline country to the north and west of the city. The mapping of the crystalline rocks was carried

on by Professor Williams, largely under the auspices of the Geological Survey, and with the assistance of Professor W. H. Hobbs, Mr. A. C. Gill and others. The mapping of the sedimentary formations is the work of Mr. N. H. Darton of the Survey. A text explanatory of this map was issued in February, 1892, by the editor and Mr. Darton, in the Guide-book of Baltimore, prepared for the American Institute of Mining Engineers.

Professor Williams makes this further explanation in respect to the coloring which he proposed and adopted in this map:

"The atlas sheet 'Baltimore' has already been printed by the Geological Survey in the colors adopted for representing the geology of the entire country. The government publication of the geology of the areas embraced on the three contiguous sheets will, however, be probably delayed for some time. The color scheme adopted for the University map is quite arbitrary, and has been selected with a view to its fitness for the particular area represented, as well as with reference to a pleasing and harmonious effect. Much credit is due to Mr. A. B. Hoen for the pains he has taken to produce the desired result, as well as to the lithographic firm to which he belongs for the admirable manner in which the work has been executed."

Those who are interested in the structure of the Baltimore region, for any reason, should read, with the maps before them, the address of Professor Williams before the University on the twenty-second of February, 1892. His subject, "The University and its Natural Environment," gave him an opportunity to describe in popular language the geological aspects of the neighborhood of Baltimore, and the researches which have been made regarding a region which affords, as

he says, unrivalled opportunities for the study and teaching of geology. Maryland, he remarks, contains a representative of every geologic period from the earliest to that now in progress. Indeed it may be said, without exaggeration, that no State in the Union contains a fuller geologic sequence, and there are few areas of like extent in the world where the record is so complete.

The University has had the pleasure of opening its doors, during the past year, as in former years, for the meetings of several scientific and philanthropic associations. The American Institute of Mining Engineers held a session here, of several days' continuance, in the month of February. The local committee prepared for this society a guide-book to Baltimore, which contained a geological map of the region and much scientific information of permanent value. The Baltimore Branch of the American Institute of Archaeology held several sessions in one of our halls. The annual meetings of the Charity Organization Society and of the Hospital Relief Association were held in Levering Hall. The American Library Association was also entertained here.

The usual reports of progress in the principal departments of instruction and investigation are appended to this report. They are of necessity somewhat technical in their phraseology, for in no other way can the work be described that is here going forward. But I trust that they will not on this account be overlooked. It is only by the scrutiny of such statements that the Trustees and the public can appreciate the variety of the subjects here pursued, the thorough methods that are followed, or the enthusiasm and vigor shown in almost every department. The Trustees have allowed, from the beginning, a large amount of liberty to every occupant of a professor's

chair, and they have secured in return hearty, intelligent and persistent attention to the requisite duties. Every one of the chiefs of departments, and not a few of those who hold subordinate positions, feel it to be a moral obligation to contribute from time to time to the progress of the sciences that they are called upon to profess. The number of their publications is large, as any one may ascertain by examining the collection which is kept as a part of the archives of the President's office; but the character of these writings is a better index of their value than the number.

Special attention is requested to two noteworthy papers, which are included among others in the appendix. One of these is the report of Professor M. Whitney on the important investigations which he is carrying on at Clifton. These studies are of great interest to all who watch the progress of agricultural science, and have attracted the attention and commendation of many experts, who appreciate their practical value as well as their scientific interest. The other is a review of the observations which have been made by the U. S. Weather Bureau and the Weather Bureau of Maryland during the past year. The combined efforts of the general government, of the State of Maryland, of this University and of a corps of unpaid private observers are bringing together a large amount of information respecting the climate of this region which cannot fail to be of value to the inhabitants of the State. A monthly bulletin enables all who are interested in this subject to follow closely the observations thus collected.

An attempt has been made to collect the titles of all the papers prepared and printed by the members of this University, but in consequence of the manifold forms of publication the effort has not been entirely successful. In one depart-

ment, however, but only in one, a thorough survey has been made. By the patience of Dr. Bloomfield, a catalogue of all the philological essays of the members of this University has been prepared and published within the year.

An admirable survey of the work of the University appeared in the Baltimore *Sun* of February 20, 1892. Several columns were devoted to a review of the history and the present condition of all departments of instruction. The information was given in unofficial and informal phrases, and for that reason was better adapted to interest the public than any official publication, and the fact that it was published without any expense to the University, purely as a matter of general interest, deserves to be gratefully remembered. To the other newspapers of Baltimore, and not of Baltimore only, the University is indebted for the publication of many notices of the work here in progress. The attention bestowed upon the colleges and universities by the press of this country is an excellent sign of public interest in advanced education; although there is occasional reason to regret that disproportionate, and in some places exclusive, attention is given to the games that are played, while important contributions to literature and science are overlooked.

In conclusion I would express to all the officers of the University, the Trustees, the Faculty, and the various persons who have charge of our affairs, a grateful appreciation of their constant devotion to the interests entrusted to them. It is by the character of the professors and their skill in awakening the minds of young men, supported by the wisdom of the Trustees in guiding the general policy and providing the requisite financial means, that an institution of learning acquires a good reputation and maintains its distinction.

During seventeen years it has been to many thoughtful people, not only in Baltimore, but in distant parts of the country, a delight to watch the successful growth of the Johns Hopkins foundation. Since its establishment in 1876, new and vigorous universities, richly endowed, have been established elsewhere. The older institutions have also received large additions to their resources, and have consequently widened their scope and increased their usefulness and attractiveness. In all this growth, we must, as patriotic Americans, most heartily rejoice. There should be no "rivalry" among those who are endeavoring to advance knowledge, promote good government, and provide for the education of youth. All wisely managed institutions should be allies,—not rivals. But there may be emulation. The sacrifices that are made and the gifts that are bestowed elsewhere should excite our zeal, and lead us all,—the trustees, the professors, the benefactors, the neighbors, and the friends of this university, to endeavor, with more earnestness than ever, to build up in Baltimore a home for science, literature, philosophy, and all the liberal arts.

I venture to close this report by adopting a quotation from a speech of George William Curtis, the gifted orator, the noble citizen, whose voice was heard in Baltimore not very long before it was silenced forever. In addressing the Convocation of the University of the State of New York in 1890, he spoke of the value of liberal education, in these fit words:

"I have heard it said that liberal education does not promote success in life. A chimney-sweep might say so. Without education he could gain the chimney top, poor little blackamoor! brandish his brush and sing his song of escape from soot to sunshine. But the ideal of success measures the worth of the remark that it may be attained without liberal education. If the accumulation of money be the standard, we must admit that a man might make a fortune in a hundred ways without education. But he could

make a fortune, also, without purity of life, or noble character, or lofty faith. A man can pay much too high a price for money, and not every man who buys it knows its relative value with other possessions. Undoubtedly Ezra Cornell and Matthew Vassar did not go to college, and they succeeded in life. But their success, what was it? Where do you see it now? Surely not in their riches, but in the respect that tenderly cherishes their memory, because, knowing its inestimable value, they gave to others the opportunity of education which had been denied to them. Let us make their lofty spirit the spirit of the University. Remembering that the great ministry of education is not to make the body more comfortable, but the soul happier, may the University in all its departments and activities cherish and promote education not for its lower uses but for its higher influences."

DANIEL C. GILMAN,
*President.*

BALTIMORE, *December* 5, 1892.

# REPORTS ON THE INSTRUCTION IN THE CHIEF BRANCHES OF STUDY.

Prepared by the Principal Instructors in the several departments.

## Mathematics and Astronomy.

### I.—Astronomy.

Professor Newcomb gave two of the courses in Astronomy proposed in the programme for the year. One of these was on the Theory of the Telescope and other optical instruments. Its principal feature was a very complete development of the theory of the spherical and chromatic aberration of the objective. The other course was on the Method of Least Squares, including the general theory of errors of observation.

The course in Practical and Spherical Astronomy was given by Mr. Borst, and included exercises in the use of the instruments. In this subject the class-work covered nearly the same ground as in former years, namely, the first volume of Chauvenet's *Manual*. But instead of using this or any other text-book, the lectures as prepared were copied by the students as they went along, thus having them in effect make their own text-book. The practice with instruments was principally upon the meridian circle and transit instruments; but the use of the equatorial was not wholly neglected.

The course in Theoretical Astronomy and the Computation of Orbits was given by Dr. Poor. It included practical exercises in the computation of orbits and special perturbations. Dr. Poor also gave a course in the History and Literature of Astronomy to the special students in that subject. He also gave a course of three public lectures, illustrated by the stereopticon, on Historical and Descriptive Astronomy.

The opportunities for original work with the equatorial are found to be greatly restricted by the electric lights in the vicinity of the Physical Laboratory, which entirely prevents the observation of such faint objects as comets and new planets.

The principal work with this instrument consisted in a series of experiments by Mr. Hoffman to determine the practicability of photographing the spectra of stars, especially the ultra-violet portion, with a concave diffraction grating. Several photographs were taken, but unfavorable weather interfered with a definitive conclusion on the merits of the system.

One candidate, Mr. C. L. Poor, presented himself for the degree of Doctor of Philosophy. His thesis is entitled "The Action of Jupiter on Comet V, 1889." This has been printed in separate form.

## II.—Graduate Courses in Mathematics.

Professor Craig gave the following courses:

Theory of Functions of one and two complex variables and functions of real variables. *Three times weekly, throughout the year.* This course included an extended course in the Theory of Series. The works principally consulted were Hermite's *Cours professé à la Faculté des Sciences*, Briot and Bouquet, Picard's *Traité d'Analyse*, memoirs by Kronecker, Picard, Appell, Poincaré, and others.

Elliptic Functions. *Twice weekly, throughout the year.* (During the months of April and May this was given four times weekly.) For the older theory, notes prepared by the lecturer were employed; for the Weierstrass theory, Halphen's treatise and Schwarz's *Formeln und Lehrsätze zum Gebrauche der elliptischen Functionen.*

Calculus of Variations. *Three times weekly, first half-year.* The authors principally followed were Jordan and Moigno.

A course lasting about three months, the class meeting four times a week, was given on the Theory of Multiple Integrals, including Poincaré's theory of the residues of double integrals (two complex variables).

Dr. Chapman gave the following courses:

Quaternions. *Three times weekly, until January.* This course followed Tait's Quaternions.

Modern Algebra. *Twice weekly, first half-year.* The text-books were Salmon's *Lessons*, Laurent's *Traité d'Analyse*, and the *Vorlesungen* of Clebsch.

Lie's Theory of Transformation Groups. *Three times weekly, during January, February, and March.* Lie's work was used as the text-book.

Higher Plane Curves. *Twice weekly, second half-year.* Text-book, Salmon's *Higher Plane Curves.*

Dynamics. *Three times weekly, second half-year.* This course followed Despeyrous and Thomson and Tait's Natural Philosophy. Matter was also taken from Jacobi, Appell, Routh, and Lagrange.

## III.—Undergraduate Courses in Mathematics.

These courses are the same from year to year. During the year 1891–2 they were given as follows:

*First Year Course:*

Analytic Geometry (together with a very brief introduction to the Theory of Equations). *Daily, till Christmas.* Dr. Poor and Mr. Cohen.

Differential and Integral Calculus. *Daily, from January 1 to end of year.* Dr. Chapman, Dr. Poor, and Mr. Landis.

*Second Year Course:*

Differential and Integral Calculus (Special Topics). *Twice weekly, till December* 1. Dr. Chapman.

Differential Equations. *Twice weekly, December* 1 *to end of year.* Professor Craig and Mr. Cohen.

Determinants and Theory of Equations. *Three times weekly, till December* 1. Dr. Chapman.

Modern Plane Analytic Geometry. *Three times weekly, December* 1 *to end of first half-year.* Dr. Poor.

Solid Analytic Geometry. *Three times weekly, second half-year.* Dr. Poor.

Classes were conducted by Dr. Poor and Mr. Cohen in:

Trigonometry and Analytic Geometry for matriculation. *Three times weekly, through the year.*

The Mathematical Seminary met weekly, under the supervision of Professor Craig and Dr. Chapman. Papers were read by a number of the advanced students and were mostly of an historical or biographical nature.

Three numbers of Vol. XIV of the American Journal of Mathematics have appeared during the year. The subjects treated have been varied and important, and several new contributors have appeared. A portrait of Professor Klein forms a frontispiece to the volume.

S. Newcomb,
*Professor of Mathematics and Astronomy.*

## Physics.

During the year regular courses of lectures and instruction have been given as follows:

By Professor Rowland:

1. Mathematical Physics, treating the subjects of Thermodynamics, Heat Conduction, and Physical Optics, with special reference during the latter part of the year to the theory of gratings. *Four times weekly, through the year.*
2. Meetings for the discussion of the current physical journals. *Weekly, through the year.*

By Dr. Ames:

1. General Physics. *Daily, through the year.*
2. A more advanced course in General Physics, consisting of lectures on Thermodynamics, Electricity, Sound, Mechanics, and the Wave Theory of Light. *Daily, through the year.*
3. Meetings of the Physical Seminary. *One evening weekly, through the year.*

The laboratory has been constantly open for the work of advanced and undergraduate students.

The following researches have been carried on:

A table of about 1000 standard wave-lengths, including those of metallic spectra to w. l. 2152, has been prepared for publication.

Measurements of all the lines in the solar spectrum, from w. l. 3000 downward towards the red, are in progress. About 14,000 measurements have so far been made.

Daily observations and photographs of the rain-band have been made for the U. S. Weather Bureau.

Investigations have been made on the effect of the magnetic field on chemical action.

The gravitation action of crystals in various directions with respect to their axes has been studied.

An investigation of the possible variations of the specific inductive capacity with different potentials has been begun.

A new dividing-engine for the ruling of diffraction-gratings is nearly finished.

In the Physical Seminary the following subjects have been considered:

The modern theories of solution, including osmotic pressure and Raoult's experiments; the kinetic theory of gases; the behavior of gases at low temperatures and at the critical temperature; capillarity and the theory of water-waves; Poynting's and J. J. Thomson's theories of the electromagnetic field; electro-chemical theories; electrolysis; Hertz's investigations on electric oscillations; magnetization of iron under various conditions; the discharge of electricity through gases; rotating-field motors with special reference to the Frankfurt-Lauffen system.

During the year there have been one hundred and thirty-seven students in the department. Of these, sixteen were graduates, studying Physics as the principal subject for the degree of Doctor of Philosophy; and forty-two followed courses in electrical engineering.

### Electrical Engineering.

During the year the following courses have been given:

By Dr. Duncan:

First year's course in Electricity and Magnetism, consisting of lectures on the general theory of the subject. *Three times weekly, through the year.*

Second year's course in Applied Electricity, consisting of lectures on the theory of dynamos and motors, the electrical transmission of energy, secondary batteries, telephone, etc., etc. *Twice weekly, through the year.* Laboratory work. *Daily, through the year.*

By Mr. Hering:

A course in Steam and Hydraulic Engineering, including lectures and recitations on steam engines, boilers, turbines, etc., and the general subject of central station equipment and the testing of the same. *Three times weekly, through the year.*

A course of lectures on Laboratory Methods for first-year students. *Weekly, second half-year.* Laboratory work. *Daily, through the year.*

By Mr. Aldrich:

A course in the Mechanics of Engineering and Machine Design, and a course in the Kinematics of Machinery for the first-year students. *Twice weekly, through the year.*

A course in the Kinematics of Machinery for the second-year students. *Twice weekly, first half-year.*

Instruction in Mechanical Drawing. *Through the year.*

The following investigations have been carried on:

A method of measuring differences of magnetic potential has been developed and employed; alternating current curves have been studied by a new method, and a number of important results obtained; the heating of coils of wire under different conditions has been studied; experiments have been made on the resistance of the electric arc under various pressures; tests of power plants of cable and electric railroads have been made.

HENRY A. ROWLAND,
*Professor of Physics.*

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## Chemistry.

During the past academic year the chemical laboratory has been constantly open for advanced and collegiate students. Lectures and class-room instruction have been given as follows:

By Professor Remsen:

1. General Chemistry (Minor Course). *Three times weekly, first half-year.*
2. Theoretical Chemistry, for graduate students. *Twice weekly, first half-year.*
3. Chemistry of the Compounds of Carbon, for graduate students. *Five times weekly, second half-year.*
4. Meetings for reports on the current journals of Chemistry. *Once weekly, through the year.*

By Professor Morse:

1. Mineralogy and Crystallography (Major Course). *Twice weekly, first half-year.*
2. Compounds of Carbon (Major Course). *Three to five times weekly, second half-year.*

By Dr. Renouf:

1. Advanced Inorganic Chemistry (Major Course). *Three times weekly, first half-year, and twice weekly for part of the second half-year.*
2. General Chemistry (Minor Course). *Three times weekly, second half-year.*

By Dr. Randall:

Reviews in General Chemistry (Minor Course). *Twice weekly, through the year.*

Besides the above, fifteen historical lectures were given by the most advanced students, on topics selected and assigned by the Director. The lecturers and their subjects were as follows:

Mr. E. T. Allen on Alcohol.
Mr. H. H. Ballard on Aldehyde.
Mr. F. A. Wolff, Jr. on Acetic Acid.
Mr. G. F. Weida on Ether.
Mr. J. E. Gilpin on Acetone.
Mr. H. M. Ullmann on Oxalic Acid.
Mr. W. B. Shober on Urea.
Mr. M. B. Stubbs on Uric Acid.
Mr. H. C. Jones on Benzene.
Mr. R. M. Parks, Jr. on Aniline.
Mr. J. A. Lyman on Phenol.
Mr. P. R. Moale on Naphthalene.
Mr. A. P. Saunders on Salicylic Acid.
Mr. A. F. Linn on Pyridine.
Mr. E. P. Kohler on Anthracene.

Ten candidates presented themselves for the degree of Doctor of Philosophy. They were Messrs. E. T. Allen, J. E. Gilpin, H. C. Jones, E. P. Kohler, A. F. Linn, J. A. Lyman, R. M. Parks, Jr., W. B. Shober, M. B. Stubbs, H. M. Ullmann. Their theses are entitled: "The Action of Lead Peroxide on Permanganic Acid"; "Orcin-sulphon-phthaleïns and Trichlorphosphanil"; "A Redetermination of the Atomic Weight of Cadmium"; "Action of Aniline on the Chlorides of Ortho-sulpho-benzoic Acid"; "Sulphon-fluoresceïn and related Compounds"; "The Phthaleïns of Ortho-sulpho-para-toluic Acid"; "The Action of Methyl Alcohol on Para-diazo-ortho-toluene-sulphonic Acid"; "The Action of Methyl Alcohol on Para-diazo-benzene-sulphonic Acid"; "Nitro-ortho-sulpho-benzoic Acid"; "Para-chlor-meta-sulpho-benzoic Acid." These will be printed in separate form as theses, and the essential parts will soon be published in the American Chemical Journal.

IRA REMSEN,
*Professor of Chemistry.*

## Geology and Mineralogy.

The sudden and very considerable increase in the number of graduate students of Geology (from four in 1890–91 to sixteen in 1891–92) has rendered more apparent than ever before the need of more adequate and permanent quarters for this department. During the past academic year the work has been carried on in the buildings Nos. 602 and 610 N. Howard St., and part of the time also at No. 311 W. Monument St. The first-named building has served as a laboratory for Mineralogy and Petrography under the direction of Professor Williams; the others for the accommodation of work in Palæontology and Physical Geography directed by Dr. Clark.

During the year the following courses of instruction have been given:

(*a*) General Mineralogy, embracing crystallography, physical and descriptive mineralogy, by Professor Williams. *Four lectures, one review, and one afternoon of practical work each week throughout the year.*

(*b*) General Geology and Palæontology, by Dr. Clark. *Three lectures and one afternoon of practical work each week throughout the year.*

(*c*) Petrography of the Igneous Rocks, by Professor Williams. *Three lectures each week from November 1st to May 1st.*

(*d*) Physical Geography, by Dr. Clark. (P. H. E. Course.) *Three times weekly until Christmas.*

(*e*) Three lectures on Cambrian Geology, by Mr. Charles D. Walcott, of Washington.

(*f*) Journal Club. *Once weekly, throughout the year.*

The laboratories have been open daily to students from 9 a. m. till 5 p. m.

*Original Work and Publications.* Petrographical studies have been made during the year by Professor Williams, of various crystalline rocks of Maryland, and also of the crystalline rocks of North Carolina collected the summer before. He has also made a field-study of the extensive areas of Cambrian volcanic rocks occurring in the South Mountain of Pennsylvania and Maryland. The granites of Maryland have been studied by Mr. C. R. Keyes, Ph. D., Fellow by Courtesy, while Mr. U. S. Grant, Fellow in Geology, has investigated certain granites of Northern Minnesota.

During the year a detailed account of the geology of the vicinity of Baltimore was published in the Guide Book prepared for the meeting of the American Institute of Mining Engineers, held in Baltimore in February. This was accompanied by the first map ever published to show the distribution of the various geological formations about the city. This map was furnished by the U. S. Geological Survey; a much more extended geological map of this region is now in course of publication by the University.

Palæontological investigations have been continued during the year by Dr. Clark, upon the Mesozoic and Cenozoic Echinodermata of the United

States. The Mesozoic portion is already in press as Bulletin 97 of the U. S. Geological Survey. Investigations are also well advanced upon the Eocene Fauna of Maryland and Virginia.

The report upon the Eocene of the United States has been published as Bulletin 83 of the U. S. Geological Survey, and constitutes one of the series of Correlation Essays that that organization has in process of preparation.

Dr. Clark has also been engaged in a study of the Coastal Plain in New Jersey, and has already completed the mapping of a large area in the northeastern portion of the State.

*Excursions.* The shorter excursions in the vicinity of Baltimore were conducted as usual during the year. The two longer excursions to the Coastal Plain and Appalachian region, which succeeded so well the year before, were found to be so considerable a tax upon the students' resources that it was determined in future to visit only one of these regions each year, but to alternate the trips, so that any one following the course could see both localities in a more thorough manner within two years.

In pursuance of this plan a more extended trip than ever before was made this spring through the Coastal Plain under the guidance of Dr. Clark, and the students were enabled to examine typical Tertiary and Cretaceous localities in Virginia, Maryland, and New Jersey. Several excursions occupying one or two days each week were made to well-known localities in Southern Maryland, while a five days' expedition was formed to study the Tertiary deposits exhibited on the York and James rivers in Virginia. Later a week's trip was made to New Jersey, and the most important points in the Cretaceous series of that State were visited. Upon all these excursions a large number of fossils were collected, representing all the important formations of the Middle Atlantic Coastal Plain.

During the coming year, 1892–3, it is proposed to devote the long geological excursion to some portion of the Appalachian system.

*Coöperation.* During the year the Maryland State Weather Service, which was organized in May, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College, and the U. S. Weather Bureau, has been duly recognized by the State Government and an appropriation made for its maintenance. In accordance with an act of the Legislature providing that the officers should be recommended by the heads of the several institutions interested and commissioned by the Governor, the following were appointed: Dr. W. B. Clark, Director; Professor Milton Whitney, Secretary and Treasurer; Dr. C. P. Cronk, Meteorologist in charge. The number of stations has been largely increased the past year, and information of value to all classes widely distributed. Weekly Crop Bulletins and Monthly Meteorological Reports have been published.

The work on soil investigation has been continued by Professor Milton Whitney, of the State Agricultural College, at the University estate at

Clifton, where accommodations have been furnished him by the Trustees. His results have been important and have been announced in special publications.

*Collections.* The past year no very important additions have been made to the Geological or Mineralogical collections. A suite of rocks was obtained by Professor Williams on a trip through the Rocky Mountains. A small collection of German rocks and minerals was presented by Professor A. Streng, of the University of Giessen. Considerable new material has also been gathered from the Cretaceous and Tertiary deposits of the Coastal Plain.

GEORGE H. WILLIAMS,
*Professor of Inorganic Geology.*

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## Biology.

The staff during the session consisted of:

Dr. H. N. Martin, Professor of Biology and Director of the Biological Laboratory.

Dr. W. K. Brooks, Professor of Animal Morphology and Director of the Marine Laboratory.

Dr. E. A. Andrews, Associate in Biology.

Dr. G. P. Dreyer, Senior Demonstrator of Animal Physiology and Histology.

Dr. B. W. Barton, Instructor in Botany.

Messrs. Hough, Field, Knower, and Britcher rendered help as junior assistants.

The Bruce Fellowship was held in the early part of the session by Dr. T. H. Morgan; on Dr. Morgan's resignation, Mr. R. P. Bigelow was appointed. The fellowships in Biology were held by Messrs. Kellogg and Lingle; the former was placed in charge of the biological museum and the latter in charge of the biological library. Mr. M. M. Metcalf has been appointed to the university table at the U. S. Fish Commission Laboratory at Wood's Holl.

The Laboratory was open regularly to graduate and undergraduate students from 9 a. m. to 5 p. m., with the exception of Saturdays and Sundays. Courses of lectures were delivered as stated below.

1. General Biology. *Thrice weekly, from the commencement of the session until April.* Twelve introductory lectures were given by Professor Martin. Dr. Andrews delivered the other lectures in the course and had general control of the work of students taking it.

2. Osteology, Human and Comparative. Professor Brooks. *Twice weekly, from early in November until the spring recess.*

3. Elements of Embryology. Dr. Andrews. *Thrice weekly, from the spring recess until the close of the session.*

4. Elements of Systematic and Structural Botany. Dr. Barton. *Twice weekly, from the spring recess until the close of the session.*

The four lecture courses above described, with accompanying laboratory work during at least five hours each week, constituted the undergraduate minor course in Biology.

5. Mammalian Anatomy. Dr. Andrews. *Twelve lectures, with dissection of a dog.*

6. Animal Physiology and Histology. Professor Martin and Dr. Dreyer. *Thrice weekly, from early in November until the close of the session.*

7. Elements of Zoology. Professor Brooks. *Twice weekly, from early in November until the end of the session.*

Courses 5, 6 and 7, with at least five hours' laboratory work each week, constituted the major undergraduate course in Biology.

8. Professor Martin lectured to advanced students on the development and physiology of the reproductive organs.

9. Professor Brooks delivered ten lectures on problems in Heredity; six, on the life-history of Salpa; three, on the phylogeny of Crustacea.

10. The Physiological Seminary met weekly under the direction of Professor Martin and Dr. Dreyer.

Special topics for presentation were assigned to the more advanced students, and discussed. Among the topics were the methods of experimental physiology; animal heat; the elements governing the intensity and quality of sensations (Wundt); demonstrations of the ophthalmoscope, perimeter, etc.; Hering's researches on color vision.

11. The Morphological Seminary met under the direction of Professor Brooks. The work consisted of assigned readings and of lectures on subjects assigned to advanced students.

The topics were the phylogeny of Echinoderms; the anatomy and histology of Lamellibranchs; the phylogeny of the Mollusca.

12. At the request of Professor Griffin, Dr. Dreyer gave to the graduating class a short course (mainly demonstrations) on the anatomy and physiology of the muscular and nervous systems. It was designed to supplement the regular psychological work of the class and attendance was voluntary. The interest shown by the students this session, as during the two preceding, emphasizes the need of a special demonstrator in experimental psychology.

During the session researches have been carried on in Baltimore and at the Marine Laboratory at Jamaica, on the following subjects:

The vaso-motor nerves of the heart; the influence of vagus stimulation on the histological structure of the cardiac nerve cells; the influence of differential circulation on the respiration; the cause of "vagus exhaustion" in cardiac inhibition; the development of amphibia; budding in annelids; the significance of metamerism; the embryology of Chiton; the sense-organs of Salpa; the structure and development of the Dis-

comedusæ; the anatomy and histology of Lamellibranchs; the embryology of Echinoderms; the history of the genus Salpa; the fauna and flora of Jamaica.

Most of these researches are well advanced, and preliminary abstracts of many of them have already been printed.

A quarto memoir on the metamorphosis and embryology of the Macroura, with fifty-six colored plates, has passed through the press this winter and will appear soon.

More than a dozen other papers based on original work done at Baltimore or in the Jamaica Laboratory have been published during the year in various journals; they range from preliminary abstracts to completed researches.

Number two of volume five of the "Studies from the Biological Laboratory" is in press and will be issued soon.

The Marine Laboratory will be organized in June at the Bemini Islands, Bahamas, under charge of Dr. E. A. Andrews; its session will last about six weeks.

During the session the Biological Department received many valuable instruments and books by bequest of the late Dr. Christopher Johnston. This bequest has already been publicly acknowledged by the University, but I think I ought to add now that it was but the last of many gifts to the biological museum. From its first year Dr. Johnston was always a generous contributor. Sometimes it would be a few excellent microscopic sections of bone and tooth, prepared by himself; at another, some zoological rarity or some useful cast or specimen; always something which we were glad to possess. Although his gifts in any one year might not be of sufficient importance for specific mention in its brief annual report, yet I felt always that he was a true and intelligent friend to the biologists of the University, and I realize that by his death we lost a valuable friend. By the similar unostentatious gifts of many friends who do not send us mere curiosities but things of permanent value, our museum grows yearly and is now overcrowded. Designed at first merely as a storehouse for the specimens required for class-work, the museum has had to receive and assume the care of the collections made at the various sessions of the marine laboratory; the gifts of the University of Maryland; of the Maryland Academy of Sciences; of collectors of our local plants; of Dr. Schimper; of Mr. Fitzgerald and of others. More space is necessary, and a paid curator should be provided. Probably the best plan would be to keep the specimens needed for class-work in our present museum and transfer the rest to a section of a general University museum, having abundant room for expansion.

H. Newell Martin,
*Professor of Biology.*

## Greek.

Under the direction of Professor Gildersleeve the advanced students of Greek have been organized into a Greek Seminary. According to the plan of the seminary the work of the year is concentrated on some leading author or some special department of literature, chiefly with reference to the literary form. During the past year the centre of work was Thukydides.

In the seminary proper, which met twice a week during the academic year, portions of the Fourth Book of Thukydides were interpreted by the members in turn. Other books were analyzed and introductory lectures prepared by different members of the seminary. In connection with the work of the seminary special studies were made in "The Proem of Thukydides," "The Typical Form of the Greek Funeral Oration," "The Speeches of Alkibiades," "The Speeches of Hermokrates," "Verbs used in Composition with Prepositions in Thukydides," "Comparison of the Syntax of Herodian with that of Thukydides."

In addition to these studies, papers have been prepared on "Plato as a Narrator," "Philosophy and Philosophers in the Greek Comic Poets," "Study of Homer in the Greek Renascence." Among the studies continued from previous years and completed may be noted "Ethopoiia in Lysias," "Locative Expressions in the Attic Orators," "Treatment of the Contradictions in Homer by the ἐνστατικοί and λυτικοί." A complete index verborum to Lysias is also to be counted as partly the work of the year.

As auxiliary to the work of the seminary, Professor Gildersleeve gave a course of more than twenty lectures on Greek Historiography and a number of readings in the rhetorical works of Dionysios of Halicarnassos pertaining to Thukydides.

The subject of Hermeneutics was discussed in weekly conferences from the beginning of January to the end of the session, and a course of lectures on Greek syntax in its relations to style has been held once a week throughout the academic year.

Professor Gildersleeve conducted also twenty-two exercises in translation at dictation from English into Greek and Greek into English.

Dr. Alfred Gudeman, Fellow by Courtesy, conducted courses in Aristotle's Poetics and the Sources of Greek History, weekly during the first half-year.

Dr. Arnolt gave five courses in New Testament Greek, the classes meeting seven times a week during the first half-year, and three times during the second half-year. The subjects treated were:—1. Grammar of Hellenistic and New Testament Greek, with constant reference to Attic Greek; 2. Introduction to the New Testament; 3. Acts of the Apostles,

introduction and exegesis of chapters I to V; 4. Introduction to the Study of Patristic Literature; 5. Second Apology of Justin Martyr, and large extracts from the First; the Apology of Aristides; and the manuscript-text of the Teaching of the Apostles.

Associate-Professor Spieker conducted the following undergraduate courses:

Plato, *Protagoras. Three times weekly, first half-year.*
Aischylos, *Septem;* Sophocles, *Ajax. Three times weekly, second half-year.*
Andokides, *De Mysteriis. Four times weekly, first half-year.*
Homer, *Odyssey*, books i, vi, ix; Euripides, *Herakleidae. Four times weekly, second half-year.*
Greek Literature. *Weekly, through the year.*
Reading at Sight. *Weekly, through the year.*

Classes in Prose Composition, meeting weekly, were conducted in connection with each of the courses above named.

Students have read privately for examination the following books:
Herodotos, book ix. (9).
Aristophanes, *Clouds.* (7).
Demosthenes, *De Corona.* (6).
Lysias, *Select Orations.* (5).

B. L. GILDERSLEEVE,
*Professor of Greek.*

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## Latin.

The Latin Seminary, under the direction of Professor Warren, held two sessions a week throughout the year, the centre of work being Vergil.

After a series of lectures by the Director upon the sources for Vergil's life, the manuscripts, ancient commentators and editions, select portions of the Bucolics, Georgics, and Aeneid were interpreted by the members in turn. Among the subjects treated in special papers were the place of Vergil as an epic poet; the sources of the Georgics; Vergil's poetical expressions for time; the substantives of Vergil; the syntactical peculiarities of Macrobius; on the genuineness of the Culex, of the Ciris, of the Moretum, of the Copa.

In connection with the work of the Seminary, Professor Warren gave during the first half-year a course of weekly lectures on Roman Epic Poetry down to Vergil. This was continued in the second half-year by a course of weekly lectures by Dr. Kirby W. Smith on the Roman Epic Poets after Vergil.

Throughout the year Professor Warren lectured weekly on Historical Latin Grammar.

During the second half-year he held a course of weekly readings in Macrobius. The Journal Club met weekly until February, after that fortnightly, to consider recent publications in the field of Latin.

Dr. A. Gudeman gave a course of lectures on Cicero de Legibus in the first half of the year.

Undergraduate courses have been conducted as follows by Professor Warren:

Plautus, *Pseudolus*, and Terence, *Andria*. *Three times weekly, first half-year.*

Tacitus, *Agricola, Germania, Annales*, book ii. *Four times weekly, second half-year.*

By Dr. K. W. Smith:

Livy, books xxi and xxii. *Four times weekly, first half-year.*

Horace, *Odes, Satires, and Epistles*. *Four times weekly, second half-year.*

Selections from Catullus, Tibullus, and Propertius. *Three times weekly, second half-year.*

Latin Prose Composition. (Two classes.) *Weekly, through the year.*

Sight Reading. *Weekly, through the year.*

Students have read privately for examination the following books:

Cicero, *De Senectute, De Amicitia*. (12).
Horace, *Epodes*. (13).
Ovid, *Fasti*, books i and ii. (13).
Terence, *Hautontimorumenos*. (9).
Plautus, *Amphitruo*. (9).
Plautus, *Menaechmi*. (1).
Quintus Curtius, book iv. (13).
Pliny, *Select Letters*. (8).

MINTON WARREN,
*Professor of Latin.*

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## Sanskrit and Comparative Philology.

During the session of 1891–92 the Vedic Seminary consisted of ten members, whose work was directed partly at the regular sessions of the Seminary and partly by private guidance of the undertakings of some of the more advanced members. During the first half-year selected hymns of the Atharva-Veda were interpreted, with constant references to the ritual practices, and especially also with the aid of the advance sheets of

the valuable commentary of Sāyaṇa on the Atharva-Veda. The first edition of this work is now going through the press under the editorship of Mr. Shankar Pandurang Pandit, the Oriental translator of the British Government in Bombay, who has been furnishing Professor Whitney, of Yale University, with the advance sheets, and the kindness of the latter in transferring to me the entire voluminous publication may here be acknowledged. During the second half-year selections from the Brāhmana-literature were interpreted and their relation to the hymnal literature established.

The special methods of studying the Vedas, which have been gradually evolved during the preceding years of the activity of the Vedic Seminary, were continued and elaborated still further. Under the stimulus of this work the director has published five series of "Contributions to the Interpretation of the Veda" (altogether twenty-one in number), in which these methods were propounded and abundantly illustrated. These series were published in various volumes of the American Journal of Philology and the Journal of the American Oriental Society; a concise account of them is printed in the Johns Hopkins University Circulars, No. 99, p. 101 fg. (June, 1892).

The work of the Seminary this year is especially noteworthy for the successful commencement of the Vedic Concordance, an undertaking contemplated for some years past and now definitely under way, with the prospect of fulfilment within a reasonable time. The plan is to collect and arrange in one work the lyric and liturgical material of the entire Vedic literature, consisting of one-fourth of a million passages, or more. A full statement of the scope and value of this work is also printed in the issue of the Circulars referred to above. Both present and former members of the Seminary are now actively engaged upon this work. They are Messrs. M. Brandow, H. L. Ebeling (Ph. D. '91), E. W. Fay (Ph. D. '90), C. J. Goodwin (Ph. D. '90), J. E. Harry (Ph. D. '89), J. T. Hatfield (Ph. D. '90), D. H. Holmes, J. T. Lees (Ph. D. '89), H. W. Magoun (Ph. D. '90), J. L. Moore (Ph. D. '91), R. B. Steele (Ph. D. '90). Dr. Hans Oertel, of Yale University, is also furnishing helpful materials from manuscripts in the library of the American Oriental Society at New Haven.

A second and more elementary course of Vedic study was conducted by Mr. W. W. Baden, Fellow in Sanskrit. Here every effort was directed toward an understanding of the special features of the Vedic language in its relation to the classical Sanskrit. A short preliminary course in Vedic grammar was followed by reading selected specimens of the Rig-Veda. The metres, the accent, the special Vedic forms, and the lexical peculiarities were constantly regarded.

In the domain of Classical Sanskrit the subjects were the Hitopadeça, Kathāsaritsāgara, and Manu. The elementary work consisted of a short course of grammar, and practical exercises in prose-writing, followed by the interpretation of the Nala.

In Comparative Philology the work was two-fold. First, a course in the general principles of linguistic science, together with an exposition and criticism of modern methods in scientific grammar. Secondly, a series of lectures through the year in the comparative grammar of Greek and Latin. The subject under treatment was the history of noun-inflections in Greek and Latin with reference to the related languages, especially German and Sanskrit. The corresponding work during the session of 1889–90 was devoted to the history of the consonants in the classical languages. During the session of 1892–93 the subject treated will be the vowels and the vowel-relations (*ablaut*) in Greek and Latin. Opportunity is thus afforded to the students of the classical languages to acquaint themselves with the modern treatment of the sounds and inflections, in addition to the elaborate studies in syntax which are carried on in the Greek and Latin Seminaries. Students of the comparative grammar of any other of the Indo-European languages, as, for instance, the Teutonic, are enabled to acquaint themselves with the chief characteristics of the entire family of speech.

MAURICE BLOOMFIELD,
*Professor of Sanskrit and Comparative Philology.*

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## Oriental Seminary.

Twenty-one courses in the various branches of Oriental research have been given during the past year, particular attention being paid to the study of the Bible and the Cuneiform Inscriptions bearing on Scripture. To the Old Testament there were devoted seven hours weekly through the first half-year, which number was increased to eight during the second half-year; to Assyriology, seven hours weekly during the first, and eight during the second half-year.

Dr. Cyrus Adler, Associate in Semitic, having been detained abroad by his official duties as Commissioner to the East, in behalf of the World's Columbian Exposition, the classes announced under his name in the Programme were conducted during the first half-year by Professor Haupt, and by the Fellow in Semitic, Dr. J. Dyneley Prince. Dr. Adler returned in the month of January and entered upon his academic duties at the beginning of the second half-year.

In Hebrew, Professor Haupt gave a critical interpretation of selected Psalms, the work centering in the so-called Songs of Degrees (Psalms CXX-CXXXIV) and Messianic Psalms (Psalms CX, II, &c.). He also conducted a series of bi-weekly exercises in Hebrew prose composition. The members of the class translated two hundred and fifty sentences from English into Hebrew, and pointed and translated a number of unpointed Hebrew letters. Dr. Johnston gave a critical interpretation of portions of

Genesis, weekly through the year, with special reference to the higher criticism of the Hexateuch. A class met weekly through the year to read selected portions of the Old Testament at sight under the guidance of Drs. Prince and Adler during the first and second half-years respectively.

Elementary instruction in Hebrew was given weekly during the first half-year by Dr. Prince, being continued by Dr. Adler after his return. During the second half-year Dr. Adler conducted a class in Biblical Archæology. After an introductory lecture on Jewish Antiquities, the following subjects were discussed: Administration, mode of government and civil and criminal procedure of the ancient Hebrews; the races of the Old Testament (an ethnologic study with illustrations drawn from the Egyptian monuments); the history of transportation and its influence on commerce and inter-communication among nations of the ancient East. Dr. Johnston delivered a series of lectures on Biblical History and Geography, in which, after describing the bearing of the recent discoveries in this field, the history and geography of Babylonia, Assyria, Media, Persia and Israel were treated. Dr. Johnston also gave a course introductory to the study of the Old Testament in the light of modern critical research.

In Biblical Aramaic, Professor Haupt met a class weekly during the first half-year, giving a critical introduction to the books of Ezra and Nehemiah, whereupon the reading of the first chapters of Ezra was entered upon. During the second half-year the class read all the Aramaic chapters of the book of Daniel under the guidance of Dr. Adler.

Exercises in Hebrew conversation and in Post-Biblical Hebrew (Strack's edition of the Mishnic tract *Yômâ* being read) were conducted by Dr. Adler during the second half-year.

The Assyrian Seminary met under the direction of Professor Haupt three hours weekly through the year, studying the vocabularies in the second volume of Sir Henry Rawlinson's *Cuneiform Inscriptions of Western Asia*, and the bilingual hymns and incantations in the new edition of the fourth volume of the same work. This was supplemented by an advanced course in Sumerian, one hour weekly through the year, in which a number of bilingual texts in Haupt's *Keilschrifttexte*, parts II and III, were studied. In addition to these courses, one hour weekly during the first, and two during the second half-year, were devoted to the study of the Babylonian *Nimrod Epic*, parts I and II in Haupt's edition.

Dr. Johnston met the second-year students in Assyrian weekly, reading selections from Delitzsch's *Lesestücke*. He also conducted a bi-weekly course in Babylonian for advanced students, interpreting portions of Pinches' *Texts in the Babylonian Wedge-Writing*.

Dr. Prince met a class weekly in Elementary Assyrian and, during the second half-year, added a special course in Assyrian historical texts.

In Arabic, Professor Haupt conducted a bi-weekly course of exercises in Arabic prose composition, about one hundred sentences being rendered

by the members of the class from English into Arabic. Dr. Johnston gave elementary instruction in Arabic weekly through the year, besides meeting bi-weekly the more advanced students, reading selections from the *Majâni-el-Adab*.

In Ethiopic, Professor Haupt, after some introductory lectures on the comparative grammar of the Geez language, interpreted selections from Dillman's Chrestomathy, which course was continued by Dr. Adler during the second half-year.

The Seminary library was enriched by the gift of 142 carefully selected volumes from Dr. J. Dyneley Prince.

Two students of the department presented themselves for examination, and were recommended for the degree of Doctor of Philosophy—Mr. J. Dyneley Prince and Mr. I. M. Casanowicz. Mr. Prince had as principal subject Assyriology, and as first subordinate Hebrew; his thesis was on *Mene, Mene, Tekel, Upharsin*. Mr. Casanowicz's principal subject was Hebrew, his first subordinate Assyrian; he submitted a thesis on *Paronomasia in the Old Testament*.

The following papers were read by members of the Seminary during the year,—before the Johns Hopkins Philological Association: Paul Haupt, *On Psalm cx;* J. D. Prince, *Mene, Mene, Tekel, Upharsin* (April 29th); D. G. Stevens, *On the so-called Songs of Degrees* (Dec. 18th, abstract in *University Circulars* No. 95, p. 40); I. M. Casanowicz, *Paronomasia in the Old Testament* (May 20th); before the American Oriental Society at its annual meeting in Washington, April 21–23: Paul Haupt, *Denominal verbs in Semitic; A new Hebrew particle; The Hebrew particle -nâ; Bâlîm lô benûyim;* Cyrus Adler, *On William B. Hodgson; On Christopher Columbus in Oriental literature* (with special reference to a Turkish manuscript); Christopher Johnston, Jr., *The Sumero-Akkadian question; Two Assyrian letters* (K.84, IVR²45, No. 1, and K.828, Pinches' Texts, p. 8); J. Dyneley Prince, *The writing on the wall at Belshazzar's feast* (Daniel V, 25); W. Muss-Arnolt, *The translations of the Cuneiform account of the Deluge*.

The second part of Professor Haupt's edition of the Babylonian *Nimrod Epic*, 70 plates in quarto, was published at the beginning of the session. The first part of the second volume of *Contributions to Assyriology*, edited by Delitzsch and Haupt, made its appearance in October. It contains papers by Delitzsch, Flemming, Belser, and Hagen, forming a volume of 273 pages, with 26 plates and a portrait of Sir Henry Rawlinson. No. 4, concluding Volume II, is in progress.

Professor Haupt made a *Report on the Eighth International Congress of Orientalists* held at Stockholm and Christiania in September, 1889, which was printed in the Smithsonian Report for 1890, pp. 85–92, issued from the Government Printing Office, Washington, 1891.

PAUL HAUPT,
*Professor of Semitic Languages.*

## German.

The German Seminary was conducted by Professor Wood. During the first half-year the most important Old High German Texts were interpreted from Braune's *Reader*, four times weekly. In the poetical pieces, special attention was given to the verse of Otfrid, the Hildebrandslied and Muspilli, and the theories of Möller, Hirt, and especially of Heusler, were discussed in their relation to Sievers' verse-types. During the second half-year the lyric poetry of Middle High German was studied in the Seminary, four times weekly. The period beginning with the introduction of foreign canons of art into the minnesong was considered, up to the appearance of Walther von der Vogelweide. Reinmar der Alte was read in part, and the following authors entire: Heinrich von Morungen, Friedrich von Hausen, Rudolf von Fenis, Albrecht von Johansdorf, Hartwic von Rute and Heinrich von Rugge. The author most closely studied was Heinrich von Morungen, and some new results were reached regarding his poetical art and style and his position among the minnepoets. It is hoped that these results will soon be ready for publication.

The Seminary met also fortnightly through the year in an evening session. Besides reviews and reports, the following papers were presented, which gave partial results of investigations still in progress, or finished during the year:

The Present Participle in Tatian, Isidor, Notker and Otfrid; Charles Sealsfield's Biography and Style; On the new theory of the Origin of Grammatical Gender; On the changes in gender of foreign words in German; On the changes in grammatical gender in Low German; The History of Rhine-Frankish Speech; Die Bartholomeusnacht in der zeitgenössischen, insbesondere Fischartschen Dichtung; Analogien in der religiösen Satire und die kirchliche Weltanschauung in Brant's "Narrenschiff" und Erasmus' "Narrenlob," resp. den "Colloquia"; Notes on a Rime-Dictionary for Hartman von Aue; Germanism in the writings of Edgar A. Poe; Notes on the style of Heinrich von Morungen.

The Outlines of Teutonic Philology were studied, twice weekly through the year, under the guidance of Professor Wood. The inflections of Gothic were first learned, after which the extracts in Braune's *Grammatik* were read, with Kluge's and Feist's dictionaries for etymological study, and with the works of Douse and Balg for syntax. Kluge's *Vorgeschichte der altgermanischen Dialekte* was then read and explained, with appropriate material for illustration. A third weekly meeting of the class in Gothic was conducted by Mr. A. B. Faust, Fellow in German. The work of each week in Gothic was reviewed in this class, and selected topics in Teutonic philology were studied.

Goethe and Schiller, in their period of classical tendencies, were studied twice weekly in a class conducted by Professor Wood. The works of both authors written between 1788 and 1805 were considered, particularly with

reference to classical models and to the new theories of poetical art which Goethe and Schiller were then elaborating. Schiller's *Wallenstein* and Goethe's *Elpenor*, *Achilleis*, and the "Helena" act in *Faust* were the works that received most attention. The results gained for "Elpenor" have been published in the American Journal of Philology, Vol. 12, pp. 458–480.

In the undergraduate major course, Professor Wood conducted a class, twice weekly, from January 1 to the end of the year, in Goethe's *Faust*. The whole of the First Part was read.

In the minor course, Schiller and Goethe's *Briefwechsel* was read with Professor Wood, weekly through the year. Among the parts taken up were the letters relating to *Tell*, *Hermann und Dorothea*, *Wallenstein*, and particularly the correspondence during the "Balladenjahr" (1797). In this connection, selected ballads of Goethe and Schiller were read in Buchheim's "Balladen und Romanzen."

Dr. Learned gave the following courses:

1. Middle High German. Weekly through the year. The forms of the language were studied in Paul's *Grammatik*. The *Erec* of Hartman von Aue was then read in part. Lectures were given on the sources and versions of the epic.

2. Deutsches Heldenbuch. Twice weekly, first half-year. *Alphart's Tod*, *Dietrich's Flucht*, and the first part of the *Rabenschlacht* were read.

3. The Heroic Sagas of Germany. Two lectures weekly, during the second half-year. The sources and origin of the heroic saga were first discussed, after which the German popular epics from the eighth to the thirteenth centuries were explored for historical elements. The saga of Theoderic was then traced in its development through all the extant versions.

4. Undergraduate courses.

Goethe's *Hermann und Dorothea* and Freytag, *Aus dem Mittelalter* (60 pp.) were read in the major course—three times weekly, first half-year, and weekly, second half-year. Buchheim's *Prose Composition* (Part III, 30 pp.) and Wilmanns' *Deutsche Grammatik*, second part, were studied in weekly meetings. The class read Schiller's *Wallenstein* as private reading.

In the minor course, Goethe's *Egmont*, Schiller's *Wilhelm Tell*, Heine's *Harzreise* (50 pp.) and Freytag's *Aus dem Staat Friedrichs des Grossen* were read, three times weekly, and the second series of exercises in Whitney's *Grammar* were translated into German, weekly. The class read the following works of Schiller, as private reading: *Des Grafen Lamoral Egmont Leben und Tod; Die Jungfrau von Orleans.*

Dr. Schoenfeld was in charge of the undergraduate minor course B, with the exception of a class in Prose Composition (Whitney's Exercises, first series), one hour weekly, which was conducted by Dr. Learned. In this course, four hours weekly, Otis' *Elementary German* was begun

and completed, and the following works were read: Buchheim's *Reader*, Part I (60 pp.); Schiller's *Wilhelm Tell;* Goethe's *Egmont*, Acts I and II.

A class of graduate students, meeting twice weekly, read with Dr. Schoenfeld, essays in Historical and Scientific German, viz.: Freytag, *Aus dem Staat Friedrichs des Grossen;* Helmholtz, *Über Goethe's naturwissenschaftliche Arbeiten;* extracts from Humboldt's *Kosmos*.

Dr. Schoenfeld gave class lectures, weekly, on subjects connected with German history and culture, and conducted a class, twice weekly, in German conversation.

HENRY WOOD,
*Professor of German.*

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## English.

1. Advanced Courses.

The English Seminary was conducted by Dr. Bright.

During the first half-year the work of the Seminary was upon the English Drama from the Morality Plays to Shakespeare. Detailed study and investigation was bestowed upon *Ralph Roister Doister*, *Gammer Gurton's Needle*, *Gorboduc*, and the dramatic writings of Thomas Kyd, Robert Greene, George Peele, Thomas Lodge, John Lyly, and Christopher Marlowe. The literary, social and political influences determining the destiny of the drama were minutely explored, including the civil enactments and the establishment of the theatres. The history of *euphuism* in style was also reviewed. During the second half-year the prose works of the Anglo-Saxon period were studied, chiefly the *Anglo-Saxon Chronicle* and the group of the so-called *Alfredian Texts*.

Dr. Bright also conducted a class in textual criticism and interpretation (twice weekly). The texts employed were the Anglo-Saxon poems *Andreas* and *Phoenix*, and the Middle English legend of *St. Alexius*. He also gave a course of lectures (weekly) on the History of English Inflections, upon the basis of Indo-European Grammar.

2. College Courses.

The English major class in Anglo-Saxon was conducted by Dr. Bright, twice weekly. The text-books employed were Sievers' Old English Grammar and Bright's Anglo-Saxon Reader.

The English major class met Dr. Browne weekly for the study of the Scottish poets of the fourteenth, fifteenth and sixteenth centuries. Readings from selected texts were accompanied by a course of lectures on Early Scottish literature. This class also studied the literature of the Elizabethan period, twice weekly, during the first half-year, and the rise and development of English Comedy, twice weekly, during the second half-year. A few members of the class who did not take the Anglo-Saxon

of the major course read Shakespeare's historical plays under the guidance of the instructor.

The English minor class was conducted entirely by Dr. Browne. For two hours a week it studied Early and Middle English, with the use of Morris and Skeat's *Specimens*, Parts I, II, in an inverse chronological order, beginning with the *Man of Lawes Tale*, and going back to the late Anglo-Saxon of the Peterborough Chronicle. The history, literature and language of the twelfth to the fourteenth century were illustrated in a weekly lecture. This class also studied English literature two hours a week, using the Morley-Tyler manual as a text-book.

The students of the P. H. E. course (required of all undergraduates) met Mr. C. A. Smith twice weekly, during the year, for the study of Rhetoric and English Composition. The first half-year was devoted chiefly to a drill in Hill's *Principles of Rhetoric*, accompanied by short written exercises. This was followed in the second half-year by a critical study of Macaulay's *Essay on Milton*, a course of lectures on poetry, the study of Goldsmith's Complete Poems, and more elaborate exercises in composition.

3. Lectures on Literature.

The second course of the Percy Turnbull Memorial Lectures on Poetry were given (March 28 to April 8) by Richard Claverhouse Jebb, LL. D., Litt. D., Regius Professor of Greek at the University of Cambridge, England. The general subject of the course, "The Growth and Influence of Classical Greek Poetry," was treated under the following special topics: 1. The Distinctive Qualities of the Greek Race as expressed by Homer; 2. Greek Epic Poetry (two lectures); 3. Greek Lyric Poetry, the course of its development; 4. Pindar; 5. The Attic Drama (two lectures); 6. The Permanent Power of Greek Poetry.

The lecturers for the year on the Caroline Donovan Foundation were Professor Caleb T. Winchester, A. M., of Wesleyan University, and Oliver Elton, A. B., Lecturer in the Owens College, Manchester, England. Professor Winchester gave (in February) nine lectures on the poets of the Romantic Revival: 1. Introductory: Characteristics of the Period; 2. Burns; 3. Wordsworth; 4. Southey and Coleridge; 5. Scott; 6. Byron; 7 and 8. Shelley; 9. Keats. Mr. Elton gave (in April) three public lectures: 1. Elizabethan Poetry; 2. Christopher Marlowe; 3. George Chapman. These were followed by eight class lectures treating: Some Minor Poems of Spenser; Elizabethan Sonnets; Michael Drayton; The Vindictive Tragedies, with a Study of Marston; The Idea of Retribution in Shakespeare, with a study of *Macbeth*; Massinger.

James W. Bright,
*Associate Professor of English Philology.*

William Hand Browne,
*Associate Professor of English Literature.*

## Romance Languages.

The advanced courses were conducted by Professor Elliott, as follows:

Romance Seminary. *Three hours a week, through the year.*

The work centered here on the Fables of Marie de France, of which it is proposed eventually to issue a critical edition based on the original manuscripts. The object of the first year's course has been to acquire a general working knowledge of the Fable literature of Antiquity and the Middle Ages; to become acquainted with the leading characteristics of the Norman and Anglo-Norman dialects in which most of the MSS are written; to present the fundamental principles of text criticism and text constitution, for which the first four fables were examined. These were based on three English MSS: 978 and 4333 Harley; 16 K. 12. York Minster and EE. 6. 11. of the University of Cambridge. A clear view of the morphology and phonetics of the language was obtained as contrasted with those of the Ile-de-France and the group of Eastern French dialects, on which the class worked during the winter.

Linguistic Ethnography of Italy. *Weekly, first half-year.*

This course was attended by all graduate students of the department, and was intended to present the condition of our present knowledge regarding the early non-Latin peoples of Italy whose influence may be traced in the modern dialects.

French Dialects. *Weekly.*

Four dialects were especially considered: Norman, Picard, Wallonian and Lorraine. The method of work was to a great extent practical, and had in view a sufficient acquaintance with dialect forms to enable the student to discriminate old French texts belonging to these different domains. To this end the leading characteristics of the old and modern dialect were presented in a few lectures; then through the use of early and later texts the student was required to recognize and name the dialect features as they occurred.

Popular Latin. *Weekly.*

The object here was to give the student an introduction to the phonetics of Folk- and Low-Latin as the common basis for a scientific study of the modern Romance idioms. Meyer-Lübke's treatment of the subject in Gröber's *Grundriss der romanischen Philologie* was taken as the starting point for this work, in connection with which lectures were given and selections read in Schuchardt's *Vokalismus des Vulgärlateins*, Budinszky's *Ausbreitung der Lateinischen Sprache*, D'Arbois de Jubainville's *Déclinaison latine en Gaule*, Bonnet's *Le Latin de Grégoire de Tours* and Wölfflin's *Archiv für lateinische Lexicographie.*

Italian Dialects. *Weekly.*

Here the principal work centered upon the Tuscan forms (Florence, Arezzo, Siena, Lucca), for the treatment of which the same system was

followed as for the French dialects. In addition to this, modern dialect works in each dialect were distributed among the students, who were required to give a résumé of all special dialect phenomena found in these monuments.

Toward the close of the year a few lectures were given on the Gallo-Italic dialects (especially the Lombard, Piedmontese and Genoese) and dialect texts for each examined with particular reference to special phonetic phenomena.

Dr. Matzke gave the following courses:

*Old French Philology.*

This course consisted of lectures on Old French phonology and morphology, and practical exercises based on Suchier's edition of Aucassin et Nicolète. The object of the course was to make first-year students in French Philology familiar with the general and well-established laws of linguistic growth, and to lay the foundation for subsequent detailed study.

*Italian Philology.*

The object of this course was in the main identical with the preceding course. The study of Italian Historical Grammar was based on Meyer-Lübke's *Italienische Grammatik* and D'Ovidio, *Die Italienische Sprache*, in Gröber's *Grundriss der romanischen Philologie I.* Constant use was also made of the literature on the subject, scattered through the different periodicals of the department. The practical exercises were based on the "Giornata prima" of Boccaccio's *Decamerone.* Towards the end of the year several of the early Florentine selections of Monaci's *Crestomazia Italiana* were critically studied.

*Old Provençal.*

Bartsch's *Chrestomathie Provençale* was used, from which selections were chosen with special reference to lyric poetry. The story began with the *Boethius* fragment and was followed by selections from Guillaume IX, Bernard de Ventadorn, Marcabrun, Ugo Catola, Jaufre Rudel, Peire d'Alvernhe, Peire Rogier, Guiraut de Borneil, Raimbout III, Guillaume de Cabestaing, Arnaut Daniel, Bertran de Born, Peire Vidal, Folquet de Marseille, Raimbaut de Vaqueiras, the Monk of Montaudon, and the epic Girart de Rossilhon. The class read privately in addition Restori, *Letteratura Provenzale.*

Mr. E. S. Lewis gave the following graduate courses:

French Phonetics. Weekly, during the first half-year, the course being based on Beyer's *Französische Phonetik.*

General Phonetics. Twice weekly, during the second half-year, the course being based chiefly on Meyer's *Vocal Organs*, Bell's *Sounds and their Relations*, and Sweet's *Primer of Phonetics.*

Interpretation of Old French Texts. Twice weekly, during first half-year, weekly during second half-year; the readings consisting of selections in Constans' *Chrestomathie de l'Ancien Français*, the whole of

*Aucassin et Nicolète*, and about three thousand lines of the *Cligès* (Förster's edition).

*Italian and Spanish.*

Both languages were taken up from the beginning, and stress was laid on the acquisition of a thorough reading knowledge of them.

The class in Italian was in charge of Dr. Matzke. After a study of the grammar from the *Italian Principia*, Part I, selections of *Italian Principia*, Part II, were read. This was followed by the reading of six chapters of Manzoni, *I promessi sposi*, and of Alfieri's tragedy, *Oreste*. During the last months of the year the class read the whole of Dante's *Inferno*.

The class in Spanish was under the direction of Mr. Marden. After a study of the grammar from Knapp's *Spanish Grammar*, the class read a portion of Knapp's *Spanish Readings*, some seventy pages of Caballero, *La Familia de Alvareda*, and Calderon's *La vida es sueño*.

*French Major Course.*

One hour a week was devoted to a historical study of French classic tragedy, under the direction of Dr. Matzke. Corneille's *Cid*, *Horace*, *Cinna* and *Rodogune*, Racine's *Britannicus*, *Iphigénie en Aulide*, *Phèdre* and *Athalie*, Voltaire's *Jaïre* and *Mérope*, and Ponsard's *Lucrèce* were read in chronological order, and the attention of the class was directed through lectures to the excellences and weaknesses of classic tragedy and to the causes for its final downfall during the eighteenth century. Ponsard's *Lucrèce* was read because of the vantage-ground which it presents for a study of the changes which the classic tragedy underwent through the Romantic movement.

The Romantic movement itself was the basis of a course of study, occupying two hours a week throughout the year, under Mr. Symington. The whole of V. Hugo's *Notre Dame de Paris* and *Ruy Blas* was read, and emphasis was laid on the teachings of the Romantic school. Towards the end of the year Bowen's *Modern French Lyrics* were studied. The class in Literature, also in charge of Mr. Symington, studied the literary history of the seventeenth, eighteenth and nineteenth centuries, using Demogeot's *Histoire de la Littérature française* as a basis, which was supplemented by frequent talks and reviews.

One hour a week was given up to grammatical work under the direction of Mr. Bonnotte. A study of idioms was made from Chardenal's *French Exercises for Advanced Pupils*, and towards the end of the year original essays in French were written and criticised.

*French Minor Course A.*

Under Mr. Symington the class read Sand's *La Mare au Diable*, Balzac's *Eugénie Grandet*, Hugo's *Hernani*, and selected stories from Daudet. Continual attention was paid to points of syntax and idiom. The course in literature was similar to that of the Major course, the

seventeenth, eighteenth and nineteenth centuries being studied from Demogeot's *Histoire de la Littérature française*. The grammatical work under Mr. Bonnotte consisted in the study of Whitney's *French Grammar*, Part II, with the exercises.

*French Minor B.*

The study of French was here taken up from the beginning, under Mr. Marden, and pushed rapidly throughout the year. Part I of Whitney's *Grammar* was covered and reviewed. Under the instruction of Mr. Bonnotte, the Exercises of Whitney's *Grammar*, Part I, were written, followed by Grandgent's *French Composition* based on *L'Abbé Constantin*. The reading was begun with Super's *French Reader*, of which Parts II, III, and IV were mastered. This was followed by Sand's *La Mare au Diable*, Hugo's *Hernani*, and Sandeau's *Mlle. de la Seiglière*.

A. M. Elliott,
*Professor of the Romance Languages.*

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## History and Politics.

The total enrolment of students for courses in history or political science during the year 1891–92 was 159. Of these, fifty-six were college graduates, twelve of whom were in the third year of their university course, twenty-three in the second year, and twenty-one in the first year. Forty-eight matriculated students were enrolled in Group VI (History and Politics). Of these eleven were in the third year of their college course; twenty in the second year; and seventeen in the first. Besides these, there were in Group VI sixteen candidates for matriculation and eleven special students. Many students from other groups have also taken courses in History and Economics.

Nineteen different courses of instruction have been given by the regular staff of five instructors. Professor Woodrow Wilson, of Princeton College, gave twenty-five excellent lectures on Administration and Comparative Politics to a class of twenty-four graduates. A course of ten lectures by Dr. E. R. L. Gould, of the U. S. Department of Labor, upon Recent Aspects of Social Science was well received. Of great practical value was a course of ten lectures on Municipal and Social Problems of European cities, given to a class of thirty-seven graduates by Dr. Albert Shaw. Among the subjects specially considered by Dr. Shaw were (1) Economic and Social Conditions of Modern Cities; (2) Physical Character and Form of Cities, Circulation, Streets, Boulevards; (3) Transit and Relation of Street Railway Systems to Suburbs; (4) Housing of Population of European and American Cities; (5) Water Supply of Great Cities;

(6) Municipal Lighting, Control of Gas Works; (7) Sanitary Service, Health Department, Cleansing, Garbage; (8) Social Ameliorations, Municipal Baths, Wash Houses, Savings Banks, Municipal Pawn Shops; (9) Education of the People in Large Cities; (10) General Booth's Project, the Attack on the Slums, Residual Poverty. Dr. Shaw devoted one introductory lecture to the past decade in the Social History of Europe; three lectures to the Economic Conditions of Foreign Industrial Labor, from his own observations; two lectures to the Homes of Workingmen in Europe; two lectures to Social Improvement, from the standpoint of the laborer and the employer; and two lectures to the subject of Legislation in Social Progress.

Besides these lectures to graduates, two interesting courses were given to undergraduate classes, to which graduates were also admitted. The first was a course of ten lectures introductory to the History of American Politics by James Schouler, LL. D., author of the History of the United States under the Constitution. The second was a course of ten lectures upon American Diplomatic History, by Dr. Frederic Bancroft, at one time a pupil of Von Holst at Freiburg, afterwards a student at the École Libre in Paris, and for the past three years prize lecturer at Columbia College.

The Seminary of History and Politics, which used to meet weekly, has held fortnightly sessions of two hours each during the past year, thus affording an opportunity for separate sessions of the Economic Conference, the work of which will be reported in another connection. Among the Seminary papers of special interest were "The Bishop Hill Colony: A Religious Communistic Settlement in Henry County, Illinois," by Michael A. Mikkelsen, Fellow in History, published in the University Studies, January, 1892; "Church and State in New England," by Paul E. Lauer, Fellow in History, published in the Studies, February and March, 1892; the "Trading-House or Factory System among the Indians," by J. A. James, Scholar in History, published in the *National Magazine*, May, 1892; the "Public Services of Nathaniel Holmes Morison, First Provost of the Peabody Institute," by H. B. Adams, privately printed, Baltimore, 1892; "History of Higher Education in Tennessee," by L. S. Merriam, Scholar in History, to be published by the U. S. Bureau of Education; the "History of our National Wealth as presented by the Tenth Census," and the "Population of the United States in 1870," by F. C. Waite; "University Settlements in New York," by P. J. Mosenthal; "The Ancient Hebrew Family," by A. P. Winston, published (in part) in *The Jewish Exponent*, Philadelphia, April 15, 1892; "The Andover House," and the "Direction and Progress of Social Reform," by David Kinley; the "Constitutional and Legal Aspects of Repudiation," by W. A. Scott; "The Pulpit and Social Problems," by F. I. Herriott; "The Pulpit as a Factor in Social Reform," by Rev. J. F. Heisse; "University Extension as a Career for University Men," by E. T. Devine, of the University of Pennsylvania; "Personal Philanthropy, illustrated by the life of Charles Loring Brace," by H. B. Adams, published by the Charity Organization Society of Baltimore, 1892, and in the *Charities Review*, April, 1892.

The Ninth Series of the University Studies in Historical and Political Science was completed by the publication of the "Constitutional Development of Japan, from 1853–1881," by Dr. T. Iyenaga, who has become Professor of Political Science in the Semmon Gakko at Tokio; the "History of Liberia," by Dr. J. H. T. McPherson, now Professor of History in the State University at Athens, Georgia; and "The Character and Influence of the Fur Trade in Wisconsin," by Dr. Frederick J. Turner, now Professor of History in the State University of Wisconsin.

Three Extra Volumes have this year been added to the series of University Studies, which embrace altogether twenty-two volumes. The new books are (1) "The Old English Manor," a study in English Economic History, by Dr. Charles McLean Andrews, formerly Fellow in History at this University, now Associate in History at Bryn Mawr College; (2) "An Introduction to the Study of the Constitution," by Morris M. Cohn; and (3) "America: Its Geographical History since 1492," by Dr. Walter B. Scaife. A report on the progress of historical science in this country, or "Nord Amerika seit 1762," by Dr. J. M. Vincent, appeared, as usual, in the *Jahresberichten der Geschichtswissenschaft*.

The following statements represent the work of individual instructors in the conduct of various class courses. Professor H. B. Adams, besides conducting the Seminary of History and Politics and guiding the reading and research of students, has lectured two hours weekly, first half-year, to forty-one graduates, upon the History of Roman Politics and Institutions; and two hours weekly, second half-year, to forty-three graduates, on the Ancien Régime and the French Revolution. He also gave a short course of lectures upon the History of the Nineteenth Century. He conducted a class course in Church History and the Renaissance, two hours weekly through the year, for fifty students, of whom twenty-two were graduates; and a class in International Law, two hours weekly, through the year, for twenty students, of whom seven were graduates.

Professor George H. Emmott lectured (1) On the History and Principles of the Roman Law and the History of Roman Institutions, to twenty-one graduate and advanced students, twice weekly, through the year. The course opened with a description of the origin and nature of the primitive Roman State, and of the early legal institutions of the Roman people, and traced fully the history and gradual progress of the Roman Law through all its stages of development from the earliest times down to and including the codification of the law by Justinian, special attention being paid to the original sources of the Roman Law and to the gradual development and continuity of Roman legal and political institutions. The subsequent history of the Roman Law in the East and in the West after the time of Justinian will be fully treated of in the course on Comparative Jurisprudence to be given in 1893–94.

In the second part of the course the subject-matter of the Institutes of Gaius and of the Institutes of Justinian were carefully analyzed, com-

pared and classified, and the fundamental principles of the Roman Law fully explained and illustrated. The topics treated of included: the law of the family; the law of things; the law of wills; the law of contract; forms of contract; the law of procedure. The instruction throughout was comparative and historical in its method. In connection with the lectures frequent oral and two written examinations took place upon the various topics treated of by the lecturer.

2. On English Constitutional Law and History to twelve graduate and fifteen undergraduate students, for three hours a week, during the first half-year. The origin and development of the English Constitution and of the fundamental principles of English constitutional law were carefully and systematically traced in chronological order from the earliest period down to the present time. Taswell-Langmead's English Constitutional History was taken as containing an outline sketch of the ground covered, with references to the works of Freeman, Stubbs, Hallam, Erskine, May, Dicey, Anson, Hearn, Bagehot, Traill, Spencer Walpole, and other writers. The instruction was given by means of lectures delivered by the instructor, by frequent recitations, and by lectures given and reports carefully prepared by the students themselves on such topics as the following: the political and social condition of England under the Anglo-Saxons; the political and constitutional effects of the Norman Conquest; the judicial and administrative reforms of Henry the Second; the Tudors and the Reformation, 1485–1603; the political relations of monarch and parliament from 1603 to 1642; the constitutional significance and political consequences of the revolution of 1688; the struggles of Whigs and Tories in the eighteenth century; the origin, development, prerequisites and peculiar form of Cabinet Government in England; the Reform Bills of 1832, 1867, and 1884.

### I.—*Undergraduate Political Economy.*

The usual undergraduate course in the elements of Economics was given. The text-book was Ely's "Political Economy," but frequent reference was made to other works. A large part of Mill's "Political Economy" and the whole of Ely's "French and German Socialism" were included in the assigned work. Essays were prepared by members of the class, and in some instances read before the class. During the first half-year five hours per week were given to the elements of Economics, and during the second half-year, three hours.

During the second half-year a course of lectures on "Money," two hours a week, was given. F. A. Walker's work "Money, Trade and Industry" was assigned as collateral reading, on which an examination was held.

II.—*Graduate Political Economy.*

1. Lectures on the History of Political Economy. This was a course of two hours a week, throughout the year. The economic views of the leading writers of classical antiquity, especially Plato and Aristotle, were examined. The economic ideas of the fathers of the Christian Church and of the great thinkers of the Middle Ages were briefly examined, after which the Mercantilists, the Physiocrats, Adam Smith and his successors were treated. A careful comparative study of the principal economic writers of the present century, in Europe and America, was made and especial attention was given to recent theories.

2. Economic Conferences. The Economic Conferences begun two years ago were continued during the past year. Membership, as heretofore, was limited to the most highly qualified special students of Economics. Particular attention, as in the previous academic year, was given to Adam Smith and his English and Scotch predecessors. Monographs were presented by members of the Conference, and these were discussed at length. The following may be specially mentioned: An essay on "The Repudiation of State Debts," by Mr. W. A. Scott; an essay on "The Independent Treasury System in the United States," by Mr. David Kinley; and one on "Value," by Mr. D. I. Green.

Mr. William A. Scott has successfully conducted two undergraduate courses: 1. a class of twenty-five students in the Outlines of European History, three hours weekly from January, 1892; and 2. a class of twenty-nine in Continental History, three hours weekly through the year. Mr. David Kinley has guided with equal success two classes of undergraduates: 1. Greek and Roman History (text-book course), thirty-three students, three hours weekly from January, 1892; 2. Herodotus and Thucydides (in translation), fourteen students, one hour weekly, through the year.

Mr. L. P. Powell, aided by Messrs. Kinley and Herriott, has rearranged the library and revised the catalogue of history and politics. They have improved the classification of government and official documents, pamphlets, newspapers, and educational material. The work of cataloguing new books, special and current literature in history and politics, has been systematically pursued. Messrs. Powell and W. I. Hull have made considerable progress in classifying and arranging the Scharf collection of Southern history.

The five gentlemen named above have all received honorable and attractive appointments in other institutions. Mr. Scott has become assistant professor of economics in the University of Wisconsin; Mr. Kinley, instructor and Fellow in the same subject, at the above institution; and Mr. Powell, a Wisconsin University Extension lecturer in history. Mr. Hull has been elected associate professor of political and social science in Swarthmore College, Pennsylvania. Mr. Herriott has been appointed an instructor in economics in the Woman's College of Baltimore.

The resignation of Dr. Richard T. Ely, who had taught political

economy to graduates and undergraduates in this institution during the past eleven years, took effect at the close of the present academic year, when he assumed charge of the new school of economics, political science and history, in the University of Wisconsin, and became Principal of the Summer University at Bay View, Michigan. Professor Henry Carter Adams, who was the first Doctor of Philosophy graduated from this department of the Johns Hopkins (1878), has consented to lecture to our advanced students on Finance and Taxation. Professor John B. Clark, a former pupil of Knies, at Heidelberg, and author of the "Philosophy of Wealth," will lecture in Baltimore upon the "Economic Theory of Distribution." Dr. Sidney Sherwood, who received his Doctor's degree, in 1891, from this University, has resigned his position in the Wharton School, University of Pennsylvania, to accept an appointment as associate in economics at the Johns Hopkins. Dr. E. R. L. Gould, another alumnus of this University, for several years chief European representative of the U. S. Department of Labor, will become a resident lecturer in Baltimore, upon Social Science and Statistics. Dr. J. M. Vincent, formerly department librarian, will return to his post after a year's absence and special study in France and Switzerland. He has accepted the appointment of an associate in history. The department has been further strengthened by the engagement of James Schouler, LL. D., for two annual courses of lectures upon American Constitutional Law and American Politics. Other well-known lecturers, the Hon. John A. Kasson, Dr. William T. Harris, Dr. James MacAlister, Dr. Albert Shaw, Dr. Frederic Bancroft, and Dr. A. G. Warner, have promised us their coöperation for the year 1892-93.

In closing this annual report I beg to assure you that the condition of the department was never more satisfactory, nor were its prospects ever more hopeful than they are at the present time.

H. B. Adams,
*Professor of American and Institutional History.*

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## Pathology.

During the past year the instruction in the Pathological Laboratory has been under the direction of Dr. W. H. Welch, Professor of Pathology, Dr. W. T. Councilman, Associate Professor of Anatomy and Associate in Pathology, Dr. G. H. F. Nuttall, Assistant in Bacteriology and Hygiene, and Dr. S. Flexner, Fellow in Pathology.

The work has been carried on in accordance with the announcements. Two practical courses in Pathological Histology and two in Bacteriology have been given. These courses have included demonstrations in Pathological Anatomy and instruction in the methods of making autopsies.

The total number of students and special workers has been forty-nine, of whom forty-three are doctors of medicine. Thirty-two have attended the courses in pathological histology, sixteen those in bacteriology, and fourteen have been engaged in special work. Many of those on the staff of the hospital have also worked in the laboratory.

In connection with the courses of medical instruction given in the Johns Hopkins Hospital during the months of January, February and March, Professor Welch lectured on Infectious Diseases, his principal subject being Pneumonia; Professor Councilman, on the Pathology of Diseases of the Stomach and Intestines; and Dr. Nuttall, on Immunity. J. P. Lotsy, Ph. D. (Göttingen), Fellow by Courtesy in the Johns Hopkins University, kindly consented to deliver six lectures on Vegetable Pathology.

At the beginning of the academic year Dr. A. C. Abbott resigned the position of Assistant in Bacteriology and Hygiene in order to accept the place of Assistant in Hygiene in the new Laboratory of Hygiene in the University of Pennsylvania. George H. F. Nuttall, M. D., Ph. D. (Göttingen), was appointed to the position left vacant by Dr. Abbott's resignation.

The Fellowship in Pathology has been held during the past year by Dr. Simon Flexner, who has given valuable assistance in instruction.

One student, Mr. H. L. Russell, received the degree of Doctor of Philosophy, with Pathology as his principal subject. His work related mainly to Vegetable Pathology and Bacteriology, his thesis being a study of the Relation of Bacteria to the Diseases of Plants.

During the year from June 1, 1891, to June 1, 1892, one hundred and six autopsies have been made in the Pathological Laboratory. Many specimens have been added to the collection in the Museum.

A valuable collection of photo-micrographs, made by Dr. Wm. Gray, Assistant in the Library and Museum of the Surgeon-General's Office in Washington, has been presented to the Laboratory by Dr. John S. Billings, U. S. A.

Several special researches in Pathology and Bacteriology have been undertaken. Of these may be mentioned: further studies on the histological changes produced by the toxic albumen of diphtheria, a bacteriological study of scarlatinal diphtheritis, the diplococcus pneumoniae, further study of the bacillus coli communis, the bacteria of the skin and in wounds treated antiseptically, disinfection of the skin, bacteria in relation to plant diseases, arterio-sclerosis, hypertrophy of the heart, papilloma of the ovary, tuberculosis of the ovary.

WILLIAM H. WELCH,
*Professor of Pathology.*

## Philosophy.

The undergraduate courses in Psychology and Ethics have been under the care of Professor Griffin. Three hours a week were given to the first named subject from the beginning of the year until March 15; thereafter the class met for the study of ethics, the number of hours per week being increased, after April 1, to five. The endeavor has been to keep particularly in view the needs of those to whom these subjects are new, and to make the treatment as simple and untechnical as possible, and at the same time to call attention to fundamental problems, so that the work may serve as an introduction to general philosophical study. Text-books have been used in each subject—Baldwin's *Handbook of Psychology*, Ladd's *Outlines of Physiological Psychology*, and Fowler's *Principles of Morals*, Part II—as affording definite material of acquisition; but informal lectures, discussions in the class, and passages from various authors specially assigned for reading, have been largely relied upon in the presentation. Each member of the class has been required to prepare two essays in the course of the year. The class has numbered forty-five members.

The instruction in Psychology has attempted to give a general view of the results of the more recent methods of study. Especial emphasis was laid upon the facts of conscious experience as known through introspection, the most important end to be secured being, it is believed, such an understanding of the facts and laws of mental life as shall fit one for wise self-government and effective influence. Such powers and states of mind as attention, memory, association, habit, imagination, the feelings, the will, were discussed in as concrete and practical a way as possible. A series of lectures and demonstrations on the anatomy and physiology of the muscular and nervous systems, given by Dr. Dreyer as a voluntary course, was attended by a considerable number of the class.

The work in Ethics was mainly confined to the theoretical and historical aspects of the subject; questions of applied ethics were, for lack of time, but slightly considered. The various forms of feeling native to our constitution and constituting the possible motives of conduct; the conditions and nature of the sense of obligation; the authority of conscience; the diversities of moral sentiment; the historic theories of morals—hedonism, utilitarianism, intuitionism; the application to ethical theory of the doctrine of evolution; the characteristic features of Christian morality: these were some of the topics discussed. While a more detailed application of the principles reached to personal and social conduct would have been desirable, the consideration of the speculative side of ethics is well adapted to produce a habit of moral thoughtfulness.

A brief outline of the History of Philosophy was given during the last weeks of the year, for the benefit of those who were able, at so disadvantageous a time, to attend the lectures.

Professor Griffin conducted during the year a course in the History of Philosophy, for graduate students, consisting of the reading and discussion of representative works in modern philosophy from Descartes to Kant. The works read were as follows: Bacon's *Novum Organum*, book I and part of book II; Descartes' *Method and Meditations;* certain portions of Spinoza's *Ethics;* Locke's *Essay on the Human Understanding*, portions of books I, II, IV; Berkeley's *Principles of Human Knowledge;* Hume's *Treatise on Human Nature,* book I; a portion of Kant's *Critique of Pure Reason.* The class met once a week for discussion and criticism. Modern ethical theories, from Hobbes to the present time, were studied by a number of graduate students, meeting one evening each fortnight.

EDWARD H. GRIFFIN,
*Professor of the History of Philosophy.*

## Logic.

The daily work of the undergraduate course has been conducted as follows:

Both Deductive and Inductive Logic were taught two hours weekly for about twenty-eight weeks. Special reference was made to Jevons's Elementary Lessons in Logic and Fowler's Elements of Inductive Logic, with frequent references to the works of Mill, Bain, Venn, Keynes, and other writers. Particular attention was given to the general theories of both deduction and induction, to the various forms of thought, notion, judgment, and reasoning; and also to the various methods of scientific investigation and proof.

Numerous exercises were given in the opposition and conversion of propositions, in indication and counter indication, in the application of the rules of the syllogism, in the detection of fallacies, and in the elimination of contradictions from thought. Forty-five students attended the class, which was taught by short informal lectures, by frequent recitations, by discussions in the class, and by written exercises required from each member.

GEORGE H. EMMOTT,
*Associate Professor of Logic.*

## Drawing.

The Undergraduate Course in Drawing has included: (*a*) representative or free-hand drawing from natural forms and geometric models, in outline and in light and shade, with pencil, pen and ink, charcoal and crayon; studies of landscape contours; and large charts finished with crayon or ink brush, such as the student may be called upon to make later on, when teaching or in illustrating lectures; (*b*) constructive or mechanical draw-

ing, with exercises in the use of instruments, and elements of descriptive geometry,—simple projections, sections and developments, isometric projections, and the elements of linear perspective.

The Special Instruction in Drawing has been adapted to the wants and abilities of those seeking it, and has been chiefly in the line of advanced free-hand drawing, in light and shade, from casts, and personal directions for individual improvement in some line of drawing helpful to the student in his scientific work.

The Technical Instruction in Drawing has already been referred to under the head of Electrical Enginering.

S. Edwin Whiteman,
*Instructor in Drawing.*

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## REPORT OF THE MARINE LABORATORY. SUMMER OF 1892.

To the President of the Johns Hopkins University.

*Sir:*—I beg leave to submit the following report of the Marine Laboratory for the summer of 1892.

The report has been prepared at my request by Dr. E. A. Andrews, who had charge of the expedition to the Island of Bimini.

Yours respectfully,
W. K. Brooks.

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During the past summer, the Chesapeake Zoological Laboratory was located in Alice Town, North Bimini, the most western of the Bahama Islands.

This remote and little known island was selected as an unusually good station for marine work in Animal Morphology, as it was probable that certain specific problems, as the life history of Balanoglossus, could be solved there, and as its geographical position makes it the gateway passed by the swimming animals of the Bahama Banks, as well as the only inhabitable land, in the very edge of the Gulf Stream, where its rich surface fauna is most concentrated.

Owing to the inaccessiblity of the islands and the difficulty in supporting a large party there, the number was restricted, so that only three, R. P. Bigelow, E. A. Andrews and T. H. Morgan, set out early in June by way of Key West.

Two days were spent at Tampa, Fla., in collecting and preserving specimens of an American Amphioxus (*Branchiostoma caripæum*), of which the University now possesses the finest collection in existence.

After many delays, accidents and dangers, the Biminis were reached by means of a pilot vessel chartered at Key West. Suitable shelter was very quickly obtained through the prompt action of Her Majesty's representative, the local magistrate, Mr. Jones, to whom is due much of the pleasure and comfort of the party while on the island.

In spite of many annoyances connected with the superabundance of water in the rainy season, and its dearth and unwholesome character in the dry season, no serious illness interfered with the work of the party up to the time of return by way of Nassau and New York. The apparatus, also, escaped all injury and was returned to Baltimore with no loss or breakage.

Work was begun at Bimini upon a variety of subjects indicated here: The Life History of Polyclonia, with the discovery of a marked sexual dimorphism in this large jellyfish; a remarkable translucent Annelid of unknown affinities; a considerable number of adult and larval Stomatopods, including undescribed forms; a very complete series of larval forms, Tornaria, of a Bahama Balanoglossus (a fully illustrated paper upon this subject is now nearly completed by Dr. T. H. Morgan); additional material for solving the question of hydroid budding in Medusæ; adult and larval stages of an unknown Amphioxus possessing more pronounced asymmetry than the known forms; numerous siphonophores, sagittas and medusæ that furnished material for testing some of the methods of preservation in vogue at Naples; a Chaetognath presenting a coloration similar to the calcareous bottom to which it may fix itself by means of adhesive organs; many lizard embryos of different kinds; a complete series of embryological material, from fertilization to hatching, of the land-hermit (*Cœnobita Draejene*, Dana).

Incidentally much of interest was observed regarding the sponge and the turtle industries—the legitimate source of support of the inhabitants of the Biminis, a few square miles of rather unfertile calcareous rock and sand.

E. A. Andrews.

# TABULAR STATEMENT OF COURSES OF INSTRUCTION, 1891–92.

| INSTRUCTOR. | COURSES. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2nd half-year. |
|---|---|---|---|---|
| | **MATHEMATICS AND ASTRONOMY.** | | | |
| Newcomb, Poor. | Method of Least Squares. | 2 | 7 | 6 |
| Borst. | Spherical and Practical Astronomy. | 5 | 15 | 10 |
| Poor. | Theoretical Astronomy. (First half-year.) | 3 | 3 | |
| Newcomb, Borst. | Theory of Instruments. | 2 | 4 | 11 |
| Poor. | Astronomical Computations. (Second half-year.) | 5 | | 2 |
| Borst. | Reduction of Observations. (Second half-year.) | 2 | | 3 |
| Craig. | Theory of Functions. (First half-year.) | 3 | 15 | |
| Craig. | Elliptic Functions. | 2 | 10 | 9 |
| Craig. | Calculus of Variations. (First half-year.) | 2 | 5 | |
| Craig. | Partial Differential Equations. (First half-year.) | 3 | 3 | |
| Craig. | Multiple Integrals. (Second half-year.) | 3 | | 12 |
| Craig, Chapman. | Mathematical Seminary. (Second half-year.) | 1 | | 16 |
| Craig, Cohen. | Differential Equations: Major Course. (Second half-year.) | 2 | | 20 |
| Craig. | Linear Differential Equations. (Second half-year.) | 3 | | 12 |
| Chapman. | Modern Algebra, Higher Plane Curves. | 2 | 8 | 5 |
| Chapman. | Differential and Integral Calculus (Special Topics). (First half-year.) | 2 | 14 | |
| Chapman. | Theory of Transformation Groups. (Second half-year.) | 3 | | 3 |
| Chapman, Poor, Landis. | Differential and Integral Calculus. (Second half-year.) | 5 | | 55 |
| Chapman. | Quaternions. (First half-year.) | 3 | 8 | |
| Chapman. | Determinants and Dynamics. | 3 | 18 | 17 |
| Poor, Cohen. | Analytic Geometry. (First half-year.) | 5 | 45 | |
| Poor. | Geometry of Three Dimensions. (Second half-year.) | 3 | | 12 |
| Cohen. | Analytic Geometry: Elementary. (Second half-year.) | 3 | | 8 |
| Poor. | Trigonometry. (First half-year.) | 3 | 2 | |
| | **PHYSICS.** | | | |
| Rowland. | Thermodynamics, Heat Conduction. (First half-year.) | 4 | 11 | |
| Rowland. | Wave Theory of Light. (Second half-year.) | 4 | | 14 |
| Ames. | Physical Seminary. | 1 | 20 | 17 |
| Ames. | General Physics: Major Course. | 5 | 32 | 30 |
| Ames. | General Physics: Minor Course. | 5 | 56 | 54 |
| Duncan. | Applied Electricity. (First Year's Course.) | 3 | 40 | 42 |
| Duncan. | Applied Electricity. (Second Year's Course.) | 2 | 18 | 18 |
| Hering. | Steam Engineering. | 3 | 15 | 16 |
| Hering. | Laboratory Methods. (Second half-year.) | 1 | | 30 |
| Aldrich. | Applied Kinematics. (First Year's Course.) (First half-year.) | 2 | 27 | |

| INSTRUCTOR. | COURSES. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2nd half-year. |
|---|---|---|---|---|
| Aldrich. | Applied Kinematics. (Second Year's Course.) (First half-year.) | 2 | 13 | |
| Aldrich. | Mechanics of Engineering. (Second half-year.) | 2 | | 25 |
| Rowland, Duncan, Ames, Hering, Aldrich, Matthews. | Laboratory Work. | | 133 | 127 |
| | Journal Club. | 1 | | |
| | **CHEMISTRY.** | | | |
| Remsen. | Theoretical Chemistry. (Second half-year.) | 2 | | 43 |
| Remsen. | Compounds of Carbon: Advanced Course. (First half-year.) | 5 | 44 | |
| Remsen, Renouf. | General Inorganic Chemistry: Minor Course. | 3 | 87 | 65 |
| Renouf. | Inorganic Chemistry: Major Course. | 3 | 17 | 15 |
| Morse. | Compounds of Carbon: Major Course. (Second half-year.) | 3 | | 14 |
| Morse. | Crystallography and Mineralogy: Major Course. (First half-year.) | 2 | 20 | |
| Randall. | Reviews in General Chemistry: Minor Course. | 2 | 65 | 63 |
| Remsen, Morse, Renouf, Randall. | Laboratory Work. | | 122 | 124 |
| | Historical Lectures. (Sixteen lectures by advanced students, second half-year.) | | | |
| | Journal Meeting. | 1½ | 32 | 30 |
| | **GEOLOGY, MINERALOGY, ETC.** | | | |
| Williams. | General Mineralogy. | 4 | 23 | 22 |
| Williams. | Petrography. | 3 | 8 | 8 |
| Williams. | Petrography: Laboratory Work. | | 8 | 9 |
| Clark. | General Geology. | 4 | 11 | 13 |
| Clark. | Palæontology: Laboratory Work. | 6 | 5 | 7 |
| Clark. | Physical Geography. (P. H. E.) (First half-year.) | 3 | 58 | |
| | Journal Meeting. (Second half-year.) | 1 | | 14 |
| | **BIOLOGY.** | | | |
| Martin. | Physiological Seminary. | 1 | 8 | 7 |
| Martin. | Physiology: Advanced Course. | 1 | 9 | 7 |
| Martin, Andrews. | General Biology. | 3 | 27 | 24 |
| Martin. | Animal Physiology. (Second half-year.) | 3 | | 19 |
| Martin. | Animal Histology. (First half-year.) | 3 | 33 | |
| Brooks. | General Zoölogy. | 2 | 14 | 15 |
| Brooks. | Morphological Readings. | 1 | 9 | 10 |
| Brooks. | Human and Comparative Osteology. | 2 | 21 | 21 |
| Andrews. | Mammalian Anatomy. (During October.) | 5 | 14 | |
| Andrews. | Embryology of the Chick. (During April and May.) | 3 | | 24 |
| Barton. | Systematic Botany. (During April and May.) | 2 | | 21 |
| Martin, Brooks, Andrews, Dreyer. | Laboratory Work. | | 73 | 48 |
| Martin, Brooks. | Journal Club. | 1 | 15 | 13 |

| INSTRUCTOR. | COURSES. | *No. of hours per week.* | *No. of students, 1st half-year.* | *No. of students, 2nd half year.* |
|---|---|---|---|---|
| | **GREEK.** | | | |
| Gildersleeve. | Greek Seminary: The Historians. | 2 | 27 | 29 |
| Gildersleeve. | Greek Syntax. | 1 | 27 | 28 |
| Gildersleeve. | Greek Historiography. (Second half-year.) | 1 | | 27 |
| Gildersleeve. | Hermeneutics and Criticism. (Second half-year.) | 1 | | 27 |
| Gildersleeve. | Practical Exercises. (First half-year.) | 2 | 25 | |
| Spieker. | Plato. (First half-year.) | 3 | 15 | |
| Spieker. | Andokides. (First half-year.) | 4 | 10 | |
| Spieker. | Homer; Euripides. (Second half-year.) | 4 | | 10 |
| Spieker. | Aischylos; Sophokles. (Second half-year.) | 3 | | 12 |
| Spieker. | Greek Literature. | 1 | 10 | 9 |
| Spieker. | Greek at Sight. | 1 | 5 | 6 |
| Spieker. | Prose Composition. (Two Classes.) | 2 | 21 | 18 |
| Gudeman. | Aristotle's Poetics. (First half-year.) | 1 | 7 | |
| Gudeman. | Sources of Greek History. (First half-year.) | 1 | 5 | |
| Arnolt. | New Testament Greek. | 6 | 9 | 8 |
| | **LATIN.** | | | |
| Warren, M. | Latin Seminary: Vergil. | 2 | 22 | 23 |
| Warren, M. | Roman Epic Poetry. (First half-year.) | 1 | 22 | |
| Warren, M. | Historical Latin Grammar. | 1 | 25 | 25 |
| Warren, M. | Journal Club. | 1 | 16 | 15 |
| Warren, M. | Macrobius. (Second half-year.) | 1 | | 18 |
| Warren, M. | Tacitus. (Second half-year.) | 4 | | 13 |
| Warren, M. | Terence; Plautus. (First half-year.) | 3 | 11 | |
| Smith, K. W. | Epic Poetry after Vergil. (Second half-year.) | 1 | | 20 |
| Smith, K. W. | Catullus; Tibullus; Propertius. (Second half-year.) | 3 | | 9 |
| Smith, K. W. | Reading at Sight. | 1 | 10 | 9 |
| Smith, K. W. | Livy. (First half-year.) | 4 | 29 | |
| Smith, K. W. | Horace. (Second half-year.) | 4 | | 15 |
| Smith, K. W. | Prose Composition. (Two Classes.) | 2 | 24 | 23 |
| Gudeman. | Cicero; De Legibus. (Second half-year.) | 1 | | 4 |
| Gudeman. | Latin at Sight. (First half-year.) | 1 | 4 | |
| | **SANSKRIT, ETC.** | | | |
| Bloomfield. | Vedic Seminary: Atharva Veda and Brāhmana Literature. | 1 | 10 | 10 |
| Bloomfield. | Advanced Sanskrit. (Kathasaritsagara.) | 1 | 2 | 2 |
| Baden. | Advanced Sanskrit. (Hitopadeça.) (First half-year.) | 1 | 2 | |
| Baden. | Introduction to the Vedas. (Second half-year.) | 1 | | 2 |
| Bloomfield. | Introduction to the Study of Comparative Philology. | 1 | 25 | 26 |
| Bloomfield. | Comparative Grammar of Latin and Greek. | 1 | 24 | 24 |
| Bloomfield. | Elementary Sanskrit. | 2 | 8 | 6 |
| | **SEMITIC LANGUAGES.** | | | |
| Haupt. | Sumero-Akkadian. | 1 | 4 | 3 |
| Haupt. | Assyrian Seminary. | 3 | 3 | 3 |
| Haupt. | Hebrew Prose Composition. | 1 | 10 | 7 |
| Haupt. | Selected Psalms. | 2 | 10 | 9 |
| Haupt. | Arabic Prose Composition. | 1 | 4 | 3 |
| Haupt, Adler. | Ethiopic. | 1 | 5 | 4 |
| Haupt, Adler. | Biblical Aramaic. | 1 | 9 | 4 |
| Haupt. | Assyrian: Advanced. | 1 | 4 | 3 |
| Johnston. | Assyrian. | 1 | 2 | 2 |
| Adler, Prince. | Hebrew: Elementary. | 1 | 3 | 3 |

| INSTRUCTOR. | COURSES. | *No. of hours per week.* | *No. of students, 1st half-year.* | *No. of students, 2nd half-year.* |
|---|---|---|---|---|
| Adler, Prince. | Hebrew Exercises. | 1 | 4 | 4 |
| Adler. | Biblical Archæology. (Second half-year.) | 1 | | 9 |
| Adler. | Hebrew Conversation. (Second half-year.) | 1 | | 5 |
| Johnston. | Biblical History and Geography. | 1 | 11 | 11 |
| Johnston. | Arabic: Elementary. | 1 | 3 | 2 |
| Johnston. | Arabic: Selected Texts. | 1 | 2 | 2 |
| Johnston. | Hebrew: Genesis. | 1 | 5 | 4 |
| Johnston. | Introduction to the Old Testament. | 1 | 6 | 5 |
| Prince. | Assyrian: Elementary. | 1 | 2 | 2 |
| | **GERMAN.** | | | |
| | *Advanced Work.* | | | |
| Wood. | Teutonic Seminary: (*a*) Old High German and Middle High German. | 4 | 4 | 5 |
| | (*b*) Journal Meeting. | 1 | 13 | 13 |
| Wood. | Introduction to German Philology. | 2 | 15 | 14 |
| Wood. | Goethe and Schiller. (Lectures and Readings.) | 2 | 18 | 18 |
| Learned. | Deutsches Heldenbuch. (First half-year.) | 2 | 3 | |
| Learned. | Middle High German: Elementary. | 1 | 10 | 10 |
| Learned. | Heroic Sagas of Germany. (Second half-year.) | 2 | | 6 |
| | *Major Course.* | | | |
| Schoenfeld. | History of German Literature. (Lectures.) | 1 | 18 | 20 |
| Wood, Learned. | Goethe (Hermann and Dorothea; Faust). | 2 | 18 | 20 |
| Learned. | Selected Prose Readings. (Freytag.) | 1 | 18 | 20 |
| Learned. | Prose Composition. | 1 | 18 | 20 |
| | *Minor Course: Class A.* | | | |
| Wood. | Briefwechsel zwischen Schiller und Goethe. | 1 | 17 | 17 |
| Learned. | Prose Composition. | 1 | 17 | 17 |
| Learned. | Selected Prose Readings. (Freytag.) | 1 | 17 | 17 |
| Learned. | Schiller (Wilhelm Tell). | 2 | 17 | 17 |
| | *Minor Course: Class B.* | | | |
| Schoenfeld. | Otis, Elementary German; Goethe (Egmont); Buchheim, I; Schiller (Wilhelm Tell). | 4 | 29 | 23 |
| Learned. | Prose Composition. | 1 | 29 | 23 |
| | *Supplementary Courses.* | | | |
| Schoenfeld. | Scientific and Historical Readings (Helmholtz, Freytag, Humboldt.) | 2 | 19 | 14 |
| Schoenfeld. | German Conversation. | 2 | 16 | 11 |
| Schoenfeld. | Lectures on Germany. | 1 | 8 | 5 |
| | **ROMANCE LANGUAGES.** | | | |
| Elliott. | Advanced Courses. (Romance Seminary, Italian Dialects, French Dialects, Ethnology of France and Italy, Popular Latin.) | 6 | 14 | 12 |
| Matzke. | Italian Philology. | 2 | 9 | 7 |
| Matzke. | Old French Philology. | 3 | 16 | 11 |
| Matzke. | Provençal. | 1 | 9 | 7 |
| Matzke. | Italian. | 3 | 9 | 4 |
| Lewis. | French Phonetics. | 1 | 14 | |
| Lewis. | General Phonetics. | 2 | | 18 |
| Lewis. | Interpretation of Old French Texts. | 2 | 12 | 12 |

| INSTRUCTOR. | COURSES. | *No. of hours per week.* | *No. of students, 1st half-year.* | *No. of students, 2nd half-year.* |
|---|---|---|---|---|
| Matzke, Symington, Bonnotte. | French: Major Course. | 5 | 7 | 8 |
| Symington, Bonnotte. | French: Minor Course (Class A). | 5 | 26 | 25 |
| Marden. | Spanish. | 2 | 7 | 3 |
| Marden. | French: Minor Course (Class B). | 5 | 27 | 24 |
| Bonnotte. | French Conversation. | 1 | | 7 |
| Kleuner. | Spanish Conversation. | 1 | | 5 |
| Kleuner. | Italian Conversation. | 1 | | 6 |
| | **ENGLISH.** | | | |
| Bright. | English Seminary. | 4 | 17 | 19 |
| Bright. | English Inflections. (Lectures.) | 1 | 17 | 18 |
| Bright. | Anglo-Saxon Versification. (First half-year.) | 2 | 19 | |
| Bright. | Middle English Texts. (Second half-year.) | 2 | | 19 |
| Bright. | Anglo-Saxon Palæography. (Second half-year.) | 1 | | 18 |
| Bright. | Anglo-Saxon. (Sweet's Reader.) | 2 | 6 | 7 |
| Bright. | Journal Meeting. | 1 | 17 | 19 |
| Browne. | Early Scottish Poets. | 1 | 7 | 8 |
| Browne. | English Literature. (Major Course.) | 2 | 7 | 8 |
| Browne. | Shakespeare. | 2 | 4 | 5 |
| Browne. | Middle English. | 2 | 11 | 10 |
| Browne. | English Literature. (Minor Course.) | 3 | 11 | 10 |
| Smith, C. A. | Rhetoric. (P. H. E. Course.) | 2 | 58 | 55 |
| | **HISTORICAL AND POLITICAL SCIENCE.** | | | |
| Adams. | Seminary of History and Politics. (Alternate weeks.) | 2 | 42 | 43 |
| Adams. | Nineteenth Century. | 1 | 49 | 49 |
| Adams. | Roman History. | 2 | 41 | 43 |
| Adams. | History of Church and Empire. | 2 | 52 | 49 |
| Adams. | International Law. | 2 | 19 | 20 |
| Ely. | Political Economy: Advanced. | 2 | 40 | 41 |
| Ely. | Economic Conferences. (Alternate weeks.) | 2½ | 10 | 11 |
| Ely. | Elements of Political Economy. | 5 | 33 | 34 |
| Emmott. | Historical Jurisprudence. (Roman Law.) | 2 | 20 | 19 |
| Emmott. | English Constitution. (First half-year.) | 3 | 27 | |
| Schouler, Lauer. | American Constitutional History. (Second half-year.) | 3 | | 16 |
| Scott. | Continental History. | 3 | 29 | 27 |
| Scott. | European History. (P. H. E.) (Second half-year.) | 3 | | 22 |
| Kinley. | Greek and Roman History. (P. H. E.) (Second half-year.) | 3 | | 33 |
| Kinley. | Herodotus and Thucydides. | 1 | 14 | 14 |
| Wilson. | Administration. (Second half-year — five weeks.) | 5 | | 24 |
| Shaw. | Municipal Problems. (First half-year.) (Ten Lectures.) | 2 | 37 | |
| Gould. | Social Statistics. (Second half-year.) (Ten Lectures.) | | | |
| | **PHILOSOPHY.** | | | |
| Griffin. | History of Modern Ethics. (Alternate weeks.) | 2 | 9 | 10 |
| Griffin. | History of Philosophy. | 1 | 10 | 10 |
| Griffin. | Psychology. (L. E. P. Course.) (First half-year.) | 3 | 45 | |
| Griffin. | Ethics. (L. E. P. Course.) (Second half-year.) | 5 | | 45 |
| Emmott. | Logic. (L. E. P. Course.) | 2 | 45 | 43 |
| Dreyer. | Physiology of the Nervous System. (L. E. P. Course.) (Twelve Lectures and Demonstrations.) | | | |
| | **DRAWING.** | | | |
| Aldrich. | Mechanical Drawing. | 6 | 40 | 39 |
| Whiteman. | Constructive and Representative Drawing. | 9 | 68 | 72 |

# DEGREES CONFERRED, 1892.

## Doctors of Philosophy.

Eugene Thomas Allen, of Athol, Mass., A. B., Amherst College, 1887. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* The Reaction between Lead Dioxide and Potassium Permanganate.

William Wilson Baden, of Baltimore, A. B., Johns Hopkins University, 1881. *Subjects:* Greek, Sanskrit, and Roman Law. *Thesis:* The Principal Figures of Language and Figures of Thought in Isaeus and the Guardianship-Speeches of Demosthenes.

Robert Payne Bigelow, of Washington, D. C., S. B., Harvard University, 1887. *Subjects:* Morphology, Physiology, and Botany. *Thesis:* Anatomy and Development of Cassiopea Xamachana.

Edwin Whitfield Bowen, of Ashland, Va., A. B., Randolph Macon College, 1887. *Subjects:* English, Latin, and German. *Thesis:* An Historical Study of the *e*-Vowel in Accented Syllables from Anglo-Saxon to Modern English.

Immanuel Moses Casanowicz, of Montclair, N. J., University of Basle. *Subjects:* Hebrew, Assyrian, and Greek. *Thesis:* Paronomasia in the Old Testament.

Starr Willard Cutting, of Richmond, Ind., A. B., Williams College, 1887. *Subjects:* German, French, and History. *Thesis:* The Subjunctive in the Works of Hartman von Aue.

William Levering Devries, of Baltimore, A. B., Johns Hopkins University, 1888. *Subjects:* Greek, Latin, and Hebrew. *Thesis:* Ethopoiia; A Rhetorical Study of the Types of Character in the Orations of Lysias.

Albert Bernhardt Faust, of Havre de Grace, Md., A. B., Johns Hopkins University, 1889. *Subjects:* German, English, and History. *Thesis:* Charles Sealsfield (Karl Postl): Materials for a Biography; a Study of his Style; his Influence upon American Literature.

George Wilton Field, of Brockton, Mass., A. B., Brown University, 1887. *Subjects:* Morphology, Physiology, and Botany. *Thesis:* The Larva of Asterias Vulgaris.

Joseph Elliott Gilpin, of Baltimore, A. B., Johns Hopkins University, 1889. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* Orcinsulphon-phthaleïns and Trichlorphosphanil.

John Leslie Hall, of Williamsburg, Va., Randolph Macon College. *Subjects:* English, German, and History. *Thesis:* Beowulf; An Anglo-Saxon Epic Poem, rhythmically translated, with critical annotations.

William Asbury Harris, of Richmond, Va., A. M., Richmond College, 1886. *Subjects:* Greek, Sanskrit, and Latin. *Thesis:* Plato as a Narrator: A Study in the Myths.

Frederick Clemson Howe, of Meadville, Pa., A. B., Allegheny College, 1889. *Subjects:* Political Economy, History, and Jurisprudence. *Thesis:* A History of the Internal Revenue System.

William Isaac Hull, of Baltimore, A. B., Johns Hopkins University, 1889. *Subjects:* History, Political Economy, and Jurisprudence. *Thesis:* Maryland, Independence, and the Confederation.

Harry Clary Jones, of New London, Md., A. B., Johns Hopkins University, 1889. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* Determination of the Atomic Weight of Cadmium and the Preparation of certain of its Sub-compounds.

James Lawrence Kellogg, of Kewanee, Ill., S. B., Olivet College, 1888. *Subjects:* Morphology, Physiology, and Botany. *Thesis:* Degeneracy in the Lamellibranchiata.

Charles Rollin Keyes, of Des Moines, Iowa, S. B., Iowa State University, 1887. *Subjects:* Geology, Palaeontology, and Biology. *Thesis:* The Principal Mississippian Section; A Classification of the Lower Carboniferous Rocks of the Mississippi Basin.

Elmer Peter Kohler, of Egypt, Pa., A. B., Muhlenberg College, 1886. *Subjects:* Chemistry, Geology, and Mineralogy. *Thesis:* Action of Aniline on the Chlorides of Ortho-sulpho-benzoic Acid.

Paul Erasmus Lauer, of Cleveland, O., A. B., Adelbert College, 1885. *Subjects:* History, Political Economy, and History of Philosophy. *Thesis:* Church and State in New England.

Edwin Seelye Lewis, of Indianapolis, Ind., A. B., Wabash College, 1888. *Subjects:* Romance Languages, Italian, and History. *Thesis:* The Guernsey Dialect.

David Judson Lingle, of Chicago, Ill., S. B., University of Chicago, 1885. *Subjects:* Physiology, Zoölogy, and Geology. *Thesis:* Vaso-motor Nerves of the Heart.

Alvin Frank Linn, of Springfield, O., A. B., Wittenberg College, 1884. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* I. Sulphon-Fluoresceïn and Related Compounds; II. Some Experiments on the Rate of Oxidation of the three Toluic Acids by Potassium Permanganate in Alkaline Solution.

James Alexander Lyman, of Amboy, Ill., A. B., Beloit College, 1888. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* The Phthaleïns of Ortho-sulpho-para-toluic Acid.

John Hanson Thomas Main, of Baltimore, A. B., Moore's Hill College, 1880. *Subjects:* Greek, Sanskrit, and Latin. *Thesis:* Locative Expressions in the Attic Orators.

Frank Jewett Mather, Jr., of Morristown, N. J., A. B., Williams College, 1889. *Subjects:* English, German, and History of Philosophy. *Thesis:* The Conditional Sentence in Anglo-Saxon.

Michael Andrew Mikkelsen, of Sioux Falls, S. D., A. B., Luther College, 1886. *Subjects:* History, Political Economy, and Jurisprudence. *Thesis:* The Bishop Hill Colony.

Robert Milton Parks, Jr., of Bedford, Ind., A. B., Indiana University, 1879. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* Action of Methyl Alcohol on Para-diazo-ortho-toluene-sulphonic Acid.

Charles Lane Poor, of New York City, S. B., College of the City of New York, 1886. *Subjects:* Astronomy, Mathematics, and Physics. *Thesis:* The Action of Jupiter upon Comet V, 1889.

John Dyneley Prince, of New York City, A. B., Columbia College, 1888. *Subjects:* Assyrian, Hebrew, and German. *Thesis:* "Mene, Mene, Tekel, Upharsin."

John Cunningham Robertson, of Washington, D. C., A. M., University of Virginia, 1885. *Subjects:* Greek, Latin, and German. *Thesis:* The Gorgianic Figures in Early Greek Prose.

Charles Hunter Ross, of Auburn, Ala., S. B., Alabama Agricultural and Mechanical College, 1886. *Subjects:* English, German, and French. *Thesis:* The Absolute Participle in Middle and Modern English.

Harry Luman Russell, of Poynette, Wis., S. B., University of Wisconsin, 1888. *Subjects:* Pathology, Botany, and Physiology. *Thesis:* Bacteria in their Relation to Vegetable Tissue.

William Amasa Scott, of Vermillion, S. D., A. B., University of Rochester, 1886. *Subjects:* Political Economy, History, and Jurisprudence. *Thesis:* The Repudiation of State Debts.

Will Bush Shober, of Baltimore, A. B., St. John's College, 1885. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* Action of Certain Alcohols on Para-diazo-benzene-sulphonic Acid.

Martin Bell Stubbs, of Philadelphia, Pa., A. B., Haverford College, 1888. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* Nitro-ortho-sulpho-benzoic Acid and some of its Derivatives.

Harry Maas Ullmann, of Springfield, Mo., A. B., Johns Hopkins University, 1889. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* Para-chlor-meta-sulpho-benzoic Acid.

Bert John Vos, of Grand Rapids, Mich., A. B., University of Michigan, 1888. *Subjects:* German, Greek, and English. *Thesis:* Diction, Formal Style, and Rime-Technic of Hartman von Aue.

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## Bachelors of Arts.

Harry Adler, of Baltimore.

Newton Diehl Baker, Jr., of West Virginia.

Charles Gambrill Baldwin, of Baltimore.

Edwin Bernhard Behrend, of Washington, D. C.

Lunsford Emory Bennett, of Mt. Washington, Md.

Arthur Fisher Bentley, of Nebraska.

George Edward Boynton, of New York.

Thomas Richardson Brown, of Baltimore.
Alfred Cookman Bryan, of Rising Sun, Md.
Charles Weathers Bump, of Baltimore.
William Calvin Chesnut, of Baltimore.
John Edwin Davis, of Baltimore.
Henry Haywood Glassie, of Washington, D. C.
Leon Emanuel Greenbaum, of Baltimore.
James Wesley Harvey, Jr., of Catonsville, Md.
William August Haussmann, of Pennsylvania.
Jose Lewis Hirsh, of Baltimore.
Morris James, of Kentucky.
Hugh Judge Jewett, Jr., of Glenville, Md.
Theodore Woolsey Johnson, of Baltimore.
John Holladay Latane, of Baltimore.
Edward Jaquelin L'Engle, of Florida.
Earl Perkins Lothrop, of New York.
Charles Whitney Mixter, of Massachusetts.
Walter Alexander Montgomery, of North Carolina.
James Flack Norris, of Baltimore.
Thomas Dobbin Penniman, of St. Denis, Md.
Charles William Peppler, of Baltimore.
Albert Moore Reese, of Baltimore.
William Miller Roberts, of Baltimore.
Abram Barr Snively, of Pennsylvania.
John Sargent Stearns, of Washington, D. C.
Charles Daniel Steenken, of Baltimore.
Leopold Stern, of Baltimore.
Lester Latham Stevens, of Baltimore.
Gustav Lürman Stewart, of Baltimore.
John Stewart, Jr., of Baltimore.
Redmond Conyngham Stewart, of Baltimore.
Arthur Bertram Turner, of Baltimore.
Harold John Turner, of Baltimore.
Richard Henry Wilson, Jr., of Kentucky.

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## Certificates of Proficiency in Electrical Engineering.

Certificates of Proficiency were given, June 14, 1892, to the following persons who had completed the two years' course in Electrical Engineering:

William Hand Browne, Jr., of Baltimore.
Henry Wakefield Frye, of Maine.
Norman Crawford McPherson, of Pennsylvania.
Arthur Judson Warner, of Ohio.
Ezra Carl Breithaupt, of Canada.
Hugh Pattison, of Maryland.
George Henry Hutton, Jr., of Baltimore.
Robert Ernest Hutton, of Baltimore.
Charles William Waidner, of Baltimore.

(9)

# REPORT ON SOIL INVESTIGATIONS ON THE GROUNDS OF THE JOHNS HOPKINS UNIVERSITY AT CLIFTON, BALTIMORE.

To President Daniel C. Gilman.

*Dear Sir:* In accordance with your request, I submit the following statements in regard to the soil investigations at Clifton for the past year.

For most of the year covered by this report I have had the very cordial co-operation of the Maryland Agricultural Experiment Station and the U. S. Department of Agriculture, and I have been able to employ three assistants for the necessary laboratory and chemical work, and to extend the scope of the work beyond the local conditions in this State.

Prior to the first of July, the U. S. Department of Agriculture arranged to continue my commission for another year and to increase their support to meet the growing expenses of the work. Just after this, however, the new Trustees of the Maryland Agricultural Experiment Station decided on a reorganization of that institution. A reorganization has recently been effected by the appointment of a new director, to succeed Major Alvord, and of two or three other officers of the station, but with no provision, so far, for continued co-operation in these soil investigations. This has crippled the work very much, and I have had to reduce the working force and discontinue some features of the work.

The U. S. Department of Agriculture has recently appointed a chemist, Professor R. L. Packard, of Washington, to make a thorough chemical and petrographical study of some of the typical soils in connection with my own work.

The object of the work, as stated in my last report, is to study the relation of the texture and physical properties of soils to plant growth. It is believed that this largely determines the local distribution and development of crops, and that it is upon this that any improvement of soils should be based.

I have collected about 400 samples of soil from Maryland, and all of these have been at least partially examined so that they could be properly classified, and many of them have had quite an exhaustive physical and chemical examination. I find that there are about fifteen important soil formations in the State, but that several of these have about the same texture and physical properties and are nearly alike in their agricultural value, differing only in their geological origin, so that it may be considered that there are not more than ten or twelve important soil formations

which differ materially in their agricultural value. The texture of these soils, as shown by the relative amount and arrangement of the sand and clay, under existing climatic conditions, appears to determine the relation of these soils to crop development and production.

I am preparing an agricultural map of the State, in connection with the Geological Department of this University and the U. S. Geological Survey, which will show the area and distribution of these different soils, and I intend to show, in a very graphic manner, the difference in texture between these different soils, their relative agricultural value and the crops best adapted to each.

In addition to this I have been able, through the co-operation of the U. S. Department of Agriculture, to make a very large collection of material from other States for the study of the principles involved in the relation of soils to crop production. This material consists now of about 1100 samples of soil from all over the country, which have been carefully collected by the Experiment Stations or by the National or State Geological Surveys. The samples are all accompanied with very full notes as to their geological origin, and the agricultural value and peculiarities of the lands. By the time the collection is completed, by samples which have been already promised, it will amount to about 1500 or 1800 samples, and will furnish an admirable basis for these soil investigations.

The collection includes samples from the famous "blue grass region," the Sea Island and upland cotton soils of the South, the bright tobacco lands of North and South Carolina, the prairie lands of the West, corn and wheat lands of Ohio and the Northwest, the tobacco lands of all the principal tobacco areas of the United States and all other important regions. It is hoped that means and opportunity will be offered for the thorough examination of this material.

An illustration of the economic value of this work may be of interest. An examination of the tobacco lands of North Carolina shows that they have about the same texture as the early truck lands and some of the pine barrens in Southern Maryland. I have suggested that certain of these lands, which are nearly worthless now, and are generally abandoned when too far from the rivers to afford quick and easy transportation for truck, are admirably adapted to the cultivation of this bright tobacco, and that they could be reclaimed and would probably have considerable value if devoted to this crop, as has been the experience with similar soils in Virginia, North Carolina, and other Southern States. There have been several attempts to introduce this bright tobacco into Southern Maryland, but the tobacco lands upon which the experiments have been tried are all much heavier in texture than those upon which the bright tobacco is grown at the South.

Other lines of considerable economic interest and value have been opened up by these investigations, and the whole aspect of the work is full of encouragement, while the interest shown all over the country, by practical as well as by scientific men, is certainly very gratifying.

I am glad to have the opportunity of thanking you again for the continued support and interest you have shown in the work, and the Trustees and officers of the University for the continued use of the estate of Clifton and for the cordial support tendered me in other ways.

Very respectfully,

MILTON WHITNEY,
*Special Agent, U. S. Department of Agriculture.*

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## REPORT ON THE MARYLAND STATE WEATHER SERVICE.

TO THE PRESIDENT OF THE JOHNS HOPKINS UNIVERSITY:

I have the honor to transmit, in accordance with your request, the following report of meteorological work carried on in connection with the University during the year ending September 1, 1892. The data have been furnished by Dr. C. P. Cronk, Meteorologist in charge and Chief Observer of the U. S. Weather Bureau Station in Baltimore.

Although the Maryland State Weather Service was organized in May, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College and the U. S. Weather Bureau, results of its work during the remaining months of that year were meagre and incomplete, as there was no fund available for the publication of reports.

The University had given the services of one of its Faculty as Director, besides office room for the accommodation of the central station of the system; the Agricultural College had given the services of one of its Faculty as Secretary and Treasurer; the U. S. Weather Bureau had given the services of a Meteorologist in charge, increased the force of the central station by the addition of two assistants, furnished nearly all of the voluntary observing stations with instruments, all of them with the necessary forms, stationery and franked envelopes, and more than one hundred individuals, representing the different sections of the territory embraced by the Service, volunteered as meteorological observers, crop reporters, or displaymen.

It remained for the State, for the benefit of which the Service was established, to supply the sum needed for the publication of reports. A bill was drafted, introduced at the last session of the Legislature by Senator Gorter, and signed by the Governor. It reads as follows:

AN ACT TO ESTABLISH A STATE WEATHER SERVICE, AND TO MAKE AN APPROPRIATION THEREFOR.

SECTION 1. Be it enacted by the General Assembly of Maryland, That there is hereby established a State Weather Service, which shall be under the control and management of the Johns Hopkins University, the Mary-

land Agricultural College and the United States Weather Bureau; the officers of said service shall be a Director, designated by the President of the Johns Hopkins University, a Secretary and Treasurer, designated by the President of the Maryland Agricultural College, and a Meteorologist in Charge, designated by the Chief of the United States Weather Bureau; they shall be commissioned by the Governor, and be duly qualified as officers of the State; the said officers shall constitute a Board of Government, under the direction of the institutions from which they are appointed, and shall receive no compensation for their services as such officers.

SEC. 2. The central station and office of said Service shall be at the Johns Hopkins University; the Board of Government shall establish, if practicable, one or more voluntary meteorological stations in each county in the State, and supervise the same, co-operating with the Chief of the United States Weather Bureau for the suitable location of such stations, in order that the greatest usefulness may result to the State and National services; the said officers are authorized to print weekly and monthly reports of the results and operations of said Service, and to distribute the same in such a manner as they shall deem most serviceable to the people of the State.

SEC. 3. The sum of two thousand dollars* annually, or so much thereof as shall be necessary, is hereby appropriated out of any funds of the Treasury not otherwise appropriated, for the purpose of carrying out the provisions of this Act, to be paid to said officers, or to their order, by the Treasurer, upon the warrant of the Comptroller, and upon the vouchers of said officers; provided, however, that no part of said sum shall be paid for salaries for any officer or officers, but a reasonable compensation may be paid for printing and other necessary and proper expenses of said officers.

SEC. 4. The said officers shall report to the Legislature at its regular sessions their expenditures under the provisions of this Act, and such information as said officers may deem desirable, or as the Legislature may require.

SEC. 5. And be it further enacted, That this Act shall take effect from the date of its passage.

*Approved April* 7, 1892.

In the securing of the enactment of the law establishing the Service, too high an estimate cannot be placed upon the interest and zeal displayed by many prominent citizens of the State. Special mention should be made of the names of Messrs. John C. Legg, Harry F. Turner, Louis Müller and Lloyd L. Jackson. Without the support of these gentlemen the needed legislation would have failed and Maryland would be without that which the most sparsely settled territory of the United States does not lack. Every State and Territory of the Union is now included within a State Weather service.

The work of the Maryland State Weather Service is similar to that carried on by like services in other States. The voluntary observers of the State organization are also observers of the National Bureau, and the results of each observer's work are tabulated monthly in the Monthly Weather Review, published in Wahington under the direction of the Chief of the Weather Bureau.

* The Governor signed the bill on the condition that only $1000 of this appropriation should be used annually.

The publication of each State Service is chiefly devoted to a discussion of the climate of the territory covered by its observations, the effect of the meteorological conditions upon the products of the soil, and the special advantages to be enjoyed by the inhabitants.

The Board of Control of the Maryland Service has reason to be satisfied with the results accomplished. On account of the varied climate of Maryland, the difference in its soil formation, and its extensive coast-line, the agricultural and commercial interests of the State are important and many. The charts of monthly temperature and rainfall beautifully exhibit, in the curves of the isotherms and the distribution of the rainfall, the influence of the bay in the east and the mountains in the west, and open vistas of future usefulness to the State.

The sum appropriated by the State Government, though small, has enabled the printing of monthly reports, extending throughout the year, and of weekly reports, extending throughout the growing and harvesting seasons. That these reports are appreciated by the people of the State is evidenced from the hearty support they have given in rendering reports of the weather and of the crops, and by the general and complete publication of reports by the newspapers of the State. Two thousand copies of each of the monthly reports and about five hundred copies of each of the weekly reports have been distributed. They are sent to the meteorological observers of the Service (who for the most part are agriculturists), into other States, and to prominent institutions. A few copies are sent abroad. It is intended to add to the list of foreign institutions receiving the reports.

During the year meteorological reports have been received from thirty stations in Maryland, the District of Columbia and Delaware (the territory covered by the service), and crop reports have been received from sixty reporters, principally agriculturists. There are, also, thirty weather signal display stations attached to the service.

During the past year the central office in the physical laboratory of this University has been designated as a station of the first class, and is being fully equipped with the latest improvements in the barograph, thermograph, sunshine recorder and other self-registering instruments. Telegraphic reports in cipher, to avoid numerals and unnecessary expense, are received each morning from about 140 stations throughout the United States. These reports include atmospheric pressure, temperature (exposed, and maximum and minimum), direction and velocity of wind, state of weather, precipitation, dew-point, clouds, and any special phenomena which may be necessary. These reports are platted upon a map dotted with the location of the stations; isotherms and isobars are drawn, and forecasts are made after a consideration of the general and local conditions. The general forecast received from Washington is also circulated. Though the Washington weather map (which doubtless is the most complete and finished map of the kind made in any country) is received, posted and circulated in Baltimore, a large blackboard weather map from which the

local forecast is made is drawn at the Corn and Flour Exchange under the supervision of Dr. Cronk, the Meteorologist in charge of the State Service. The observations throughout the United States and Canada are taken at 8 A. M., 75th meridian time, and the map is usually completed before 10 A. M. The precedence of Weather Bureau business over other telegraphic matter accounts for the early receipt of the messages.

Chief-Assistant Wilson and Assistants White and Brewer have rendered valuable aid in the preparation of reports.

The approbation of the President of the University in the work done, the kindness of Professor Rowland in providing convenient and comfortable office rooms for the central station, the encouraging support of Professor Williams, and the generous help of Mr. Murray, to whose advice the attractive form of the monthly report is due, are gratefully acknowledged.

Very respectfully,

WILLIAM B. CLARK,
*Director, Maryland State Weather Service.*

# ABSTRACT OF THE REPORT OF THE JOHNS HOPKINS PRESS.

The several journals issued by The Johns Hopkins Press have appeared at regular intervals during the year.

1. Three numbers of volume fourteen of the American Journal of Mathematics, under the editorial direction of Professors Newcomb and Craig, have been issued. The series of portraits of mathematicians was continued in this volume with the portrait of Professor Klein. The portrait of Professor Halphen will appear in the first number of volume fifteen.

2. Of the American Chemical Journal, under the editorial direction of Professor Remsen, volume thirteen has been completed and five numbers of volume fourteen have been issued.

3. Of the American Journal of Philology, of which Professor Gildersleeve is the editor, volume twelve has been completed and two numbers of volume thirteen have appeared.

4. Of the Studies in Historical and Political Science, edited by Professor Adams, four numbers of the ninth series and eight numbers of the tenth series have been published.

Of this series three "extra volumes" have been issued, viz.:

An Introduction to the Study of the Constitution, by Morris M. Cohn.

The Old English Manor, by Charles M. Andrews.

America: Its Geographical History, 1492–1892, by Walter B. Scaife.

5. Of the Studies from the Biological Laboratory, edited by Professors Martin and Brooks, number two of volume five is nearly ready for issue.

6. Numbers 90–100 of the University Circulars have appeared during the year.

7. The third number of the Beiträge zur Assyriologie, of which Professor Haupt is one of the editors, was published in November, 1891. This number begins the second volume.

8. The sixteenth Annual Report of the President of the University was issued in December, 1891, and the Annual Register in May, 1892.

9. The Press has continued in charge of the publications of the Johns Hopkins Hospital, viz.: The Hospital Bulletin, appearing nine times yearly; The Hospital Reports, of which three numbers have been published during the year.

10. The first part of the Bibliographia Hopkinsiensis (a list of publications by members of the University, 1876–92) was issued in May. This part relates to Philology and was edited by Professor Bloomfield.

11. A new topographical map of the vicinity of Baltimore, based upon the topographical work of the U. S. Geological Survey, has recently been

issued, and a geological map of the same region is well advanced for publication.

12. There have been received, in accordance with the regulations, one hundred and fifty copies of the theses accepted for the degree of Doctor of Philosophy from the following named graduates:

Bagby, A.—Adverbs in Horace and Juvenal.

Black, J. W.—Maryland's Attitude in the Struggle for Canada.

Devries, W. L.—Ethopoiia: A Rhetorical Study of the Types of Character in the Orations of Lysias.

Eichelberger, W. S.—The Orbit of Hyperion.

Faust, A. B.—Charles Sealsfield (Carl Postl).

Goodwin, C. J.—Apollonius Rhodius.

Hall, J. L.—Beowulf: An Anglo-Saxon Epic Poem.

Harrison, T. P.—The Separable Prefixes in Anglo-Saxon.

Haskins, C. H.—The Yazoo Land Companies.

Huizinga, A. H.—Analogy in the Semitic Languages.

Hull, W. I.—Maryland, Independence, and the Confederation.

Jones, H. C.—Determination of the Atomic Weight of Cadmium.

Keyes, C. R.—Classification of the Lower Carboniferous Rocks of the Mississippi Valley.

Lauer, P. E.—Church and State in New England.

Linn, A. F.—Sulphon-Fluoresceïn and Related Compounds.

Lyman, J. A.—The Phthaleïns of Ortho-sulpho-para-toluic Acid.

McPherson, J. H. T.—History of Liberia.

Main, J. H. T.—Locative Expressions in the Attic Orators.

Metzler, G. F.—Invariants and Equations associated with the General Linear Differential Equation.

Mikkelsen, M. A.—The Bishop Hill Colony.

Mustard, W. P.—The Etymologies in the Servian Commentary to Vergil.

Parks, R. M.—The Action of Methyl Alcohol on Para-diazo-ortho-toluene-sulphonic Acid.

Petrie, G.—Church and State in Early Maryland.

Poor, C. L.—The Action of Jupiter upon Comet V, 1889.

Ross, E. A.—Sinking Funds.

Shober, W. B.—On the Action of Certain Alcohols with Para-diazo-benzene-sulphonic Acid.

Slaughter, M. S.—The Substantives of Terence.

Turner, F. J.—The Character and Influence of the Indian Trade in Wisconsin.

Weeks, S. B.—The Religious Development in the Province of North Carolina.

13. The system of exchanges has been conducted as in previous years.

N. MURRAY.

September 1, 1892.

# ABSTRACT OF THE REPORT OF THE LIBRARIAN.

The number of bound volumes now in the library is 55,283. The number of unbound volumes and pamphlets is estimated at 40,000. This last number does not include a portion of the pamphlet collection in Southern History not as yet collated and arranged.

The recorded increase in the number of bound volumes during the year is 8,283. Of this number, 2,149 were purchased, 2,641 were presented, 1,012 were volumes now bound for the first time, and 2,481 were government and other official publications now first recorded. The number of pamphlets and unbound volumes added during the year was 1,500, and of University theses and publications, 2,000. The periodicals and serials now received exceed one thousand.

Many valuable gifts have been received during the year. Among these may be mentioned:

The library of Dr. Christopher Johnston. This relates principally to medicine and contains 737 volumes, 250 pamphlets and 230 charts and illustrations.

The medical library of Dr. Francis Donaldson, containing 947 volumes.

Both of these collections have been described in the University Circulars.

The gift of Mr. Robert Garrett of 140 books and a number of pamphlets relating to history and statistics.

The gift of Dr. J. Dyneley Prince, Fellow in Semitic Languages, of five hundred dollars, which has been expended in the purchase of books in Assyriology, Semitic Philology, and Biblical Criticism. In the University Circulars No. 98 is given a list of the books purchased with Dr. Prince's gift.

The gift of Rev. Dr. E. A. Hoffman, of New York, of five hundred dollars to be expended in the purchase of books in Astronomy.

The gift of the Government of France of 882 books and pamphlets.

From the State of Michigan have been received a set of the Collections of the Historical Society of that State.

From the Government Departments in Washington have come, as in previous years, a large number of volumes.

The remainder of the sum of two thousand dollars given by Mr. William A. Slater has been expended in the purchase of 205 volumes, mainly the best editions of works of the great writers of France and Germany.

Special reference should also be made of the gifts of Mr. John Glenn and Mr. John M. Glenn, and of the gifts of President Gilman.

The general library and reading-room has been open from 9 a. m. to 10 p. m., daily. Dr. W. M. Arnolt and Mr. H. C. F. Miller have been the assistants in charge. The resources of this collection have been increased, and the number of volumes in the room doubled by the accession of the books in general literature brought from the McCoy collection and placed in the upper-tier of shelves recently constructed. Attention has been given to increasing the number of the works of reference and to the purchase of works in English, French, and German literature.

In the autumn, the McCoy library was rearranged and about one-half of the volumes were brought to the University buildings. The works relating to art, archæology, travels, and the bibliographical rarities were retained in the McCoy library room. This room has been open daily from 2 to 5 p. m., and has been in the charge of Dr. H. W. Magoun.

In the library of Southern History, much attention has been given to the arrangement and cataloguing of the collections received from Mr. Scharf, Mr. Birney, and others. About 3000 volumes have been brought together and we have now a collection of much importance, especially in the subject of Slavery. Mr. W. I. Hull and Mr. L. P. Powell have been employed in this library through the year.

The several departmental libraries have been open daily from 9 a. m. to 5 p. m., as follows:

The Historical, under the charge of Mr. Powell, Mr. Kinley and Mr. Herriott; the Classical, under the charge of Dr. Devries; the Sanskrit and Semitic, under the supervision of the heads of these departments; the Modern Language, under the charge of the Fellows in Romance and Teutonic Languages; the Mathematical and Physical, under the supervision of Professor Craig; the Chemical, under the charge of Mr. Kohler; the Biological, under the charge of Mr. Lingle; the Geological, under the supervision of Professor Williams and Dr. Clark.

The books relating to medical subjects, received during the year, have been deposited in the library of the Johns Hopkins Hospital.

Books have been bought for the several collections as, from time to time, requested by the heads of departments. Valuable accessions have been made in the departments of Geology, Morphology, Mathematics and Physics.

Detailed statements of expenditures for the library and classified lists of accessions have been separately submitted.

During the year the New Book Department has received 5,943 volumes of the estimated value of $8,500. Since the opening of the department in 1876, 64,750 volumes of the invoiced value of over $100,000 have been exhibited on its shelves.

N. Murray,
*Librarian.*

September 1, 1892.

# GIFTS TO THE LIBRARY.

The following list enumerates the principal gifts to the Library since the last Annual Report. The list does not include exchanges received from the correspondents of the University, nor a large number of official reports and catalogues received from public and private institutions.

ADAMS, CHARLES FRANCIS. (Author). History of Quincy, Mass. Cambridge, 1891. O.

The Centennial Milestone, 1792-1892. An address. Cambridge, 1892. O.

ADAMS, PROFESSOR H. B. (Author). Memorial of Nathaniel Holmes Morison, First Provost of the Peabody Institute. Baltimore, 1891. O.

Georg Kaufmann. Die Geschichte der deutschen Universitäten. 1. Band, Vorgeschichte. Stuttgart, 1888. O.

ALABAMA GEOLOGICAL SURVEY. (E. A. Smith, Ph. D., State Geologist). Report on the Cahaba Coalfield by Jos. Squire. Montgomery, Ala., 1890. O.

Report on the Coal Measures of the Plateau Region of Alabama by H. McCalley, etc. Montgomery, Ala., 1891. O.

AMERICAN ACADEMY OF ARTS AND SCIENCES. Memorial of Joseph Lovering, late President of the Academy. Cambridge, 1892. O.

AMERICAN BANKERS ASSOCIATION. (Wm. B. Greene, Secretary). Proceedings of the Convention at New Orleans, 1891, etc. New York, 1891. O.

AMERICAN INSTITUTE OF MINING ENGINEERS. Transactions of the Institute. Vols. XIX and XX. New York, 1891-92. O.

AMERICAN METROLOGICAL SOCIETY. Eastburn, George, M. A. The Metric System and Chart. New York, 1892. O.

AMERICAN ORTHOPEDIC ASSOCIATION. Transactions. Vol. IV. Phila., 1891. O.

ANSPACH, LUCIEN. (Author). L'école Alsacienne a-t-elle raison contre Zeuner? Le rôle de l'eau dans les cylindres à vapeur. Bruxelles, 1891. O.

ARKANSAS GEOLOGICAL SURVEY. Annual Report for 1890. Vol. I. Manganese, its uses, ores and deposits. Little Rock, 1891. O.

ASSOCIATION FOR THE ADVANCEMENT OF WOMEN. (Mrs. Lita Barney Sayles, Custodian). Reports and papers of the Nineteenth Women's Congress, 1891. Syracuse, 1892. 2 vols. O.

ASSOCIATION OF AMERICAN PHYSICIANS AND SURGEONS. Transactions of the Second Triennial Session, 1891. New Haven, Conn., 1892. O.

ASTOR LIBRARY. Forty-third Annual Report. New York, 1892. O.

AUSTRALIAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Report of the third meeting, edited by Sir J. Hector. Sydney, 1891. O.

AVERILL, C. K., JR. List of Birds found in the vicinity of Bridgeport, Conn. Bridgeport, 1892. O.

BACKUS, MISS. Ferguson, Adam. Essay on the History of Civil Society. 8th edition. Philadelphia, 1819. O.

Ferguson, Adam. The History of the Progress and Termination of the Roman Republic. Vols. I-III. Philadelphia, 1805. O.

Hopkins, Samuel. The Puritans, or the Church, Constitution and Parliament of England during the reigns of Edward VI and Queen Elizabeth. Vols. I and II. Boston, 1859-60. O.

Burton, Thomas. Cromwellian Diary [of the Parliament from 1656-1659]. 4 vols. Edited by J. T. Rutt. London, 1828. O.

Miller, George. History philosophically illustrated from the Fall of the Roman Empire to the French Revolution. 4 vols. London, 1832. O.

Franklin, Benjamin. Works. Philadelphia, 1809-18. 6 vols. O.

O'Callaghan, E. B. Documentary History of the State of New York. Vols. I-IV. Albany, 1849-51. O.

BACKHOUSE, T. W. (Author). Structure of the Sidereal Universe. Sunderland, 1891. Q.

BAILY, WILLIAM E. (Author). Classical Poems. Cincinnati, 1892. D.

BALTIMORE BOARD OF COMMISSIONERS OF PUBLIC SCHOOLS. Sixty-third Annual Report. 1891. O.

BALTIMORE CHARITY ORGANIZATION SOCIETY. Directory of Charitable and Beneficent Organizations. 1892. D.

BALTIMORE CORN AND FLOUR EXCHANGE. Thirty-sixth and Thirty-seventh Annual Reports. Baltimore, 1891, 1892. 2 vols. O.

BALTIMORE MANUAL LABOR SCHOOL. Annual Report of the Board of Directors. Baltimore, 1892. O.

BAYLEY, W. S. (Author). A Summary of Progress in Mineralogy and Petrography in 1891. Waterville, Me., 1892. O.

BAYLIES, N. (Author). Eleazer W. Ripley of the War of 1812. Des Moines, 1890. O.

BERGBOHM, DR. JULIUS. (Author). Neue Integrationsmethoden auf Grund der Potenzial-, Logarithmal- und Numeralrechnung. Stuttgart, 1892. O.

Neue Rechnungsmethoden der höheren Mathematik. Stuttgart, 1892. O.

Entwurf einer neuen Integralrechnung auf Grund der Potenzial-, Logarithmal- und Numeralrechnung. Leipzig, 1892. O.

BLOXHAM, R. J. Flavell, John. The Fountain of Life opened. London, 1698. O.

BODLEIAN LIBRARY. Bailey, W. O. Tragic Iambic Verse. Oxford, 1892. D.

Cotton, J. J. Phoenicum navigationes. Oxford, 1892. D.

Du Pontel, R. L. A. De Coloniis Britanniae in unam rem publicam cum populo Britanno consociandis. Oxford, 1892. D.

Grindle, G. E. A. The Destruction of Paganism in the Roman Empire from Constantine to Justinian. Oxford, 1892. D.

Hanson, P. H. Nikias. Oxford, 1892. D.

Warkworth, Lord. S. Francis of Assisi. Oxford, 1892. D.

BOSTON MUSEUM OF FINE ARTS. Annual Report. Boston, 1892. O.

BOSTON PUBLIC LIBRARY. Annual Report. Boston, 1892. O.

BOURINOT, JOHN GEORGE. (Author). Parliamentary Procedure and Practice. 2d edition. Montreal, 1892. O.

BOUTELL, L. H. (Author). Thomas Jefferson, the Man of Letters. Chicago, 1891. D.

BOWES, J. L. (Author). A Vindication of the Decorated Pottery of Japan. Liverpool, 1891. Q.

BREMER, DR. L. (Author). Tobacco, Insanity, and Nervousness. St. Louis, 1892. O.

BRIGHAM, W. T. Baltimore Hats, Past and Present. Historical Sketch. Baltimore, 1890. D.

A Reciprocidade Commercial. Baltimore e Brazil. Baltimore. D.

BRIGHT, JAMES W. Lyman, A. S. Historical Chart from the Earliest Times to the Present Day. Philadelphia, 1874. F.

Wiencke, O. Ueber Walter Scotts the Lady of the Lake. Ploen, 1886.

F. A. Wolf's Omrids af Oldtids videnskabens encyclopaedie (af P. O. Brönsted). Kjöbenhavn, 1818. O.

BRINTON, D. G. Analytical Catalogue of his Works and Scientific Articles. O.

BRONSON, HENRY, M. D. (Author). The Money Problem. New Haven, 1877. O.

BROOKLYN LIBRARY. Annual Report. 1892. O.

BROOKS, PROFESSOR W. K. Bausch, Edward. Manipulation of the Microscope. Rochester, 1891. D.

BROWN, FREDERICK J. (Author). Streets and Slums. A Study in Local Municipal Geography. Baltimore, 1892. O.

BROWN, MRS. GEORGE WILLIAM. Wilberforce, Samuel. History of the Protestant Episcopal Church in America. New York, 1849. D.

BROWNE, WILLIAM HAND. Ottfrid der Krist, hrsg. von E. G. Graff. Königsberg, 1831. Q.

BRUSSELS: SOCIÉTÉ ROYALE MALACOLOGIQUE DE BELGIQUE. Annales, 1890. O. Procès-verbal des Séances, Vols. XIX and XX. 1891. O.

BRYAN, HON. G. D. Annual Reports of the City of Charleston, S. C., 1890. Charleston, 1890. O.

BUENOS AYRES, GOVERNMENT OF. Anuario Estadistico de la Ciedad de Buenos Aires, Año. 1-1891. Buenos Ayres, 1892. O.

BUFFALO HISTORICAL SOCIETY. Annual Report. Buffalo, 1892. O.

BUFFALO LIBRARY. Fifty-sixth Annual Report. Buffalo, 1892. O.

BUFFALO SOCIETY OF NATURAL HISTORY. Bulletins. Vols. 2, 3, 4 and 5. O.

BUTTERFIELD, GEN. DANIEL. (Author). Union College: its Character and Duty. An Address. Schenectady, 1892. O.

CALIFORNIA, UNIVERSITY OF. Riverside Addresses, 1891. Berkeley, 1892. D.
Memorial of Professor John Le Conte. Berkeley, 1892. Q.
Coöperative List of Periodical Literature. 2d edition. Berkeley, 1892. O.
Catalogue of the Bacon Art Gallery. 2d edition. Sacramento, 1892. O.

CAMBRIDGE (MASS.) PUBLIC LIBRARY. Volume describing the Library. Cambridge, 1891. D.

CANADA: GEOLOGICAL AND NATURAL HISTORY SURVEY. (A. R. C. Selwyn, Director). Macoun, J. Catalogue of Canadian Plants. Montreal, 1892. O.
Rüst, D. Contributions to Canadian Micro-Palaeontology. Pt. IV. 1892. O.

CARTER, A. M. Stiles, J. C. Modern Reform Examined. Phila., 1858. D.

CATHELL, D. W. (Author). Book on the Physician Himself. 10th edition. Phila., 1892. O.

CAYLEY, PROFESSOR ARTHUR. (Author). Collected Mathematical Papers. Vol. IV. Cambridge, 1891. Q.

CHAPMAN, C. H. (Author). An Elementary Course in Theory of Equations. New York, 1892. D.

CHICAGO LAW INSTITUTE. Supplement to Catalogue. Chicago, 1892. O.

CHICAGO PUBLIC LIBRARY. Annual Report. Chicago, 1892. O.

CHRISTIANIA, OBSERVATORY OF. Catalog der astronomischen Gesellschaft. I. Leipzig, 1890. Q.
Magnetische Beobachtungen und stündliche Temperaturbeobachtungen im Terminjahre 1882—August, 1883. Christiania, 1891. Q.
Supplement zu den Zonenbeobachtungen in Christiania. Christiania, 1892. Q.

CINCINNATI CHAMBER OF COMMERCE. Reports, 1880-1890. 9 vols. Cincinnati, O.

CINCINNATI PUBLIC LIBRARY. Annual Reports. Cincinnati, 1891. O.
Bulletin of Books added to the Library during 1891. Cincinnati, 1892. Q.

CLARK, HON. WALTER. (Author). Address on the Life and Services of Gen. W. R. Davie, 1892. Greensboro, N. C., 1892. O.

COBB, N. A. (Author). Four pamphlets on Biological subjects. Sidney, 1890 and 1891. O.

COLES, DR. J. A. (Editor). Abraham Coles. Memorial Tributes.

COLORADO COLLEGE. Papers read before the Colorado College Scientific Society. Colorado Springs, 1891. O.

COLUMBUS PUBLIC LIBRARY. Annual Report, 1891-92. Columbus, O. O.

COMMONS, JOHN R. (Author). A Popular Bibliography of Sociology. Oberlin, 1892. D.

CONNECTICUT HISTORICAL SOCIETY. Celebration of the 250th Anniversary of the Adoption of the First Constitution of Connecticut. Hartford, 1889. O.

COPE, PROF. E. D. (Author). On Some New and Little Known Paleozoic Vertebrates. O.
On the Skull of the Dinosaurian Laelaps incrassatus Cope. O.
Professor Marsh on Extinct Horses and other Mammalia. O.
The Homologies of the Cranial Arches of the Reptilia. O.

CORNELL UNIVERSITY. Exercises at the Opening of the Library Building, October 7, 1891. Ithaca, 1891. Q.

COXE, A. Water and Air Circulation in Heating and Ventilating. Philadelphia, 1892. Q.

CREHORE, ALBERT C. (Author with F. Bedell). Equivalent Resistance, etc., of Parallel Circuits. 1892. O.
Derivation and Discussion of the General Solution for the Current flowing in a Circuit containing Resistance, etc. 1892. O.

CROSS, WHITMAN. (Author). The Post-Laramie Beds of Middle Park, Colorado. O.

CROW, C. L. (Author). Zur Geschichte des kurzen Reimpaars im Mittelenglischen. Göttingen, 1892. O.

CURTIN, ROLAND G., and WATSON, E. W. (Authors). Papers on the Epidemic of Influenza from 1889-1892. Phila., 1892. O.

CUST, R. N. (Author). "Africa Rediviva"; or the Occupation of Africa by Christian Missionaries of Europe and North America. London, 1891. O.

DALTON, JOSEPH G. (Author). Lyra Bicyclica. Boston, 1885. D.

DEXTER, MORTON. Proceedings at the Unveiling of the John Robinson Memorial Tablet in Leyden, Holland, July 24, 1891. Boston, 1891. O.

DONALDSON, DR. FRANCIS. The valuable Medical Library of Dr. Donaldson was presented to the University by his family. It consists of 897 bound and 50 unbound volumes. [See *Johns Hopkins University Circulars, No.* 95].

DWIGHT, DR. H. E. (Author). Philadelphia and Popular Philadelphians. Phila., 1891. Q.

DWIGHT, PRESIDENT TIMOTHY. Report of the President of Yale University for the year ending Dec. 31, 1891. New Haven, 1892. O.
Address delivered at the funeral of President Noah Porter, March 7, 1892. New Haven, 1892. O.

EDINBURGH MATHEMATICAL SOCIETY. Seven volumes of the Proceedings of the Society. Edinburgh. O.

EDINBURGH ROYAL COLLEGE OF PHYSICIANS. Reports from the Laboratory. Vol. IV. Edinburgh, 1892. O.

ELY, C. W. Seventh Biennial Report (22d and 23d Annual) of the Maryland School for the Deaf and Dumb. Frederick, Md., 1891. O.

ETTINGER, G. T. (Author). Pedagogy, the Fourth Profession. An Address. D.

FISHER, DR. IRVING. (Author). Mathematical Investigations in the Theory of Value and Prices. 1892. O.

FLETCHER FREE LIBRARY, BURLINGTON, VT. Report, 1892. O.

FLEXNER, A. B. Newton, Sir Isaac. Principia, reprinted for Sir W. Thomson and H. Blackburn. Glasgow, 1871. Q.

FLORENCE, BIBLIOTECA NAZIONALE. Elenco delle Pubblicazioni Periodiche Italiane. Firenze, 1891. O.

FOERSTER, F. (Publisher). Scheffler, H. Beiträge zur Theorie der Gleichungen. Leipzig, 1891. O.
Scheffler, H. Beiträge zur Zahlentheorie. Leipzig, 1891. O.
Scheffler, H. Die Hydraulik auf neuen Grundlagen. Leipzig, 1891. O.

FOOTE, A. E. (Author). The Duty and Reward of Loyalty. Washington, D. C., 1891. O.
Municipal Ownership of Quasi-public Works. Washington, D. C., 1891. O.

FOSTER, J. M. (Author). Reformation Principles. Chicago, 1891. O.

FRADENBURGH, J. N. (Author). Departed Gods. Cincinnati and New York, 1891. D.
And five other volumes of his writings.

FRANCE, GOVERNMENT OF. 882 books and pamphlets.

FRAZIER, PERSIFOR. (Author). Joseph Leidy, M. D., LL. D. [An article reprinted from the *American Geologist*]. O.

GALLAUDET, PRESIDENT EDWARD M. Thirty-fourth Annual Report of the Columbian Institution for the Deaf and Dumb. Washington, 1891. O.

GARNETT, PROFESSOR JAMES M. Early Revolutionary History of Virginia, 1773-4. The Committee of Correspondence and the Call for the first Congress. 1892. O.

GARRETT, ROBERT. One hundred and forty volumes on historical and statistical subjects and a large number of pamphlets.

GERMAN HISTORICAL SOCIETY OF MARYLAND. Annual Report, 1891-92. Baltimore. O.

GILMAN, PRESIDENT D. C. Twenty-five volumes and a large number of pamphlets.

GLENN, JOHN. Niles' Register, 50 vols., 1811-1836. Baltimore. O.

GLENN, JOHN M. The Seventh Census of the United States, 1850. Washington, 1853.

Mushet, David. Papers on Iron and Steel. London, 1840. O.

Alexander, J. H. Report on Manufacture of Iron. Baltimore, 1840.

McCulloch, R. S. Mechanical Theory of Heat. 1876.

Regnault, M. V. Chimie. 3 vols. Paris, 1850. D.

Regnault, M. V. Kurzes Lehrbuch d. Chemie. 3 vols. Braunschweig, 1851.

Pouillet-Müller's Lehrbuch der Physik und Meteorologie. Braunschweig, 1852. 2 vols. O.

Scherer, T. Lehrbuch der Metallurgie. Vol. I, pts. 1-7. Braunschweig, 1846. O.

U. S. Geological Survey of Wyoming and Portions of Contiguous Territories. Washington, 1872. O.

Raymond, R. W. Mineral Resources of the States and Territories west of the Rocky Mountains, 1869-1871. Washington, 1869. 3 vols. F.

Harper, R. G. Select Works. Vol. I. Baltimore, 1814. O.

Voltaire. Œuvres complètes. Paris, 1789. 70 vols. O.

The American Almanac. 16 vols. 3d edition. Boston, 1830-60. D.

Taylor, Tom. Life of Benjamin Robert Haydon. New York, 1859. 2 vols.

Botts, John M. The Great Rebellion. New York, 1866. D.

Barbee, William J. The Cotton Question. New York, 1866. D.

Jones, William D. Mirror of Modern Democracy. New York, 1864. D.

Peto, Sir S. Morton. Resources and Prospect of America. New York, 1860. D.

GORDON, H. L. (Author). The Feast of the Virgin, and other Poems. Chicago, 1891. O.

GORE, DR. G. (Author). A General Relation of Electromotive Force to Equivalent Volume and Molecular Velocity of Substances. 1892. O.

GREAT BRITAIN, GOVERNMENT OF. Report on the Scientific Results of the Exploring Voyage of H. M. S. Challenger: Deep Sea Deposits. London, 1891. F.

GREEN, DR. SAMUEL A. (Author). A Paper containing some remarks on the Waters-Winthrop Map, March 10, 1892. O.

Whitmore, W. A. Memoir of Aug. Thorndike Perkins, A. M. Cambridge, 1892. O.

Suffolk Deeds. Liber VI. Boston, 1892. O.

Thirty-four other Books and Pamphlets.

GREVILLE, EDWARD. (Editor). The Year-book of Australia. Sydney. 3 vols. O.

GRIFFIN, PROFESSOR EDWARD H. Lindner, G. A. Manual of Empirical Psychology as an inductive science. Translation. Boston, 1889. D.

GRIFFIS, WILLIAM ELLIOTT. (Author). The Influence of the Netherlands in the Making of the English Commonwealth and the American Republic. Boston, 1891. D.

GROSSMANN, E. Untersuchung über systematische Fehler bei Doppelsternbeobachtungen. Göttingen, 1892. Q.

HABERSHAM, A. W. (Author). The Two Sisters. Baltimore, 1892. D.

HALE, BISHOP CHARLES R. Foreign Church Chronicle of London, for sixteen years.

HARJES, J. H. Say, Léon. Dictionnaire des Finances. Fasc. 17 et 18. Paris, 1891. O.

HARLEM: SOCIÉTÉ HOLLANDAISE DES SCIENCES. Œuvres complètes de Christiaan Huygens. Tome IV. La Haye, 1891. Q.

HARMAN, PROFESSOR H. M. (Author). Introduction to the Study of the Holy Scriptures. 4th edition. New York, 1884. O.

HARRINGTON, PROFESSOR MARK W. (Author). Authorities on Arctic Meteorology. Q.

Astronomical Observations. Q.

HARRIS, DR. WM. T. Arte de la lengua Cahita por un padre de la compañia de Jesus. Publicado de nuevo por Eustaquio Buelna, Mexico, 1891. O.

Das Ungarische Unterrichtswesen in den Studienjahren 1889–90 und 1890–91. Budapest, 1892. O.

HARRISON, R. G. Gosse, P. H. A Naturalist's Sojourn in Jamaica. London, 1851. O.

HAUPT, PROFESSOR PAUL. 186 Göttingen Dissertations and Festreden. O. and Q.

HEIMWEH, JEAN. (Author). Pensons-y and Parlons-en. Paris, 1891. 16mo.

HELSINGFORS: INSTITUT MÉTÉOROLOGIQUE CENTRAL. Observations météorologiques faites à Helsingfors en 1890. Q.

HENNEMAN, JOHN BELL. (Author). Historic Elements in Virginia Education and Literary Effort. 1892. O.

HENRY BILL PUBLISHING CO. (Publishers). Through Mr. Edward F. Hovey. Thayer, William M. Marvels of the New West. Norwich, 1891. O.

HILL, N. P. (Author). Speeches and Papers on the Silver and other Questions. Colorado Springs, 1890. O.

HOFFMANN, REV. DR. E. A. A gift of five hundred dollars, to be expended in the purchase of Astronomical books.

HOLT, HENRY, & CO. (Publishers). Russell, J. E. The Philosophy of Locke, in extracts from the Essay concerning Human Understanding. New York, 1891. D.

McClelland, M. G. Manitou Island. New York, 1892. D.

And five other volumes.

HOPKINS, CASPAR T. The University and Practical Life. (Reprinted from the *Overland Monthly*, April, 1892). O.

HOPKINS, LOUIS N. Autograph Letter of Johns Hopkins, his uncle, and the founder of the University.

HOWARD ASSOCIATION, LONDON. Papers issued by the Association. 5 vols. O.

HOWISON, R. R. (Author). A History of the United States of America, intended for students. Richmond, 1892. O.

ILLINOIS COMMISSIONER OF LABOR. Reports of the Bureau of Labor. Springfield, 1891. 6 vols. O.

ILLINOIS STATE LABORATORY OF NATURAL HISTORY. Vols. III and IV of Bulletins. O.

Report on the Noxious and Beneficial Insects of the State of Illinois. Springfield, 1891. O.

INDIAN RIGHTS ASSOCIATION. Annual Report, 1891. Philadelphia, 1892. O.

INDIANA HISTORICAL SOCIETY. Julian, G. W. The Rank of Charles Osborn as an Anti-Slavery Pioneer. Indianapolis, 1891. O.

IOWA AGRICULTURAL COLLEGE. A Partial Catalogue of the Animals of Iowa. Ames, 1892. O.

ITALY, GOVERNMENT OF. Le opere di Galileo Galilei. Edizione nazionale sotto gli auspicii di sua majestà il Re d'Italia. Vol. II. Firenze, 1891. Q.

JASTROW, PROFESSOR JOSEPH. The Natural History of Analogy. Address before the American Assoc. for the Advancement of Science, Aug. 1891. 1892. O.

JERSEY CITY PUBLIC LIBRARY. Library Record. Vol. I. 1891-92. O.

JOHNS HOPKINS UNIVERSITY: Class in Church History, 1890-1891.
Lecky, W. E. H. Rationalism in Europe. Revised edition. New York, 1889. 2 vols. D.
Seneca, Luc. Ann. Morals, edited by W. Clode. London, 1888. D.
Tozer, H. T. The Church and the Eastern Empire. New York. D.
Perry, G. A. History of the Reformation in England. New York. D.
Ward, A. W. The Counter-Reformation in England. New York. D.
Stephens, W. R. W. Hildebrand and His Times. New York. D.
Balzani, Ugo. The Popes and the Hohenstaufen. New York. D.
Symonds, J. A. Renaissance in Italy. 5 vols. New York. O.

JOHNSON, BRADLEY T. (Author). Life of Joseph E. Johnston. Baltimore, 1891. O.

JOHNSTON, DR. CHRISTOPHER, SR. The library of Dr. Johnston was bequeathed to the University. It consists of 736 volumes, 250 valuable pamphlets, and 230 illustrations and charts. (See *Johns Hopkins University Circulars, No.* 94).

JOHNSTON, DR. CHRISTOPHER, JR. Disraeli, Benjamin, Earl of Beaconsfield, in upwards of 100 cartoons from the collection of Mr. Punch. London, 1878. Q.

JONES, CHARLES EDGEWORTH. (Author). Political and Judicial Divisions of the Commonwealth of Georgia. Atlanta, 1892. O.

JORDAN, MRS. D. C. Thirty-one miscellaneous books and pamphlets.

KEELER, PROFESSOR JAMES E. Elementary Principles governing the Efficiency of Spectroscopes for Astronomical Purposes. O.
The Star Spectroscope of the Lick Observatory. O.

KINLEY, DAVID. Welsh, Alfred H. English Masterpiece Course. Chicago, 1887. D.
Peirce, James Mills. Three and Four Place Tables of Logarithmic and Trigonometric Functions. Boston, 1877. O.

KLEBS, E. (Author). Ueber die Heilung der Tuberkulose und die Biologie des Tuberkelbacillus. Wiesbaden, 1892. O.

KOHUT, REV. DR. A. Jewish Theological Seminary Association: Report. 1892.

KOOPMAN, A. L. (Author). Bibliography of George Perkins Marsh. Burlington, 1892. O.

LATROBE, HON. FERDINAND C. The Mayor's Message and Reports of the City Officers made to the City Council of Baltimore for the year 1891. Baltimore, 1892. 2 vols. O.

LEAVENWORTH PUBLISHING CO. Five volumes on Insurance topics. O. and D.

LEMOINE, É. (Author). Sur les transformations systématiques des formules relatives au triangle-transformation continue. Paris, 1891. Q.
Étude sur une nouvelle transformation dite transformation continue. Paris, 1892. Q.
Sur une transformation relative à la géométrie du triangle. Paris. O.
Trois théorèmes sur la géométrie du triangle. Paris. O.

LICK OBSERVATORY. Total Solar Eclipse, Dec. 1889. Sacramento, 1891. O.

LOCKE, HON. S. D. (Author). The Battle of Bennington should be called the Battle of Walloomsac. 1891. O.

D. LOTHROP CO. (Publishers). E. E. Hale. The Story of Massachusetts. Boston, 1888. D.
Maurice Thompson. The Story of Louisiana. Boston, 1888. D.
R. G. Thwaites. The Story of Wisconsin. Boston, 1890. D.
Alexander Black. The Story of Ohio. Boston, 1888. D.

LOUVAIN, UNIVERSITÉ CATHOLIQUE DE. Annuaire 1872 à 1892. 15 vols. Louvain. 16mo.
Schrijnen. Étude sur le phénomène de l'S mobile dans les langues classiques. 1891. O.
Liber memorialis, 1834-1884. Louvain, 1887. O.

MACKAY, A. H. (Superintendent of Education). Annual Report on the Public Schools of Nova Scotia. Halifax, 1892. O.

MACDONALD, ARTHUR. (Author). Genius and Insanity. Lewes, 1892. O.

MADRAS, GOVERNOR IN COUNCIL AT. Madras Meridian Circle Observations, 1868-1873. 2 vols. Madras, 1890-92. Q.

Results of the Meteorological Observations made at the Govt. Observatory, 1861-90. Madras, 1892. Q.

MADRID, OBSERVATORY OF. Resumen de las observaciones meteorológicas; durante el años de 1887-1889. 3 vols. Madrid, 1891. O.

MAIMONIDES LIBRARY, N. Y. Report of the Librarian. New York, 1891. O.

MARCHAND, J. (Author). Sur la rectification des arcs des courbes dites limaçons de Pascal. O.

MARYLAND HISTORICAL SOCIETY. Archives of Maryland, Vol. X. William Hand Browne, Editor. Baltimore, 1891. O.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND. Transactions Ninety-third Annual Session, held at Baltimore, April, 1891. O.

MASSACHUSETTS STATE LIBRARY. Reports and Catalogues. Boston, 1882. 2 vols. O.

Reports on the Custody and Condition of the Public Records. Boston. 3 vols. O.

MATHESON, EWING. (Author). Papers on Foreign Exchange. London, 1892. O.

MCATEE, REV. W. A. (Author). Must the Bible go? A Review of a decision of the Supreme Court of Wisconsin. Madison, 1890. O.

MCLAREN, DICE. Wyoming Experiment Station, Bulletin No. 5, 1892. O.

MERRIAM, C. HART. (Author). The Geographic Distribution of Life in North America. Washington, 1892. O.

MERRIMAN, MANSFIELD. (Author). Final Formulas for the Algebraic Solution of Quartic Equations. New York, 1892. O.

MEXICO, GOVERNMENT OF. Annales del Ministerio de Fomento de la Republica Mexicana, Tomo IX. México, 1891. O.

MICHIGAN PIONEER AND HISTORICAL SOCIETY. Collections and Researches. Vols. I-XVIII. Lansing, 1877-92. O.

MICHIGAN STATE LIBRARY. Early History of Michigan, with Biographies of State Officers, etc. Lansing, 1888. O.

The Semi-centennial of the Admission of the State of Michigan into the Union. Detroit, 1886. O.

MINNEAPOLIS PUBLIC LIBRARY. Annual Report. Minneapolis, 1892. O.

MINNESOTA HISTORICAL SOCIETY. Legislative Manual of the State of Minnesota. St. Paul, 1891. O.

MISSOURI BOTANICAL GARDEN. Annual Report. St. Louis, 1892. O.

MITCHELL, DR. S. WEIR. The Early History of Instrumental Precision in Medicine. New Haven, 1892. O.

MORISON, MRS. N. H. Memorial of Nathaniel Holmes Morison (1850-1890), First Provost of the Peabody Institute (1867-1890). Baltimore, 1891. O.

MORISON, MISS ALICE S. Alberti, F. von. Ueberblick über die Trias mit Berücksichtigung ihres Vorkommens in den Alpen. Stuttgart, 1864. O.

Cassino, S. E. The Scientist's International Directory. Boston, 1892. D.

Claus, C. Lehrbuch der Zoologie. Leipzig, 1885. O.

Fraas, O. Geognostische Beschreibung von Würtemberg, Baden und Hohenzollern. Text and Atlas. Stuttgart, 1882. O. and F.

Haas, H. J. Die Leitfossilien. Leipzig, 1887. O.

Hann, J. Handbuch der Klimatologie. Stuttgart, 1883. O.

Löwe, F. Ueber Thalbildung. Prag, 1884. O.

Norman, M. W. Popular Guide to the Geology of the Isle of Wight. Ventnor, 1887. O.

Oppel, A. Die Juraformation Englands, Frankreichs und des südwestlichen Deutschlands. Stuttgart, 1856-58. O.

Richthofen, Ferd. von. Führer für Forschungsreisende. Berlin, 1886. O.

Supan, A. Grundzüge der physischen Erdkunde. Leipzig, 1884. O.

Wiesener, J. Elemente der Anatomie und Physiologie der Pflanzen. Wien, 1885. O.

MOTT, L. F. (Author). Dante and Beatrice. New York, 1892. D.
MURPHY, JOHN, & CO. (Publishers). Education, to whom does it belong? By the Rev. Thomas Bouquillon. Baltimore, 1892. O.
NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin, 1891. O.
NEBRASKA STATE HISTORICAL SOCIETY. Transactions and Reports, Vols. III and IV. Lincoln, 1892. O.
NETTO, LADISLÁU. (Author). Le Muséum National de Rio-De-Janeiro et son influence sur les sciences naturelles au Brésil. Paris, 1889. O.
NEWARK, (N. J.), PUBLIC LIBRARY. Annual Report. Newark, 1892. O.
NEWTON FREE LIBRARY. Annual Report. 1892. O.
NEW BEDFORD (MASS.) FREE PUBLIC LIBRARY. Annual Report, 1892. O.
NEW ENGLAND HISTORIC GENEALOGICAL SOCIETY Proceedings at the Annual Meeting. Boston, 1892. O.
Rolls of Membership, 1844-1891. Boston, 1892. O.
NEW HAMPSHIRE STATE LIBRARY. Annual Report. Concord, 1891. O.
NEW JERSEY GEOLOGICAL SURVEY. Annual Reports of the State Geologist for 1890 and 1891. 2 vols. Trenton, 1891-92. O.
NEW JERSEY, SECRETARY OF STATE. New Jersey Archives. First series, Vols. XV and XVI. O.
NEW YORK ASSOCIATION OF THE BAR. Catalogue of the Library, 1892. O.
NEW YORK: GENERAL SOCIETY OF MECHANICS AND TRADESMEN. Annual Report. New York, 1892. O.
NEW YORK STATE LIBRARY. Hall, James. (Editor). Palaeontology. Vol. VI. Corals and Bryazoa. Vol. VII. Albany, 1887 and 1888. Q.
Annual Report of the Regents of the University, 1890. Albany, 1892. O.
Preliminary list of N. Y. Unionidae (New York State Museum). By W. B. Marshall. Albany, 1892. O.
NICARAGUA CANAL CONSTRUCTION COMPANY. The Interoceanic Canal of Nicaragua. New York, 1891. O.
NORTH CAROLINA, UNIVERSITY OF. Proceedings of the Alumni Association of the University at the Centennial Celebration, June 5, 1889. Raleigh, 1890. D.
NORWEGIAN NORTH-ATLANTIC EXPEDITION. Danielssen, D. C. Zoologi: Crinoida, Echinida. Christiania, 1892. F.
OHIO ARCHAEOLOGICAL AND HISTORICAL SOCIETY. Report, 1892. O.
OHIO MECHANICS INSTITUTE. Annual Report. Cincinnati, 1892. O.
OLTRAMARE, ANDRÉ. (Author). Étude sur l'épisode d'Aristée dans les Géorgiques de Vergile. Genève, 1892. D.
OPEN COURT PUBLISHING CO. Carus, P. The Soul of Man. Chicago, 1891. O.
Binet, A. The Psychic Life of Micro-Organisms. Chicago, 1889. D.
And four other volumes of their publications.
OSLER, PROF. WILLIAM. The Principles and Practice of Medicine. N.Y., 1892. O.
OTT, DR. ISAAC. (Author). The Modern Antipyretics; their Action in Health and Disease. Easton (Pa.), 1891. O.
OUDEMANS, DR. J. T. (Author). Die accessorischen Geschlechtsdrüsen der Säugethiore; vergleichend-anatomische Untersuchung. Haarlem, 1892. Q.
PEABODY INSTITUTE. Catalogue of the Library. 8 vols. Baltimore, 1883-92. Q.
Annual Report of the Provost. Baltimore, 1892. O.
PENNSYLVANIA, COLLEGE OF PHYSICIANS. Transactions. Third Series. Vol. 13. Philadelphia, 1891. O.
PENNSYLVANIA GEOLOGICAL SURVEY. Report on the Geology of the Counties of Union, Snyder, Mifflin and Juniata. Atlas of Anthracite Field. 4 vols. O.
Final Report; a summary description of the Geology of Pennsylvania. Vol. I. Harrisburg, 1892. O.
PENNSYLVANIA SOCIETY OF THE SONS OF THE REVOLUTION. Constitution of the Society, By-Laws, and Register. Philadelphia, 1891. O.
PENNSYLVANIA STATE LIBRARY. Seventeen bound volumes of official publications. Harrisburg, 1891-92. O.

PHILADELPHIA MERCANTILE LIBRARY. Annual Report. Philadelphia, 1892. O.

PHILLIPS, HENRY, JR. (Translator). [Through Pres. Gilman]. German Lyrics. Phila., 1892. O.

PILLING, JAMES CONSTANTINE. (Author). [Through Pres. Gilman]. Bibliography of the Algonquian Languages. Washington, 1891. Q.

POOLE, W. F. (Author). Columbus and the Finding of the New World. Chicago, 1892. D.

POPE, COL. ALBERT A. (Author). The Movement for Better Roads. An Address. Boston, 1892. D.

PORTER, HON. ROBERT P. (Author). The Eleventh Census. An Address before the American Statistical Association. New York, 1891. O.

PORTICI: SCUOLA SUPERIORE D'AGRICOLTURA. Annuario, Vol. VI, 1892. O.

PORTLAND (ME.) SOCIETY OF NATURAL HISTORY. Catalogue of Maine Plants. 2d edition. Portland, 1892. O.

POWELL, LYMAN P. Wilson, Woodrow. The State. Boston, 1890. D.

PRINCE, DR. J. DYNELEY. The gift of five hundred dollars for the purchase of books in Assyriology, Semitic Philology and Biblical Criticism. (See *Johns Hopkins University Circulars, No.* 98.)

PROVIDENCE (R. I.) RECORD COMMISSIONERS. The Early Records of the Town of Providence, Vol. I. Providence, 1892. Sq.-O.

First Report of the Record Commissioners relative to the Early Town Records. Providence, 1892. Sq.-O.

PROVIDENCE (R. I.) PUBLIC LIBRARY. Annual Report. Providence, 1892. O.

PUTNAM'S SONS, G. P. (Publishers). Talleyrand, Prince de. Memoirs, edited by the Duc de Broglie. Translated. Vols. I and II. New York, 1891. O.

Abbott, Evelyn. Pericles and the Golden Age of Athens. New York, 1891. D.

Holder, C. F. Charles Darwin. His Life and Work. New York, 1891. D.

RADCLIFFE OBSERVATORY (OXFORD). Results of Astronomical and Meteorological Observations made in the year 1887. Vol. XLV. Oxford, 1891. O.

RAMSAY, PROFESSOR WILLIAM. (Author). Universities Abroad. (Reprint from the *Times*, June 8, 9, 1892). O.

REDDING, J., M. D. (Author). Physiology, its Science and Philosophy. New Castle, 1891. O.

REMSEN, PROFESSOR IRA. (Author). Principles of Theoretical Chemistry. 4th edition. Philadelphia, 1892. O.

Iago, W. Inorganic Chemistry (theoretical and practical). London, 1890. O.

Ostwald, W. Outlines of General Chemistry. Trans. Boston, 1886. D.

Massachusetts State Board of Health. Experimental Investigations upon the Purification of Sewage. Boston, 1890. O. And Annual Report, 1891. O.

RHAWN, WILLIAM H. (Publisher). Sidney Sherwood. Syllabus of Lectures on the History and Theory of Money. Phila., 1892. O.

RIVERS, ALBERT W. Rivers, William J. Sketch of the History of South Carolina to the Close of the Proprietary Government. Charleston, 1856. O.

Tuomey and Holmes' Fossils of South Carolina (in 15 numbers). Charleston, 1855. Q.

Holmes' Post Pleiocene Fossils of South Carolina (in 15 numbers). Charleston, 1858. Q.

Collections of the Historical Society of South Carolina. Vol. II. Charleston. O.

A Chapter in the Early History of South Carolina, by W. J. Rivers. Charleston, 1874. O.

ROBB, HON. JOHN A. (Register of the City of Baltimore). Annual Reports of the Register and the Commissioners of Finance of Baltimore, Dec. 31, 1891. Baltimore, 1892. O.

ROBINSON, JOHN. (Author). Our Trees. A popular account of the trees in the streets and gardens of Salem, Mass., etc. Salem, 1890. O.

RUNKLE, J. A. (Author). The Cheap and Easy Degree. 1892. O.

RUSSELL, ISRAEL C. (Author). Three pamphlets on Mt. St. Elias and the Alaskan Glaciers. O.

SAGE, B. J. (Author). The Republic of Republics. New York, 1892. O.

SALEM (MASS.) PUBLIC LIBRARY. Annual Report. Salem, Mass., 1892. O.

SAN FERNANDO, SPAIN: INSTITUTO Y OBSERVATORIO DE MARINA. Almanaque Nautico para 1893. Madrid, 1891. O.

SAUSSURE, HENRI DE. (Editor). Saussure, H.-B. de. Observations météorologiques faites au Col du Géant du 5 au 18 Juillet 1788. Genève, 1891. Q.

SCHAIBLE, CHARLES HENRY. (Author). The State and Education. London, 1884. O.

SCHOENLE, DR. FRED. L. (Author). Diodor-Studien. Berlin, 1891. O.

SCHUR, PROFESSOR W. Göttingen Stern-Catalog für 1860 nach Beobachtungen von W. Klinkerfues. Göttingen, 1891. Q.

SCOTLAND FISHERY BOARD. Tenth Annual Report, 1891. Edinburgh, 1892. O.

SCOTT, PRES. AUSTIN. Inauguration of President Scott, Rutgers College, Feb. 4, 1891. New Brunswick, 1891. O.

Neilson, James. Address commemorative of Professor George H. Cook. 1891. O.

SCRIPTURE, E. W. (Author). Education as a Science. 1892. O.

Psychological Notes. 1892. O.

SHARP, G. M. (Author). American Bar Association. Report of the Committee on Legal Education. 1892. O.

SHAW, W. B. (Author). Social and Economic Legislation of the States in 1890. (Reprints of several articles.)

SHEFLOE, DR. J. S. Ilvisaker, J. T. The Norwegian Luther-College. Decorah, 1890. D.

SHORT, CHARLES LANCASTER. (Author). Memoir of the life of Professor Charles Short. 1892. Q.

SIEMENS, W. VON. Autograph letter of Professor Gauss to A. Olbers, 20 Nov., 1833.

SLATER, WILLIAM A. The remainder of the gift of two thousand dollars from Mr. Slater has been expended in the purchase of 154 volumes of Kürschner's Deutsche Nationallitteratur and 51 volumes of Les Grands Écrivains de la France.

SMITH, ERWIN F. (Author). The Chemistry of Peach Yellows. D.

SMITH, JOHN C. (Author). Questions in Mathematics. Brooklyn, 1889. D.

SMITH, JOHN DONNELL. (Editor). Enumeratio plantarum Quatemalensium imprimis a H. de Tuerkheim collectarum quas edidit J. D. Smith, Vols. I and II. Oquawkae, 1889-91. O.

SMITHSONIAN INSTITUTION. Shakespeare, E. O. Report on Cholera in Europe and India. Washington, 1890. Q.

Langley, S. P. Experiments in Aerodynamics. Washington, 1891. Q.

U. S. National Museum. 4 vols. and a number of pamphlets.

Bureau of Ethnology. 2 vols. and a number of pamphlets.

Publications of the Institution. 5 vols. and number of pamphlets.

SNIDER, J. D. (Author). Homer in Chios, an Epopee. St. Louis, 1891. D.

STANFORD, E. Civil Service Commission: Open Competition for Admission to the Royal Military College. London, 1891. O.

STEINMANN, G. (Author). Ueber seine Reisen in Süd-America. Berlin, 1885. O.

Sulla età del Calcare Appenninico di Capri. Roma, 1889. O.

STOKVIS, B. J. (Author). P. C. Donders, 1818-1889. (Biography). Amsterdam, 1891. O.

ST. LOUIS MERCANTILE LIBRARY ASSOCIATION. Annual Report. 1892. O.

SUNSET CLUB OF CHICAGO. Echoes of the Sunset Club. Papers and addresses before the Sunset Club. Chicago, 1891. O.

SWIFT, F. J. (Editor). A Tribute to T. W. Dwight, presented on his resignation from the wardenship of the Columbia College Law School. 1892. O.

SWIFT, M. I. (Author). Problems of the New Life. Ashtabula, O. 1891. O.

TAKAKI, KANEHIRO. Report of the Health of the Imperial Japanese Navy. Tokyo, 1891. O.

TANAKA, I. I. (Librarian, Tokyo Library). Three volumes of Educational Reports and Statements. (Japan). Tokyo, 1891-92. O.

TEXAS GEOLOGICAL SURVEY. Two volumes of Reports and two numbers of Bulletins. Austin, Texas, 1890-92. O.

THOMAS CRANE PUBLIC LIBRARY (Quincy, Mass.). Catalogues and Report. 2 vols. Boston, 1892. O.

THOMPSON, PRESIDENT W. O. Addresses, etc., at the Inauguration of W. O. Thompson, D. D., as President of Miami University. Oxford (Ohio), 1891. O.

THWAITES, REUBEN G. First and Second Annual Reports of the State Historical Society of Wisconsin. Madison, 1855-56. O.

Catalogue of the Wisconsin State Historical Society, Vols. VI and VII (1881-84, 1884-87). Madison, 1885 and 1888. O.

TRELEASE, PROFESSOR WILLIAM. (Author). The Species of Rumex occurring north of Mexico. 1892. O.

Detail Illustrations of Yucca and Description of Agave Engelmanni, 1892. O.

UNITED STATES GOVERNMENT PUBLICATIONS.

The University is indebted, as in previous years, for many and valuable gifts from the several governmental departments in Washington. In addition to a very large number of unbound books and pamphlets, the following should be specially acknowledged:

Department of Agriculture, including the Weather Bureau. 13 vols.

Department of the Interior, including the Geological Survey and Bureau of Education. 19 vols.

U. S. Coast and Geodetic Survey. 3 vols. and a number of maps.

Commission of Fish and Fisheries. 3 vols.

Interstate Commerce Commission. 3 vols.

Department of Labor. 2 vols.

Navy Department, including the Naval Observatory. 25 vols.

Department of State, including the Bureau of American Republics. 60 vols.

Surgeon-General's Office: Index-Catalogue of the Library, Vols. XII and XIII.

Treasury Department. 10 vols.

War Department. 29 vols.

Post-Office Department. 2 vols.

U. S. Senate. 12 vols.

U. S. House of Representatives. 30 vols.

VAN BIBBER, DR. W. C. (Author). The Climate of the Greater Piedmont and Mountainous Regions of the Southern United States. 1891. O.

VERMONT STATE LIBRARY. Eleven volumes of official publications. O.

VERY, F. W. (Author). Prize essay on the Distribution of the Moon's Heat. The Hague, 1891. O.

WASHINGTON AGRICULTURAL EXPERIMENT STATION. Bulletins and Announcements. Olympia, 1892. O.

WEEKS, PROFESSOR STEPHEN B. (Author). The Lost Colony of Roanoke, its Fate and Survival. 1891. O.

The History of the Press in North Carolina. 1891. O.

WHEELER, HORACE L. (Author). Christianity and Life. A sermon. Burlington, Vt., 1892. O.

WHIPPLE, STEPHEN M. (Publisher). Miller, O. D. Har-Moad, or the Mountain of the Assembly. North Adams, Mass., 1892. O.

WHITE, E. A. (Secretary of State of N. C.). The Colonial Records of North Carolina. 10 vols. Raleigh, 1886-90. Q.

WHITE, FRANCIS. M. T. Ciceronis orationum pars tertia. Rothomagi, 1619.

WHITE, JOHN S. Addresses at the dedication of the new building of the Berkeley School. New York, 1891. O.

WHITING, H. (Author). A Short Course of Experiments in Physical Measurement. Vols. III and IV. Cambridge, 1891. O.

WHITMAN, PRESIDENT B. L. Ideals in Education. Inaugural address as President of Colby University. Portland, Me., 1892. O.

WHITNEY, PROFESSOR MILTON. (Author). Soil Investigations. Annapolis, 1892. O.

WILDE, H. (Author). On the Causes of the Phenomena of Terrestrial Magnetism, etc. London, 1890. Q.

WILHELM, L. W. The Berkshire Jubilee, Pittsfield, Mass., Aug. 1844. Albany, 1845. O.

Raymond, Daniel. The Elements of Political Economy. Baltimore, 1823. 2 vols. O.

WILKENS, F. H. (Author). Zum hochallemannischen Konsonantismus der althochdeutschen Zeit. Leipzig, 1891. O.

WILLIAMS, DR. G. H. Woodward, S. P. A Manual of the Mollusca. 3d edition. London, 1875. D.

Chenu, J. G. Manuel de Conchyliologie et de Paléontologie conchyliologique. 2 vols. Paris, 1859-1862. O.

Guide Book for the Meeting of Institute of Mining Engineers. Baltimore, 1892. D.

WILLIAMS & NORGATE. (Publishers, London, Eng.). Harnack, Axel. An Introduction to the Study of the Elements of the Differential and Integral Calculus. Translation. London, 1891. O.

WILSON, J. McC. (Author). The Fate of the Leaf. Baltimore, 1891. D.

WINCHELL, PROFESSOR N. H. The Geological and Natural History Survey of Minnesota. Reports for the years 1886-1890. St. Paul, 1887-1892. 5 vols. O.

WISCONSIN ACADEMY OF SCIENCES. Transactions, Vol. VIII., 1888-1891. Madison, 1892. O.

WITTON, H. B. (Author). Five pamphlets. Hamilton, Canada, 1881-91. O.

WORCESTER (MASS.) FREE PUBLIC LIBRARY. Annual Report, 1892. O.

YONKERS HISTORICAL ASSOCIATION. Atkins, Hon. T. A. Indian Wars and the Uprising of 1655. Yonkers, N. Y., 1892. O.

# AMENDMENT APPROVED APRIL 4, 1892, TO THE ACT OF INCORPORATION OF THE JOHNS HOPKINS UNIVERSITY.

An Act to authorize the Trustees of the Johns Hopkins University, a corporation incorporated under the General Laws of Maryland, to make and constitute the President for the time being of its University and each of his successors in said office, during their respective terms thereof, a member ex-officio of the Board of Trustees of the Johns Hopkins University, in addition to the number of twelve trustees of said University now authorized by law.

*Section* 1. Be it enacted by the General Assembly of Maryland, that the Trustees of the Johns Hopkins University, a corporation duly incorporated by certificate under the General Laws of Maryland, be, and they are hereby, authorized and empowered to make and constitute the President for the time being of the Johns Hopkins University and each of his successors in said office, during their respective terms thereof, a member *ex-officio* of said Board of Trustees in addition to the number of twelve Trustees of said University now authorized by law.

*Section* 2. And be it enacted that this Act shall take effect from the date of its passage.

*Approved*, April 4, 1892.

# IN MEMORY OF FRANCIS T. KING.

Minute adopted at a meeting of the Trustees and Officers of the Johns Hopkins University and the Johns Hopkins Hospital, December 19, 1892.

"Those who are here assembled as representatives of the Johns Hopkins Hospital and of the Johns Hopkins University have heard, with great sorrow, the announcement of the death of Francis T. King, the late President of the Board of Hospital Trustees and one of the University Trustees.

"His counsel and opinions largely influenced Johns Hopkins to procure the incorporation of the Johns Hopkins Hospital, and to set apart, by his will, a large portion of his estate for its endowment.

"He was made President of the Hospital Board when it was first organized, at the request of our founder, and he remained President of the Board from that period until his death.

"He was a member of the University Board of Trustees from its organization until yesterday.

"We are witnesses of his unselfish devotion to the duties of these trusts from the day he assumed them until the last day of his life.

"While this hospital building in which we are assembled is an enduring monument to the charity of the founder, it will also perpetuate the memory of the late President of the Hospital Board; for all men know that the growth and development of this Hospital have been largely due to the patient and untiring care with which he, from the beginning, watched over all its interests and concerns.

"He was our personal and familiar friend. He was endeared to all engaged in the service of the Hospital and University by his unceasing courtesy, Christian life, and earnest desire to promote the usefulness and welfare of all who were brought into contact with him.

"We desire to express to his family our deep sympathy with their loss. They have, however, the consolation of knowing that he closed a well-spent life in the evening of his days, honored and respected, not only in this community, but in the many sections of the country to which his zeal in good works had extended his influence.

"This minute shall be entered among the proceedings of the Hospital Trustees and of the University Trustees. It shall be published in such newspapers as the chairman of this meeting may select, and a copy of it, attested by the chairman and secretary of this meeting, shall be sent to the family of the deceased."

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[Issued December 21, 1892.]

EIGHTEENTH

# ANNUAL REPORT

OF THE PRESIDENT OF THE

# Johns Hopkins University

Baltimore, Maryland

1893

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BALTIMORE
THE JOHNS HOPKINS PRESS
1893

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**1893.**

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***Treasurer:***

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# REPORT.

To the Trustees of the Johns Hopkins University:—

*Gentlemen:*

I have the honor to present my Eighteenth Annual Report as President of the Johns Hopkins University.

The academic staff numbered during the year seventy-two teachers, including eight physicians and surgeons attached to the Johns Hopkins Hospital. The number of students enrolled was five hundred and fifty-one, of whom two hundred and sixty-six were residents of Maryland, and two hundred and sixty-five came here from thirty-nine other States of the Union, and twenty from foreign countries. Among the students were three hundred and forty-seven already graduated, coming from one hundred and forty-nine colleges and universities; there were one hundred and thirty-three matriculates (or candidates for the degree of Bachelor of Arts); and there were seventy-one admitted as special students, to pursue courses of study for which they seemed fitted, without reference to graduation. The degree of Bachelor of Arts was conferred upon forty candidates, and twenty-eight candidates were promoted to the degree of Doctor of Philosophy.*

* The statistics have been prepared, as in former years, by the Registrar, Mr. T. R. Ball.

The following table indicates the enrolment of students in each year since the University was opened in the autumn of 1876:

| | Total Enrolled. | Graduates, (incl. Fellows.) | Matriculates. | Non-Matriculates. |
|---|---|---|---|---|
| 1876–77 | 89 | 54 | 12 | 23 |
| 1877–78 | 104 | 58 | 24 | 22 |
| 1878–79 | 123 | 63 | 25 | 35 |
| 1879–80 | 159 | 79 | 32 | 48 |
| 1880–81 | 176 | 102 | 37 | 37 |
| 1881–82 | 175 | 99 | 45 | 31 |
| 1882–83 | 204 | 125 | 49 | 30 |
| 1883–84 | 249 | 159 | 53 | 37 |
| 1884–85 | 290 | 174 | 69 | 47 |
| 1885–86 | 314 | 184 | 96 | 34 |
| 1886–87 | 378 | 228 | 108 | 42 |
| 1887–88 | 420 | 231 | 127 | 62 |
| 1888–89 | 394 | 216 | 129 | 49 |
| 1889–90 | 404 | 229 | 130 | 45 |
| 1890–91 | 468 | 276 | 141 | 51 |
| 1891–92 | 547 | 337 | 140 | 70 |
| 1892–93 | 551 | 347 | 133 | 71 |

During seventeen years, two thousand two hundred and forty-six individuals have been enrolled as students, of whom nine hundred and seventy-three are registered as from Maryland (including seven hundred and eighty-seven from Baltimore), and twelve hundred and seventy-three from fifty-six other States and countries. Twelve hundred and ninety-nine persons entered as graduate students, and nine hundred and forty-seven entered as undergraduates. Of the undergraduates, two hundred and twenty have continued as graduate students, many of them proceeding to the degree of Doctor of Philosophy. It thus appears that fifteen hundred and nineteen persons have followed graduate studies here.

The following table indicates the geographical distribution of the students each year since the opening, as shown by the Annual Registers:

| | *Of Md.* | *Not of Md.* | | *Of Md.* | *Not of Md.* |
|---|---|---|---|---|---|
| 1876–77 | 59 | 30 | 1885–86 | 130 | 184 |
| 1877–78 | 71 | 33 | 1886–87 | 162 | 216 |
| 1878–79 | 76 | 47 | 1887–88 | 199 | 221 |
| 1879–80 | 97 | 62 | 1888–89 | 183 | 211 |
| 1880–81 | 95 | 81 | 1889–90 | 215 | 189 |
| 1881–82 | 97 | 78 | 1890–91 | 235 | 233 |
| 1882–83 | 106 | 98 | 1891–92 | 273 | 274 |
| 1883–84 | 123 | 126 | 1892–93 | 266 | 285 |
| 1884–85 | 130 | 160 | | | |

The attendance upon the courses given in some of the principal subjects has been as follows during the last five years :—

| | 1888–89. | 1889–90. | 1890–91. | 1891–92. | 1892–93. |
|---|---|---|---|---|---|
| Mathematics and Astronomy, | 82 | 83 | 85 | 98 | 118 |
| Physics, | 74 | 85 | 98 | 138 | 145 |
| Chemistry, | 124 | 137 | 114 | 135 | 127 |
| Mineralogy and Geology, | 38 | 33 | 30 | 27 | 28 |
| Biology, | 81 | 64 | 59 | 72 | 58 |
| Pathology, | 24 | 34 | 40 | 44 | 57 |
| Greek, | 58 | 55 | 61 | 59 | 49 |
| Latin, | 69 | 69 | 70 | 73 | 77 |
| Sanskrit, etc., | 39 | 38 | 35 | 46 | 41 |
| Semitic Languages, | 43 | 35 | 26 | 22 | 18 |
| German, | 119 | 116 | 104 | 121 | 110 |
| French, Italian, etc., | 69 | 88 | 84 | 91 | 80 |
| English, etc., | 94 | 90 | 84 | 94 | 84 |
| History and Political Science, | 162 | 142 | 143 | 165 | 192 |
| Psychology, Ethics, etc., | 48 | 60 | 72 | 61 | 58 |

Since degrees were first conferred, in 1878, three hundred and eighty-one persons have attained the Baccalaureate degree, and two hundred and seventy-seven have been advanced to

the degree of Doctor of Philosophy, as appears from the following table,—the whole number of individuals graduated being six hundred and eight:

| | *B. A.* | *Ph. D.* | | *B. A.* | *Ph. D.* |
|---|---|---|---|---|---|
| 1877-78 | 0 | 4 | 1885-86 | 31 | 17 |
| 1878-79 | 3 | 6 | 1886-87 | 24 | 20 |
| 1879-80 | 16 | 5 | 1887-88 | 34 | 27 |
| 1880-81 | 12 | 9 | 1888-89 | 36 | 20 |
| 1881-82 | 15 | 9 | 1889-90 | 37 | 33 |
| 1882-83 | 10 | 6 | 1890-91 | 50 | 28 |
| 1883-84 | 23 | 15 | 1891-92 | 41 | 37 |
| 1884-85 | 9 | 13 | 1892-93 | 40 | 28 |
| | | | | 381 | 277 |

The year that is closed is noteworthy for many important events. The academic building, which the Trustees decided to construct from the funds bequeathed by the late John W. McCoy, has made good progress and will doubtless be ready to be occupied in the course of the next academic year. A description of the building may be deferred until it is completed. The friends of this university at a distance may now be interested in a general statement that this hall is intended to supply places for instruction in ancient and modern languages and literature, in history, political economy and philosophy, equal to those hitherto provided for instruction in chemistry, physics and biology. The building will be one hundred and seventy-five feet long, one hundred feet wide, and four stories high. On the ground floor will be a large assembly room, adapted to examinations, a smaller hall (the uses of which will resemble those to which Hopkins hall has been devoted), and suitable offices for the President and Trustees. The second and third stories will be divided into class-rooms and studies for Professors. The Library will be placed on the fourth floor and will be well lighted from the roof.

Elevators will render access easy. Levering Hall has been successfully moved to the site at the corner of Eutaw and Little Ross Streets and will be connected with the new building by passages on the first and second floors.

It is not likely that there will ever be a time in the history of the university when a building like this will not be required for the instruction of literary classes, but as a home for the library and as a place for public lectures, its use, we hope, will be but temporary. Should the authorities of the city decide to open Centre street from Howard to Eutaw street, there will be an excellent place for a public building on the site where the administration building now stands. It should contain an auditorium for not less than a thousand hearers, administrative rooms for the Treasurer, the Registrar, and the publication agency, and also halls fitted to receive collections which have been or may be made in geology, mineralogy, zoölogy, botany, ethnology, archæology, and bibliography. Such a building would form an excellent means of communication between the university and the public. It would be a suitable place not only for academic celebrations, but also for lectures and concerts. It would attract the visits of citizens and strangers. I cannot but think that some citizen, when he sees what an admirable use has been made of the gift of Mr. McCoy, will be willing to add another building to the group now devoted to the work of the university.

In other places, the gift of academic buildings has been a favorite mode of promoting education. The admirable structures erected within the last few years at Harvard, Yale, Princeton, Cornell, and Chicago, have nearly all been the gifts of generous individuals. Why should not the like disposition be shown in Baltimore?

Public announcement was made on the 22d of February, 1893, that the Johns Hopkins Medical School would be opened in the next October. The Trustees were enabled to take this step forward in consequence of the liberality of Miss Mary Elizabeth Garrett, who offered to contribute to the capital of the school the sum of $306,977. The Trustees had previously received from ladies in various parts of the country unsolicited gifts amounting (with the accrued interest) to $119,000, for the same object. All these contributions were made on the condition that women and men should be received to the medical school upon the same terms. These generous gifts, augmented by the Baxley fund, received some years ago, and its accretions, together with the cost of a lot of land near to the grounds of the Hospital, purchased many years ago from the general funds of the university, were considered by the Trustees to constitute the sum of $500,000,—which they had fixed as the minimum endowment of the school. As this development of our work is of such great importance, the papers pertaining to it are printed in the appendix.

The school thus established has certain noteworthy advantages. It is not an 'outside' department of the University,—a grafted branch,—but an integral part of the institution as it was projected by Mr. Hopkins. The relations to the Hospital are of the most friendly and coöperative character. "In all your arrangements in relation to the Hospital (these are the words of the founder), you will bear constantly in mind that it is my wish and purpose that the institution shall ultimately form a part of the Medical School of that University for which I have made ample provision by my will." The combined endowments of the University, the Hospital, and the Medical School, are sufficient to make the maintenance of the School, so far at least as salaries are concerned, independent

of the income that may be received from tuition fees. All this points to a school where the effort may be made to provide the highest instruction in the Medical Sciences, that can anywhere be given.

The question of the admission of women was determined when the Trustees accepted in the month of October, 1890, the fund contributed and collected by a committee of ladies who were deeply interested in securing for their sex the best possible opportunities for medical instruction. By far the largest part of this fund came from Baltimore (Miss Garrett $47,000, others $21,000),—but there were also many liberal gifts from Boston (Miss Loring $10,000, others $10,000), Philadelphia ($8000), New York ($5500), Washington ($2100), Springfield, Mass. ($600); and even from remote places, Chicago ($1150), St. Louis ($550), Wisconsin ($700), California ($2100).

Miss Garrett's recent munificence has crowned the previous efforts and projects respecting the Johns Hopkins Medical School. The Trustees have constituted the Medical Faculty, by appointing additional professors and assistants and by arranging for the requisite laboratory instruction, and the Medical Faculty has matured and set forth the plans of instruction. The newly appointed professors are these,—Franklin P. Mall, M. D., lately of the University of Chicago, and formerly a Fellow of this University, Professor of Anatomy; John J. Abel, M. D., lately of the University of Michigan, and formerly a graduate student of Johns Hopkins, Professor of Pharmacology; and William H. Howell, Ph. D., M. D., lately of Harvard University and formerly Associate Professor of Biology among us, Professor of Physiology.

Ever since the opening of the University, the expectation has been that the Medical School, when established, should be

planned for the reception of a class of students, who should, at their admission, in addition to other evidence of a liberal education, exhibit an acquaintance with those branches of natural science which are regarded as fitting preliminaries to medical study, namely, Physics, Chemistry, and Biology, with the ability to read ordinary French and German prose. Accordingly, these requirements for admission have now been prescribed. The course of subsequent professional study will continue through four years, leading to the degree of Doctor of Medicine. Prominence will be given to laboratory methods of instruction in those subjects which permit it, and in other subjects adequate clinical facilities are assured in the Hospital.

For the temporary accommodation of the Medical School rooms have been provided at the Hospital, by the enlargement of the pathological building,—so that it is now a structure of four stories containing convenient rooms for anatomy and pharmacology as well as for pathology. Physiology is provided for in the biological laboratory. The arrangements, although sufficient for the present, will soon, it is believed, be inadequate. Ample space for the new buildings has been secured by the University, on a site quite near the Hospital. A central building, with rooms for the library and museums, and consultation rooms, a place of assembly for medical congresses and societies, should be a dignified and ornamental structure, standing perhaps on the corner of Monument and Wolfe streets. In less conspicuous positions, the plain structures requisite for laboratories may be so placed that enlargements when called for may be readily made. These are our first want.

The school upon which so much thought has been bestowed opened October 2, 1893, with sixteen scholars, three of them ladies,—candidates for the degree of M. D. The attendance is not large, but it includes graduates of Harvard, Yale, and

other strong institutions, and is regarded by the Faculty as highly satisfactory. There are also, as heretofore, a number of physicians pursuing graduate studies provided by members of the Hospital Staff.

It is with great regret that the university loses the efficient services of one who has been connected with the work since its beginning. Professor H. Newell Martin, who has held the office of Professor of Biology since 1876, felt constrained, on account of serious and prolonged ill health, to tender his resignation on the seventeenth of April. His services in organizing the department of Biology were of the highest value, and his success as a teacher, lecturer, and writer was acknowledged throughout the land. One mark of his ability may be seen in the number of young men trained by him who have themselves become Professors of Biology in other distinguished seats of learning.

The importance of providing more instruction in English for the undergraduate students of the university has received much attention during the year. The discussion resulted in calling Dr. Herbert Eveleth Greene, a graduate of Harvard (A. B., 1881; Ph. D., 1888) recently a Professor in Wells College, New York, to be Collegiate Professor of English. He has accepted the invitation and enters upon his new duties at the beginning of the academic year.

The following appointments and promotions have been made since the last report was issued:

To be Professors:

JOHN J. ABEL, M. D., *Pharmacology.*
JAMES W. BRIGHT, Ph. D., *English Philology.*
WILLIAM HAND BROWNE, M. D., *English Literature.*
HERBERT E. GREENE, Ph. D., *English Literature.*
WILLIAM H. HOWELL, M. D., Ph. D., *Physiology.*
FRANKLIN P. MALL, M. D., *Anatomy.*

To be Associate Professors:

JOSEPH S. AMES, Ph. D., *Physics.*
MARION D. LEARNED, Ph. D., *German.*
KIRBY F. SMITH, Ph. D., *Latin.*

To be Associates:

B. MEADE BOLTON, M. D., (*Acting*) *Bacteriology and Hygiene.*
JOHN M. T. FINNEY, M. D., *Surgery.*
SIMON FLEXNER, M. D., *Pathology.*
JOHN P. LOTSY, Ph. D., *Botany.*
ADOLF RAMBEAU, Ph. D., *Romance Languages.*
WYATT W. RANDALL, Ph. D., *Chemistry.*
HUNTER ROBB, M. D., *Gynecology.*
BERT J. VOS, Ph. D., *German.*
J. WHITRIDGE WILLIAMS, M. D., *Obstetrics.*

To be Lecturer:

BOLLING W. BARTON, M. D., *Botany.*

To be Instructors and Assistants (not including the Student-Assistants):

THOMAS B. ALDRICH, Ph. D., *Physiological Chemistry.*
HERBERT G. GERR, B. S., *Mechanical Engineering.*
J. ELLIOTT GILPIN, Ph. D., *Chemistry.*
GEORGE KRIEHN, Ph. D., *History.*
JERE W. LORD, M. D., *Anatomy.*
L. EMIL MENGER, Ph. D., *Romance Languages.*

The Columbian Celebration in Chicago has incidentally affected the work of this university. At the opening of the academic session an address commemorative of Columbus was delivered in the hall of the Peabody Institute before the officers, the students, and their friends by Professor H. B. Adams. Not long afterwards, the Commissioners of the State of Maryland, appointed for the purpose of making an ex-

hibit of the resources of Maryland at Chicago, asked the University to prepare for them a book in which the natural characteristics of the state, its mines, its fisheries and its farms, should be set forth, and its educational, philanthropic and political institutions should be described.

A committee of the faculty was appointed to undertake this work, consisting of Messrs. G. H. Williams (Chairman), Wm. Hand Browne, W. B. Clark, H. B. Adams, N. Murray, W. K. Brooks, Milton Whitney, and the President of the University, *ex officio*. They have produced a volume of several hundred pages, quarto, which presents a comprehensive view of the natural and political condition of the state. The geological map, edited by Professor Williams, with the co-operation of the U. S. Geological and Coast Surveys, is one of the most valuable parts of the work.

An exhibit of the publications of the University, of certain scientific instruments here devised, and of other objects illustrative of our work was placed in the educational section of the department of Liberal Arts in Chicago.

There have been three assemblies of the University during the year. The first was held in the Peabody Institute at the opening of the autumnal session, when a discourse (already mentioned), commemorative of Christopher Columbus and the Discovery of America, was delivered by Professor Adams.

The foundation of the University was celebrated on Commemoration Day, February 22, 1893, by a second assembly, likewise held in the Peabody Institute. An announcement (already referred to) was then made of the prospective organization of the medical school, and the principal address of the day was delivered by Hon. James B. Angell, LL. D., President of the University of Michigan. In this discourse President Angell, with great felicity, expounded the principles which

have governed the western states in founding and supporting universities and he suggested many lessons which the citizens of the eastern states might study. His oration (which was printed in No. 104 of the *University Circulars*), is of permanent value. Two candidates were admitted to the degree of Doctor of Philosophy.

The third assembly was held on Commencement Day, June 13th, in the Academy of Music. After an announcement, given elsewhere, by Dr. Welch of the plans of the Medical School, a statement respecting recent studies of the State of Maryland was presented by Professor Williams. The candidates for degrees were then addressed by the President of the University, after which, with appropriate remarks, Professor Remsen presented the candidates for the degree of Doctor of Philosophy, and Dr. Griffin the candidates for the degree of Bachelor of Arts. Forty young men were graduated as Bachelors of Arts, twenty-six as Doctors of Philosophy, and fifteen received certificates of proficiency in Electrical Engineering. The candidates for degrees came forward in academic gowns.

The third course of lectures on the Percy Graeme Turnbull memorial foundation was delivered by Professor Robert Yelverton Tyrrell, Litt. D., LL. D., Fellow of Trinity College and Regius Professor of Greek in the University of Dublin. His principal subject was the Growth and Influence of Latin Poetry, and the eight lectures were devoted to the following themes: Introduction: A General View of Latin Poetry; Early Latin Poetry, especially the Drama; Lucretius and Epicureanism; Catullus and the Transition to the Augustan Age; Virgil; Horace; Satire: Persius and Juvenal; Poetry of the Decline.

During his residence in Baltimore, Professor Tyrrell was suffering from ill health, but with great resolution he delivered

the entire course of lectures which he had prepared for this foundation; and he subsequently repeated several of them by invitation in Richmond College, Va., Columbia College, New York, and the University of Chicago. These lectures were most highly appreciated by large assemblies of professors, students, and other cultivated gentlemen and ladies.

The fourth course of lectures before the Young Men's Christian Association, provided by Mr. Eugene Levering, was delivered by the Rev. W. R. Huntington, D. D., of Grace Church, New York. His subject was the Four Monosyllables of Religion: Light, Life, Law, Love.

A course of lectures on the Donovan foundation was given by Professor F. B. Gummere, of Haverford College, Pa. His subjects were: Poetry of the Schools: Characteristics and Tendencies; Poetry of the People: The Question of Popular Origin; A Century of Criticism; Who Composes a Popular Ballad; Poetry of the People and Poetry of the Schools.

Two courses of lectures on Education were delivered in the physical laboratory on successive Saturdays in the months of January, February, and March. The room was filled by an attentive audience chiefly composed of graduate students.

The first of these courses was given by Hon. W. T. Harris, LL. D., U. S. Commissioner of Education, whose principal subjects were: The Literature of the History of Education; Problems peculiar to American Education; Opposition between Pestalozzi and Herbart as Educational Leaders; Rousseau and the Return to Nature; Herbert Spencer, and what knowledge is of most worth; Revolutionary Protest.

The second course was delivered by Dr. James MacAlister, President of the Drexel Institute in Philadelphia. His subject was the History and Institutes of Education, and he treated particularly of The Renaissance in its Relation to Education;

The English Renaissance and the Humanistic Movement in England; The History of Popular Education in England and America; The German System of State Education; Education in France since the Revolution.

An unusually large number of lectures were given by non-resident lecturers to the students in historical and political science, namely: Hon. John A. Kasson, on the History of European Diplomacy; Dr. James Schouler, on American Constitutional Law; Dr. E. R. L. Gould, on Current Social Problems in Europe; Dr. Frederick Bancroft, on American Diplomatic History; Professor H. C. Adams, on Finance; Professor J. B. Clark, on Political Economy; Professor Simon Newcomb, on the Mathematical Method of Economics; Professor A. G. Warner, on Charities and their Administration.

While it has not been possible in the past to organize advanced courses of instruction in Botany, the needs of this department of natural science have not been lost sight of, and they have been considered in the purchase of books and in the collection of museum specimens.

The library of the Biological laboratory receives the current numbers of the most important journals of research in structural and physiological botany. Our museum contains the herbarium of local plants collected by the Naturalists' Field Club, as well as the Schimper collection of European phanerogams and the Fitzgerald collection of mosses. Our proximity to salt water puts within our reach good collecting grounds for marine algae, near enough to our laboratory to be available for the study of the reproduction of algae.

Through the appointment of Dr. J. P. Lotsy as Associate in Botany, investigations can now be carried on. He is also able to guide the work of students in the library and the laboratory, and to offer to graduate students advanced courses

in vegetable histology and in morphological botany, and opportunities for studying the methods of original botanical research.

Dr. B. W. Barton for many years has taken special interest in this department, and has been a most acceptable teacher of systematic botany. Under the title of lecturer he has consented to continue his instructions in that subject.

It gives me great pleasure to say that students of systematic botany have the privilege of consulting the herbarium and the botanical library of Captain J. Donnell Smith. The former contains about eighty thousand sheets of mounted specimens from nearly every part of the world, embracing most of the important public and private distributions of plants that have been made during the past twenty years, and is especially full in its representation of species of the United States and of the American tropics. The library aims in particular to furnish works cited in the bibliography and iconography of the North and South American Floras. Mr. Smith has signified his desire to present both herbarium and library to the university whenever a suitable building shall be offered for their reception, and provision made for their maintenance.

The Marine Station of the Johns Hopkins University was maintained during the summer of 1893 in the island of Jamaica (W. I.), under the direction of Dr. Robert Payne Bigelow, who consented to take charge of the party, in consequence of the enforced absence of Professor Brooks. The work of the year was satisfactory and is fully reported in the appendix. As in former years, the expedition was indebted to the Governor of Jamaica and Lady Blake for repeated courtesies.

The library numbered in May, 1893, 62,186 volumes, an increase during the year of nearly seven thousand volumes.

Among the most important gifts, may be mentioned a copy, in twenty-three volumes, folio and quarto, of the great work upon Egypt,—commonly known as the Napoleon Egypt,—in which are given the reports of the French archaeological investigations made early in this century. The donor was Mendes Cohen, Esq., of Baltimore. These volumes are a valuable addition to the Cohen Collection of Egyptian Antiquities received by the University many years ago.

From the library of the late Charles J. M. Eaton, for many years past the President of the Board of Trustees of the Peabody Institute, his nieces, the Misses Eaton of Baltimore, gave to the University seven hundred bound volumes, chiefly in English literature, voyages, and travels.

From the library of the late F. E. Chatard, M. D., of Baltimore, his son, Dr. F. E. Chatard, Jr., has given two hundred and fifty bound volumes and one hundred and fifty pamphlets of great bibliographical and historical interest to the medical profession. Many of these books were owned by the donor's grandfather, Dr. Petrus Chatard, who graduated in Montpellier, France, in 1788.

From Miss Alice S. Morison a number of valuable books have been received, which were a part of the library of her father, Dr. N. H. Morison, late Provost of the Peabody Institute.

Messrs. Henry Holt & Co., of New York, as in former years, have generously given to the library copies of all their important publications issued within the year.

The municipal authorities of Berlin, Vienna, and Paris have presented valuable topographical maps of those cities, at the request of the university, in order that they might be consulted by those who are interested in the preparation of a topographical map of Baltimore.

Other important and acceptable gifts are enumerated in the Librarian's report in the appendix.

A portrait in oil of the Honorable George William Brown, one of the original Trustees of the University, and for many years Chairman of the Executive Committee, was presented to the University on the twenty-second of February, 1893, by some of the alumni and other friends of Judge Brown, through a committee of which Dr. Jeffrey R. Brackett was the Chairman. The portrait was painted by Mr. John Dabour.

The Marshall Prize for 1893 was awarded to Charles M. Andrews, Ph. D., Associate in History in Bryn Mawr College, Pa., for his memoir on the Old English Manor.

The first, second, and third parts of the Bibliographia Hopkinsiensis have appeared enumerating the writings of members of the university. The first part, on Philology, was edited by Professor Bloomfield; the second, on Chemistry, by Dr. Wyatt W. Randall; the third, on Geology and Mineralogy, by Drs. Williams and Clark.

Dr. Brooks's memoir on Salpa is nearly ready to be published.

The Journals issued under the auspices of the university have appeared as usual during the year.

The "Maryland Book" has already been mentioned.

From the report of the Director of the State Weather Service of Maryland, Dr. W. B. Clark, given in the appendix, the progress of that excellent work may be ascertained.

It will be remembered that this service, which was organized in 1891 under the joint auspices of this University, the Maryland Agricultural College, and the United States Weather Bureau, received a subvention from the Legislature of the State in 1892.

Six thousand copies of the monthly Meteorological Report, and two thousand copies of the weekly Bulletin of Crops,

have been printed and distributed. A series of charts of large dimensions, illustrative of the climate of the State, has been prepared, and the materials have been collected for a full report on the climatology of Maryland. The number of voluntary and unpaid observers, in different parts of the State, is more than one hundred. Special acknowledgments are due to them for their intelligent coöperation.

As this report is about to be closed a very welcome gift has been received by the university. Mrs. William E. Woodyear, of Baltimore, has offered to the Trustees the sum of ten thousand dollars, in order to provide for the annual bestowal of five scholarships, of one hundred dollars each, upon five young men to be selected under such conditions as the Trustees may from time to time prescribe. These scholarships are a memorial of her husband, who was well known and highly respected in the mercantile circles of this city, and they will consequently be called "The Woodyear Scholarships."

For the present, these scholarships will be awarded to young men who are known to the President to be in need of pecuniary assistance, and who at the same time have given evidence of their character and ability. Such funds are of inestimable value. They serve to aid and encourage a most deserving class of students. Similar gifts for the benefit or reward of meritorious scholars will be most acceptable, and they can be directly employed, either in the form of permanent scholarships, or of occasional assistance. Moderate sums can be most usefully bestowed in this way.

A member of the Board of Trustees has offered a prize of one hundred dollars to be awarded, during the current year, for an essay by an undergraduate, under such conditions as the university may prescribe; and a lady of Baltimore has offered the sum of fifty dollars to be awarded in two prizes for

essays to be written by undergraduates who entered the university in the autumn of 1893.

I cannot close this report without saying that the needs of the university in every department are very great. It has acquired so much distinction for its scientific work, that continued outlays of a liberal character are indispensable if the same high standard of intellectual activity is to be maintained. More rooms, more instruments, more books, more funds for publication, more assistants, more scholarships are constantly called for. The work in electricity particularly needs at the present time, in addition to what the Trustees have provided from the general fund, a special endowment. Electrical engineering is a subject of increasing interest and importance, but it is a particularly expensive department of instruction. The laboratories should be well equipped with apparatus for investigation and instruction, and the corps of special instructors should be large and efficient. The current expenses are very large.

It is desirable also to enlarge the facilities for instruction in astronomy,—not only for the training of those who expect to devote their lives to this special branch of knowledge, but for the benefit of all those students who desire, as an element in their liberal education, to acquire some knowledge of the heavens.

As soon as the funds of the university permit, instruction should be renewed in experimental psychology. The laboratory here opened for this subject by Dr. Stanley Hall was the first in a series of twenty established in the universities of this country. The call of Dr. Hall to the presidency of Clark University interrupted our plans just as they were taking good form, and, since his departure from Baltimore, no attempt has been made to carry on, in a systematic way, the courses that had been projected.

As to buildings, an intimation has already been given that a large and dignified structure should at some future day be placed on the land owned by the university on Howard street, where the administration building now stands. Here should be a commodious hall, adapted to an audience of ten or twelve hundred persons, and so arranged that scientific lectures may be well illustrated in it. There should also be provision for the museum of the university, a series of rooms devoted to the collections in geology, mineralogy, and natural history, as well as in the wide field of anthropology, ethnology, archaeology, art, and the growth of literature.

But more than anything else, the university needs a large addition to its endowment for general purposes. There is no doubt that the generous gifts of Johns Hopkins have affected the prosperity and attractiveness of Baltimore in many ways, besides the education of those who have resorted to its instructions. The city has become a centre of educational influences which have gone forth to every part of the land. Other important schools and colleges are sharing in this progress. The Woman's College of Baltimore is a wonderful illustration of how much can be accomplished by intelligent coöperation, under the name of a single religious denomination. New institutions in other cities have made generous acknowledgment of their obligation to Johns Hopkins.

Such instruction, in many departments, is costly. It grows costlier all the while. Meanwhile, as the public are aware, the income of the endowment has been seriously diminished. The amount received from a single source is less than it was a few years ago, by the sum of seventy-five thousand dollars annually. At the same time, other institutions are receiving generous aid, and are occupying the field where for several years we stood almost alone. Harvard has an annual income

of very nearly a million dollars. Several universities have each an annual income of half a million dollars or more. The liberality which has endowed the University of Chicago, the Armour Institute, the Art Institute, the Columbian Museum, and other educational establishments in Chicago, is known and admired throughout the land.

Will not the citizens of Baltimore consider these facts? They are not put forth for the benefit of any set of men, any denomination, any unworthy object. They appeal to those who would like to show their appreciation of good work already done, and who believe that with larger income still greater results may be secured. Almost every year one after another of those who have accumulated fortunes in this community passes away,—but in the seventeen years that have passed since instruction here began there has been but one important bequest. Will this always be the case?

The citizens of Baltimore have it in their own hands to say whether they desire to build up an institution devoted to the education of young men in all the liberal arts and sciences, or whether they will suffer it to decline because other cities are more generous or farsighted. Shall the prestige acquired be allowed to depart? Certainly a university which provides advanced instruction in the liberal arts and sciences should also be liberally maintained in order that the young men of Baltimore may be sure of the very best instruction that can be given in this country, and that they may have, without going away from home, opportunities to fit themselves for useful, honorable, and pleasant lives.

The Trustees of this university are the trustees of the interests of higher education in this region. They and the faculty invite intelligent scrutiny of the methods here employed and of the results that have been accomplished with the means

at their command. It is almost twenty years since the death of the founder initiated the work of this university. Is it not time for the community to show more appreciation of the benefits that the University and the Hospital have conferred upon Baltimore by enlarging and improving and adorning the structure of which he laid the foundation?

DANIEL C. GILMAN,
*President.*

*October* 2, 1893.

# REPORTS ON THE INSTRUCTION IN THE CHIEF BRANCHES OF STUDY.

Prepared by the Principal Instructors in the several departments.

## Mathematics and Astronomy.

### I.—Astronomy.

Professor Newcomb gave a very extended course in Celestial Mechanics, embracing the various methods of developing the perturbative function and computing the secular variations and periodic inequalities in the motions of the planets and satellites. This course extended through the year.

Dr. Poor gave the following courses:

1. Elementary Course in Theoretical and Practical Astronomy. *Three times weekly, through the year.* This course was intended for those beginning the subject and for those who wished to take Astronomy as a subsidiary subject for the Doctorate. It included a general outline of the principal problems of Spherical Astronomy, the first principles of the Method of Least Squares, and a careful discussion of the fundamental laws and equations of Gravitational Astronomy. A short historical sketch of the science was also given.

Among the books consulted and referred to in connection with this course were: Spherical and Practical Astronomy, Chauvenet; General Astronomy, Young; Mécanique Célèste, Tisserand; Planetary Theory, Cheyne; Histoire de l'Astronomie, Delambre.

2. Advanced Spherical Astronomy and Theory of Instruments. *Three times weekly, first half-year.* In this course were discussed the theory of Precession and Nutation and the reduction of star places. This was followed by a general discussion of the principles of Measuring Instruments.

3. Advanced Theoretical Astronomy. *Three times weekly, second half-year.* The methods of computing and correcting orbits were fully developed, as were also the methods of computing Special Perturbations of rectangular coördinates and of elements. Among the books consulted and referred to were: Mécanique Célèste, Tisserand; Bahnbestimmung, Oppolzer; Theoretical Astronomy, Watson.

The work in the Observatory was systematized and carried on whenever the weather permitted. Up to May 1st observations were made on sixty nights.

All the students were trained in the use of the Transit Instrument and the Equatorial. The Meridian Circle was used for practice by Messrs. Annis and Stoner. The Equatorial was mostly used for double-star measures, quite a series of such measures having been obtained. The light of the city interferes with observations of comets and faint planets.

Seminary work was regularly carried on during the year, sixteen papers in all having been read by the students.

During the year there have been nineteen graduate students in attendance on the various courses, and five of these intend making Astronomy their principal subject for the Doctor's degree.

## II.—Graduate Courses in Mathematics.

Professor Craig gave the following courses:

Theory of Functions of one and more complex variables and functions of real variables. *Twice weekly, throughout the year.* (For the last two months of the year this was given four times weekly.) This course included a rather full account of the theory of series, the elementary theory of uniform functions and of algebraic functions, the theory of curvilinear and surface integrals, and concluded with a brief account of Dirichlet's theorem. The authors principally consulted were Hermite, Briot and Bouquet, Picard, Poincaré, Appell and Cantor (on the theory of ensembles).

Partial Differential Equations. *Twice weekly, first half-year.* This course began with a full account of the most important investigations on the existence of an integral for ordinary or partial differential equations, and then followed in the main Goursat's *Leçons sur l'intégration des Équations aux dérivées partielles du premier ordre*, referring occasionally to Darboux's *Théorie générale des Surfaces.*

Algebraic Differential Equations. *Four times weekly, second half-year.* This course treated principally of the invariants of differential equations of the first and second orders and of the cases of reduction to linear differential equations. The authors consulted were principally Fuchs, Appell, Poincaré, Picard, and Painlevé.

Linear Differential Equations. A brief course on this subject was given in the first half-year, dealing principally with the investigations of Fuchs and Frobenius and Hermite's application of Cauchy's Theorem to equations with constant coefficients.

A course of about fifteen lectures was given in the second half-year on the applications of the theory of functions to algebraic curves, in particular the curves of genus $p = 1$. The authors followed were Clebsch, d'Esclaibes and Humbert.

Professor Franklin gave the following courses:

A course covering successively the elements of the following subjects: Theory of Invariants, Theory of Higher Plane Curves, Calculus of Finite Differences, Theory of Probability. *Five times weekly, first half-year.*

Theory of Surfaces and Curves in Space. *Three times weekly, second half-year.* This course had reference to metrical properties: Joachimsthal's

*Anwendungen der Infinitesimalrechnung* and Darboux's *Théorie des Surfaces* were referred to.

The Riemann Theory of Algebraic Functions and their Integrals. *Twice weekly, second half-year.* This course was based upon Riemann's *Theorie der Abelschen Functionen*, with the aid of the work of later mathematicians.

Mr. Hulburt gave the following courses:

Theory of Substitutions with Applications to Algebraic Equations. *Three times weekly, first half-year.* Particular attention was given to Galois' Theory of Algebraic Equations. The authors chiefly followed were Jordan and Netto.

Theory of Plane Algebraic Curves. *Twice weekly, second half-year.* This course included some of the principal portions of the non-Metrical Theory of Curves, Rational Transformation, and the Theory of the Cubic. The authors principally consulted were Clebsch-Lindemann and Salmon.

### III.—Undergraduate Courses in Mathematics.

These courses are the same from year to year. During the year 1892–3 they were given as follows:

*First Year Course:*

Analytic Geometry. *Daily, till Christmas.* Mr. Hulburt and Mr. Cohen.

Differential and Integral Calculus. *Daily, from January* 1 *to end of year.* Mr. Hulburt and Mr. Landis.

*Second Year Course:*

Differential and Integral Calculus (Special Topics). *Twice weekly, till December* 1. Professor Franklin.

Differential Equations. *Twice weekly, December* 1 *to end of year.* Mr. Hulburt and Mr. Cohen.

Determinants and Theory of Equations. *Three times weekly, till December* 1. Professor Franklin.

Modern Plane Analytic Geometry. *Three times weekly, December* 1 *to end of first half-year.* Professor Franklin.

Solid Analytic Geometry. *Three times weekly, second half-year.* Professor Franklin.

Classes were conducted by Mr. Landis and Mr. Cohen in

Trigonometry and Analytic Geometry for matriculation. *Three times weekly, through the year.*

The Mathematical Seminary under the direction of Professor Craig met weekly. A large number of papers were presented dealing with historical, biographical and current mathematical literature, and a number of brief courses of lectures were given by the students on assigned mathematical topics.

Vol. XIV of the American Journal of Mathematics was completed during the year, and Vol. XV commenced. A portrait of Halphen forms a frontispiece to Volume XV.

S. Newcomb,
*Professor of Mathematics and Astronomy.*

## Physics.

During the year regular courses of lectures and instruction have been given as follows:

By Professor Rowland:

1. Mathematical Physics, treating the subjects of Electricity and Magnetism. *Four times weekly, through the year.*
2. Meetings for the discussion of the current physical journals. *Weekly, through the year.*

By Dr. Ames:

1. Mechanics, Hydrodynamics and the Mathematical Theory of Sound. *Twice weekly, through the year.*
2. General Physics. *Daily, through the year.*
3. A more advanced course in General Physics, consisting of lectures on Mechanics, Thermodynamics, Electricity, Sound, and the Wave Theory of Light. *Daily, through the year.*
4. Meetings of the Physical Seminary. *One evening weekly, through the year.*

The laboratory has been constantly open for the work of advanced and undergraduate students.

The following researches have been made.

A table of about 1000 standard wave-lengths, including those of metallic spectra to w.-l. 2152, has been published.

Measurements of all the lines in the solar spectrum, from w.-l. 3000 downward towards the red, are in progress. About 10,000 measurements have been made this year in addition to the 14,000 made last year.

Daily observations and photographs of the rain-band have been taken for the U. S. Weather Bureau.

Investigations have been made on the effect of the magnetic field on chemical action.

The study of the gravitation action of crystals in various directions with respect to their axes has been continued.

Work on the new dividing-engine for the ruling of diffraction-gratings has been carried on continuously.

The attraction and repulsion of submerged solids has been for the first time successfully studied.

The form of the deposit of copper upon iron in a magnetic field has been investigated.

The action of the ultra-violet light of various metals on charged bodies, and the electric resistance of powders have formed the subjects of shorter investigations.

In the Physical Seminary, which has been attended by about twenty persons, the following subjects have been considered:

Distribution of lines in the spectra of the elements; range of molecular action; color sensation; modern steam engines; aberration; dust phenomena; limit of microscopic vision; molecular hypotheses; Michelson's

interference experiments; theory of lightning rods; physical aspect of dissociation; chemical mechanics; Lockyer's meteoretic hypothesis; Maxwell's displacement theory; measurements of high and low temperatures; atmospheric electricity; and metallic reflection.

During the year there have been one hundred and forty-two students in the department. Of these, twenty-one were candidates for the degree of Doctor of Philosophy, taking Physics as their principal subject; seventy-one were graduate students in other departments, or undergraduates, following physical courses; and fifty were special students in electrical engineering.

## Electrical Engineering.

During the year the following courses have been given:

By Dr. Duncan:

First year's course in Electricity and Magnetism, consisting of lectures on the general theory of the subject. *Three times weekly, through the year.*

Second year's course in Applied Electricity, consisting of lectures on the theory of dynamos and motors, the electrical transmission of energy, alternate current apparatus, batteries, telegraph, telephone, etc., etc. *Twice weekly, through the year.*

Laboratory work. *Daily, through the year.*

By Mr. Hering:

A course in Steam and Hydraulic Engineering, including lectures and recitations on steam engines, boilers, turbines, etc., and the general subject of Central Station equipment and the testing of the same. *Twice weekly, through the year.*

A course of lectures on Laboratory Methods for first year students. *Weekly, through the year.*

Laboratory work. *Daily, through the year.*

By Mr. Head:

A course in Mechanics of Engineering and a course in Applied Kinematics for first year students. *Twice weekly, through the year.*

A course in Applied Kinematics for second year students, with special reference to the steam engine. *Twice weekly, first half-year.*

Instruction in Mechanical Drawing. *Four afternoons weekly, through the year.*

The following investigations have been carried on:

A careful determination of the efficiency of a two-phase transmission plant was made, under different conditions.

The curves of armature current in a two-phase motor were studied in order to determine the effect in power transmission of upper harmonics in the current waves.

Current curves on making and breaking circuits were obtained under various conditions.

A method of picking out the higher harmonics from alternate current waves was further developed.

Experiments were made on the efficiency of various condensers in single and multiphase transmission.

The investigations on the electric arc under various pressures in air and other gases were completed.

A method of maintaining a constant potential under variable speed was developed.

The heating of field magnet coils of a dynamo was carefully investigated.

Various methods of cooling transformers were experimented with.

Papers were read by the first-year students upon subjects pertaining to laboratory methods, and the following subjects were treated by the second-year students:

Car lighting; high frequency experiments; the electric arc under pressure; commercial electrolysis; secondary batteries; alternate current motors; motor regulations for electric traction; transformers; method of determining alternating curves; propagation of electric waves; car trucks; comparison of modern types of boilers; cost of boilers per horse power; tests of boiler materials; relation of steam space and horse power of boilers; determination of the most economical point of cut-off; steam turbines; calorimeters.

The following additions and improvements have been made to the Electrical Laboratory:

Another laboratory assistant has been added to the staff, and a mechanic and curator of apparatus been engaged to make and repair apparatus for this department.

A drawing-room for the electrical engineering students has been equipped in the top floor of 303 Monument street, thus avoiding the crowding in the old drawing-room and enabling the classes to be handled separately.

A power-house has been erected on Linden Avenue opposite the Physical Laboratory, containing a boiler and engine of about 60 horse-power, and dynamos of various kinds; appliances for testing the boiler and engine, and switch-boards for distributing the power from the dynamos have been supplied, and the power of any of the dynamos can be transmitted to any part of the Physical Laboratory.

The 50 horse-power Ball & Wood engine and the 30 kilowatt Fort Wayne generator were each in part donated to the University by the manufacturers.

The 900 light Westinghouse Alternator and many transformers and sundry apparatus, as well as the 30 horse-power two-phase transmission plant, consisting of a dynamo and two motors, regulators, etc., were a donation from the Westinghouse Electric and Manufacturing Co.

The General Electric Co. presented the University with four street railway motors, a Thomson transformer, a Thomson recording wattmeter, and other pieces.

The Interior Conduit and Insulation Co. presented a half horse-power Lundell motor outfit. An alternating current ammeter and voltmeter were donated by the Whitney Electric Instrument Co., and a Kennelly ammeter by the Edison Manufacturing Co.

This assistance from manufacturing concerns and the interest manifested by them has been greatly appreciated.

HENRY A. ROWLAND,
*Professor of Physics.*

## Chemistry.

During the past academic year the chemical laboratory has been open as usual for advanced and collegiate students. Lectures and class-room instruction have been given as follows:

By Professor Remsen:

1. History of Chemistry, for graduate students. *Twice weekly, until Christmas.*
2. Chemistry of the Compounds of Carbon, for graduate students. *Five times weekly, from Christmas to the end of the year.*
3. Meetings for reports on the current journals of Chemistry. *Once weekly, through the year.*
4. General Chemistry (Minor Course). *Three times weekly, until Christmas.*

By Professor Morse:

1. History of the Determination of Atomic Weights, for graduate students. *Twice weekly, until Christmas.*
2. Mineralogy and Crystallography (Major Course). *Twice weekly, first half year.*
3. Compounds of Carbon (Major Course). *Three to five times weekly, second half-year.*

By Professor Renouf:

1. Advanced Inorganic Chemistry (Major Course). *Three times weekly, first half-year, and twice weekly, during part of the second half-year.*
2. General Chemistry (Minor Course). *Three times weekly, from Christmas to the end of the year.*

By Dr. Randall:

Reviews in General Chemistry (Minor Course). *Twice weekly through the year.*

By Dr. Gilpin:

Reviews in General Chemistry (Minor Course). *Twice weekly, until Christmas.*

Since the last annual report was published Dr. Renouf, who for a number of years past has had the principal charge of the work of the undergradu-

ates, has been advanced to the position of Collegiate Professor of Chemistry. This has relieved the Director of part of the elementary instruction that he has given since the beginning of the University, and has made it possible for him to devote more time to the graduate courses.

Besides the lectures included in the above list, thirteen historical lectures were given by the most advanced students, on topics selected and assigned by the Director. The lecturers and their subjects were as follows:

Mr. A. J. Hopkins on Phosphines.
Mr. H. H. Ballard on Hydrazines.
Mr. G. F. Weida on Terpenes.
Mr. F. A. Wolff, Jr., on Solutions and Electro-Chemical Theories. (Two lectures.)
Mr. A. P. Saunders on Cacodyl Compounds.
Mr. W. E. Chamberlin on Thiophene and Related Compounds.
Mr. R. N. Hartman on Ptomaines.
Mr. F. K. Cameron on Ring Compounds containing Nitrogen.
Mr. B. H. Hite on Hoffmann's Work on Substituted Ammonias.
Mr. A. M. Muckenfuss on Würtz's Work on Cyanic Ethers.
Mr. L. C. Newell on Passive Iron.
Mr. M. S. Walker on Hydrazoic Acid.

Four candidates presented themselves for the degree of Doctor of Philosophy. They were Messrs. H. H. Ballard, J. L. Beeson, A. J. Hopkins, and J. N. Swan. Their theses are entitled: "The Action of Phenylhydrazine upon the Chlorides of o-Sulphobenzoic Acid;" "A Study of the Action of certain Diazo-compounds upon Methyl and Ethyl Alcohols under varying Conditions;" "The Reaction between Manganese Dioxide and Potassium Permanganate;" and "Some Double Halides of Mercury." These will be printed in separate form as theses, and the essential parts will soon be published in the American Chemical Journal.

IRA REMSEN,
*Professor of Chemistry.*

## Geology and Mineralogy.

During the past academic year the work in Geology has been carried on in the two buildings Nos. 602 and 712 N. Howard Street. The first-named building has served as the laboratory of Mineralogy and Petrography under the direction of Professor Williams, while the other has accommodated the work in Palæontology under Dr. Clark. The undergraduate lectures in Physical Geography were given in the large lecture room of the Biological Laboratory by Dr. Clark.

During the year the following courses of instruction have been given:

(*a*) General Mineralogy, embracing crystallography, physical and descriptive mineralogy, by Professor Williams. *Four lectures, one review, and one afternoon of practical work each week throughout the year.*

(*b*) General Geology and Palæontology, by Dr. Clark. *Three lectures and one afternoon of practical work each week throughout the year.*

(*c*) Rock-forming Minerals and the Petrography of the Crystalline Schists, by Professor Williams. *Three lectures each week from November 1st to May 1st.*

(*d*) Physical Geography, by Dr. Clark. (P. H. E. Course.) *Three times weekly until Christmas.*

(*e*) Evening talks on selected geological topics by Messrs. Hayes, Willis, Walcott, and McGee of the U. S. Geological Survey, Washington, D. C.

(*f*) Journal Club. *Once weekly, throughout the year.*

The laboratories have been open daily to students from 9 a. m. till 5 p. m.

*Original Work and Publications.*—Petrographical studies have been carried on by Professor Williams of crystalline rocks from various parts of Maryland, Pennsylvania, and Virginia. The ancient volcanic rocks, which compose so important a part of South Mountain, have been made the subject of special attention. Two preliminary papers on them have been published by Professor Williams, while they have been studied in detail by Miss Florence Bascom. Mr. U. S. Grant, Fellow by Courtesy, has investigated the augite granites and porphyrite of Kekequabic Lake in northern Minnesota. Mr. S. L. Powell has studied many of the minerals occurring near Baltimore, and Mr. A. C. Spencer has investigated the crystallographic properties of certain new organic salts.

During the year a new topographic and geologic map of the vicinity of Baltimore has been published by the University. These embrace an area of over four hundred square miles, and contains all, or a part, of four of the U. S. Geological Survey atlas sheets. The scale is 1 : 62,500, or about one mile to the inch. The water courses are represented in blue, the roads, etc., in black, and the contour lines, which have a 20 foot vertical interval, in brown. Considerable information has been added to that contained on the Government sheets. The city of Baltimore is toward the eastern edge of the map, which shows the county as far north as the Worthington Valley, as far west as Sykesville, and as far south as Annapolis Junction.

The geological map is printed upon the topographic map in colors to represent all the rock formations. Eighteen separate types are thus distinguished, and are further identified by letter symbols printed upon them.

Essays on the physical features, geology, mineral resources, and agriculture of the State have also been prepared by Professors Williams, Clark and Whitney for the World's Fair Book on Maryland, and are now in course of publication. In this connection a new geological and agricultural map of the entire state has been prepared, embodying much information never before published. This map, on a scale of eight miles to the inch, will be printed in colors with full explanations.

Palaeontological studies have been continued during the year by Dr. Clark upon the Cenozoic Echinodermata of the United States. The volume dealing with the Mesozoic species has been recently published as Bulletin 97 of the U. S. Geological Survey.

Geological investigations upon the Cretaceous and Tertiary formations of New Jersey have been conducted during the year by Dr. Clark with the aid of Messrs. C. W. Cowan, H. S. Gane and R. M. Bagg, Jr., students in Geology, under the joint auspices of the U. S. Geological Survey and the State Geological Survey of New Jersey. A preliminary report of the work has been published in the Annual Report of the State Geologist for 1892. Three U. S. Geological Survey Atlas Sheets have been mapped and five type sections made across the Coastal Plain.

*Excursions.* Aside from numerous short excursions which have been made by both students and instructors to various points of geological interest in the neighborhood of Baltimore and Washington and along the shores of Chesapeake Bay, the long annual excursion was taken across the mountains of Maryland and southern Pennsylvania between May 29th and June 7th, 1893. Upon this trip the ancient volcanic works of South Mountain were studied in the neighborhood of Monterey and at Graeffenburg; the limestones of the Cumberland valley were visited at Chambersburg and Hagerstown; the structure of North Mountain was examined at Cherry Run and Hancock as well as the Susquehanna river section north of Harrisburg; finally a part of a day was spent at Harper's Ferry and Weverton. Some eighteen persons participated in this expedition, including, beside the students of the geological department, some from other departments of the University and several persons residing in Gettysburg, Chambersburg and Hagerstown. The cordial reception and hospitality everywhere extended to the party did much to insure the success of the trip. Especial thanks are due in this respect to Rev. J. Edgar, President of Wilson College, Chambersburg; and to Albert Small, Esq., of Hagerstown.

*Coöperation.* The United States Geological Survey has continued to assist the geological work carried on at the University by furnishing topographic maps and facilitating field work in South Mountain, in the Piedmont Plateau, especially near Washington, and in New Jersey. Material assistance has also been received from the State Geological Surveys of New Jersey and North Carolina. The U. S. Coast and Geodetic Survey has also greatly aided the compilation of information relative to the maps of Maryland.

The Maryland State Weather Service organized in 1891 and reorganized by the Legislature of the State at its last session has further extended its work during the past year. New stations have been added from time to time until now nearly every portion of the State is represented. Weekly Crop Bulletins and Monthly Meteorological Reports have been published. During the period of the World's Fair a large edition of especially prepared Monthly Reports has been sent to Chicago for distribution. A series of ten large charts illustrating the seasonal and annual temperature and precipitation of the State has also been published.

The officers of the State Weather Service are Dr. Wm. B. Clark, Director, Professor Milton Whitney, Secretary and Treasurer, and Dr. C. P. Cronk, Meteorologist in charge.

*Apparatus and Collections.* By a liberal appropriation from the trustees the apparatus and collections of the geological department have within the past year been greatly augmented and improved. Four new petrographical microscopes of the latest pattern were obtained from R. Fuess of Berlin, while a number of new crystal and optical models, petrographical apparatus and mineral and work specimens have been secured both by purchase and exchange.

Important additions have also been made to the palæontological collections. By purchase an extensive suite of European fossils illustrating all the leading geological horizons was obtained from Dr. F. Krantz, of Bonn. A collection of rare and peculiarly choice forms was presented by Prof. von Zittel of Munich to the University while from other sources considerable material has been obtained by exchange.

GEORGE H. WILLIAMS,
*Professor of Inorganic Geology.*

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## Biology.

The staff during the session consisted of

Dr. H. N. Martin, Professor of Biology and Director of the Biological Laboratory (until his resignation on account of serious and prolonged ill-health, April 17, 1893).

Dr. W. K. Brooks, Professor of Zoölogy and Director of the Marine Laboratory.

Dr. E. A. Andrews, Associate Professor of Biology.

Dr. G. P. Dreyer, Associate in Biology.

Dr. B. W. Barton, Instructor in Botany.

Dr. John P. Lotsy, Fellow by Courtesy in Botany.

Messrs. Hunt, Knower, and Britcher rendered help as junior assistants.

The Bruce Fellowship was held by Dr. R. P. Bigelow. The fellowships in Biology were held by Messrs. Metcalf and Hough; the former was placed in charge of the biological museum and the latter in charge of the biological library. Mr. M. M. Metcalf occupied the university table at the U. S. Fish Commission Laboratory at Wood's Holl during the summer of 1892.

The Laboratory was open regularly to graduate and undergraduate students from 9 a. m. to 5 p. m., with the exception of Saturdays and Sundays. Courses of lectures were delivered as stated below.

1. General Biology. *Thrice weekly, from the commencement of the session until April.* Introductory lectures were given by Professor Martin. Dr. Andrews delivered the other lectures in the course and had general control of the work of students taking it.

2. Osteology, Human and Comparative. Professor Brooks. *Twice weekly, from early in November until the spring recess.*

3. Elements of Embryology. Dr. Andrews. *Thrice weekly, from the spring recess until the close of the session.*

4. Elements of Systematic and Structural Botany. Dr. Barton. *Twice weekly, from the spring recess until the close of the session.*

**The four lecture courses above described, with accompanying laboratory work during at least five hours each week, constituted the undergraduate minor course in Biology.**

5. Mammalian Anatomy. Dr. Andrews. *Twenty lectures, with dissection of a dog.*

6. Animal Physiology and Histology. Professor Martin and Dr. Dreyer. *Thrice weekly, from early in November until the close of the session.*

7. Elements of Zoölogy. Dr. Andrews. *Twice weekly, from early in November until the end of the session.*

**Courses 5, 6 and 7, with at least five hours' laboratory work each week, constituted the major undergraduate course in Biology.**

8. Professor Martin lectured to advanced students on the physiology of sense organs.

9. Professor Brooks directed the work of the Zoölogical Seminary for graduate students, and lectured before the seminary, as stated below.

10. The Zoölogical Seminary met under the direction of Professor Brooks to read and discuss topics in Zoölogy and Animal Morphology.

The chief topic for the year 1892–3 was the Echinoderms, in their anatomical, embryological, physiological and phylogenetic relations. At the beginning of the year the great classics on the Echinoderms, the most important recent memoirs, and the papers in the journals were brought together in the library of the biological laboratory, from the Peabody Library, the general library of the University, the library of the geological department, and from other sources.

This literature was then assigned to the more advanced members of the seminary, and several months were spent in the preparation of the reports.

In the meantime Professor Brooks gave a general introductory course of lectures on the Echinoderms, and the anatomy and embryology of illustrative types was studied in the laboratory.

Early in January the course of lectures by the members of the seminary upon the assigned topics was begun, and it was continued, three times a week, until the Easter recess, and it consisted of from three to five lectures or reports upon each of the following subjects: the anatomy and general zoölogy of the Holothurians; the embryology of Holothurians; the physiology of Holothurians; the physiology of Asterids and Ophiourans; the embryology of Asterids; the anatomy and zoölogy of Echinoids; the anatomy of Crinoids; the anatomy and zoölogy of Ophiourans; the homologies and affinities of Echinoderms.

Professor Uhler permitted us to keep in the laboratory, for the whole year, a number of memoirs from the Peabody Library, and the opportunity to study and compare them at our leisure contributed materially to the success of this course.

In addition to this chief topic, Dohrn's memoir on the "Ursprung der Wirbelthiere" was read and discussed. Professor Brooks lectured on the evidence as to the origin of the Vertebrates which is afforded by the Tunicates; and Prof. T. H. Morgan of Bryn Mawr College gave three lectures before the seminary on Balanoglossus, describing his own studies at the marine laboratory of the university, and discussing the evidence afforded by Balanoglossus, as to the origin of the Vertebrates.

Korschelt and Heider on the embryology of Insects was also read and discussed by the seminary, and Professor Brooks gave three lectures on "Pelagic Life in its relation to the evolution of the Metazoa," and four lectures on the affinities of Salpa.

11. The Physiological Seminary met weekly during the months of January, February, March and April under the direction of Prof. Martin and Dr. Dreyer. The advanced students took turns in reporting on important researches that had appeared recently, and in discussing them. Among the papers presented may be mentioned: The mammalian nervous system: its functions and localization determined by electrical methods (Golch and Horsley, Croonian Lecture, Phil. Trans. 1891); a physiological, histological and clinical study of the degeneration and regeneration in peripheral nerve fibres after severance of their connections with the nerve centres (Dr. H. Howell and G. C. Huber, Journ. of Phys., XIV, 1); history of animal fat (Pflüger, Pflüger's Archiv); researches on the filling of the heart (Dr. H. Porter, Jour. of Phys., XIII, 6); aims and methods of biological science (F. Dreyer, Jena, 1892); first chapter of Bunge's physiological chemistry.

At the invitation of Professor Martin, lectures were given before the seminary by Professor Halsted on Operative Surgery; by Mrs. Christine Ladd Franklin on Color Vision; and by Dr. H. M. Thomas on The Use of Electrical Apparatus in Medicine.

12. Normal Histology. Dr. Dreyer conducted a course of lectures and laboratory work in Normal Histology for graduate students and physicians.

13. Reproduction of Algae. Dr. Lotsy gave a course of ten lectures on the Reproduction of Algae to graduate students, with ten afternoons of work in the laboratory.

During the session researches have been carried on in Baltimore and at the Marine Laboratory at Jamaica, on the following subjects:

The structure of Tornaria and the development of Balanoglossus; the anatomy and systematic zoölogy of Amphioxus; the structure of Octacnemus; the Stomatopoda of the Albatross collection; the asexual multiplication of Epenthesis; budding and regeneration in the star-fish; the life history of Doliolum; the embryology of Chiton; the food supply of the oyster; the origin of the Tetrasporangia of Dasya; the influence of tox-albumin on pear blight; formation of cypress-knees; the phylogeny of the bacteria; a new nematodial disease of grasses; differential respiration; histological evidence of physiological changes in the kidney; escape of the heart from vagus inhibition.

Most of these researches are well advanced, and preliminary abstracts of many of them have already been printed.

A quarto memoir on the embryology and metamorphosis of the Macroura, by W. K. Brooks and F. H. Herrick, has been published, with fifty-six colored plates, in the Memoirs of the National Academy of Science. It gives the results of researches which were carried on for five years and more at Beaufort, N. C., at Green Turtle Bay in the Bahamas, at Nassau, New Providence, and in the biological laboratory in Baltimore.

A volume of quarto Morphological Monographs is now in press, and it will be issued by the University Press in the autumn. It will contain a Memoir on the Genus Salpa, by W. K. Brooks with 300 pages and forty-seven colored plates, and a Memoir on the Eye and Sub-Neural Gland of Salpa, by M. M. Metcalf, with 50 pages and ten colored plates.

Parts II, III and IV of Vol. V of the studies from the Biological Laboratory, are passing through the press. These three parts will complete Vol. V of the Studies.

The Marine Laboratory was opened on May 1st, in a house which had been rented for the purpose, close to the water at Port Henderson, on Kingston Harbor, in Jamaica. It is under the charge of Dr. R. P. Bigelow, the Bruce Fellow in Biology. The building is near a coral reef, and other good spots for collecting are within easy reach. The mountains of Jamaica, which present very great opportunities for studying the botany and terrestrial zoölogy of the tropics, can be reached from Port Henderson in less than half a day.

Our museum is now overcrowded with valuable specimens. Designed at first merely as a storehouse for specimens required for class-work, the museum has had to receive and assume the care of the collections made at the various sessions of the Marine Laboratory; the gifts of the University of Maryland; of the Maryland Academy of Sciences; of collectors of local plants; the herbariums of Dr. Schimper, Mr. Fitzgerald, and others.

Other friends of science stand ready to make very much more extensive and important additions to our collections as soon as we are able to receive them and to care for them in such a way as to insure their safety and to make them available for study and the advancement of science. We have been forced to decline these valuable gifts for the present, since our space is already filled, and we find it difficult to care for and to utilize the museum without a paid curator.

W. K. Brooks,
*Professor of Zoölogy.*

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## Pathology.

During the past year the instruction in the Pathological Laboratory has been under the direction of Dr. W. H. Welch, Professor of Pathology, Dr. G. H. F. Nuttall, Associate in Bacteriology and Hygiene, Dr. S. Flexner, Associate in Pathology, Dr. Meade Bolton, Acting Associate in Bacteriology, and Dr. L. F. Barker, Fellow in Pathology.

The work has been carried on in accordance with the announcements. Two practical courses in Pathological Histology and two in Bacteriology have been given. These courses have included demonstrations in Pathological Anatomy and instruction in the methods of making autopsies.

The total number of students and special workers has been eighty-two, nearly all of whom are doctors of medicine. Fifty-three have attended the courses in pathological histology, twenty-eight those in bacteriology, and eleven have been engaged in special work. Many of those on the staff of the hospital have also worked in the laboratory.

In connection with the courses of medical instruction given in the John Hopkins Hospital during the months of January, February and March, Professor Welch lectured on Asiatic Cholera, and Dr. Nuttall, on Bacteriological Methods.

In September, 1892, Dr. Councilman resigned his position in order to accept the professorship of Pathology in the Harvard Medical School. He had been associated with the department of Pathology since its organization and previously with that of Biology in this University.

Dr. S. Flexner, formerly Fellow in Pathology, was appointed Associate in Pathology at the beginning of the academic year. Dr. L. F. Barker was appointed Fellow in Pathology.

In March, 1893, Dr. Nuttall was granted leave of absence for a year to study in hygienic laboratories in Europe. Dr. Bolton, formerly Assistant in Bacteriology and later connected with the University of South Carolina and the Hoagland laboratory in Brooklyn, was appointed Acting Associate in Dr. Nuttall's absence.

Dr. Flexner was also granted leave of absence from March until October, 1893. Dr. Barker kindly consented to perform a large part of the work which devolved upon Dr. Flexner. He has given valuable assistance in instruction and in conducting autopsies.

During the year from June 1, 1892, to June 1, 1893, one hundred and ten autopsies have been made in the Pathological Laboratory. Many specimens have been added to the collection in the Museum.

Several special researches in Pathology and Bacteriology have been made. These have been published partly in the Hospital Bulletin and Reports and partly in other medical journals, and some still await publication.

WILLIAM H. WELCH,
*Professor of Pathology.*

## Greek.

Under the direction of Professor Gildersleeve the advanced students of Greek have been organized into a Greek Seminary. According to the plan of the Seminary, the work of each year is concentrated on some leading author or some special department of literature. During the past year the work has been in the Attic Orators.

In the Seminary proper, which met twice a week during the academic year, the orators chiefly studied were Antiphon, Andokides, Lysias, Isokrates, Isaios, and Demosthenes. Especial attention was paid to the development of language and style, and to the antique canons of aesthetic criticism. The members were required to present in turn exegetical and critical commentaries on select portions of the orators, and to make analyses of speeches and abstracts of rhetorical treatises.

Of the investigations carried on in this field and elsewhere may be noted—

Antiphon I and V in their relation to the Tetralogies; Andokides and the Trial of the Hermokopidai; Comparison of Lysias and Demosthenes and of Isokrates and Demosthenes in their private speeches; Isokrates' Πλαταϊκός; Style of Isaios; Dionysios' Iudicium de Isaeo; Spuriousness of Dem. XXXIV; Aristotle's Homeric Studies; Compound Verbs in Thukydides.

The work of the Seminary was supplemented by the study, under the Director's guidance, of the rhetorical writings of Dionysios of Halikarnassos, and by courses of lectures on Greek Rhetoric and on the History of Attic Oratory.

Besides the Seminary course proper, Professor Gildersleeve lectured once a week during the session on Greek Syntax in its relations to Style, and once a week, after the first of January, on Greek Lyric Poetry from Kallinos to Simonides. In addition, he conducted eighteen exercises in translating at dictation from Greek into English and from English into Greek.

Dr. C. W. E. Miller conducted the following courses: Greek Orators (Reading and Recitation); Pindar (Reading and Study of Rhythms and Metres); Tragic Poets (Reading and Recitation); Greek Palaeography (Lectures and Practical Exercises).

Dr. Alfred Gudeman conducted courses in the History of Alexandrian Literature and in the History of Classical Philology during the first half-year, and in Plutarch's Life of Cicero during the second half-year.

Dr. W. M. Arnolt gave a course in New Testament Greek and the Septuagint during the first half-year.

Dr. Spieker conducted courses for undergraduates as follows:

Thucydides, book vii. *Three times weekly, first half-year.*

Aischylos, *Prometheus Vinctus*, and Sophokles, *Antigone*. *Three times weekly, second half-year.*

Lysias, *Select Orations*. *Four times weekly, first half-year.*

Homer, *Iliad*, books xvi and xviii, and Euripides, *Alkestis*. *Four times weekly, second half-year.*

Greek Literature. *Weekly, through the year.*

Sight Reading. *Weekly, through the year.*

Classes in Prose Composition were conducted in connection with each of the courses above named. *Once weekly.*

Students have read privately for examination the following books:

Aristophanes, *Clouds.* (2.)
Demosthenes, *De Corona.* (2.)
Herodotos, book ix. (8.)
Plato, *Gorgias.* (3.)
Xenophon, *Hellenica*, i, ii. (8.)

B. L. GILDERSLEEVE,
*Professor of Greek.*

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## Latin.

The Latin Seminary under the direction of Professor Warren held two sessions a week throughout the year, the authors selected for special study being Plautus and Terence.

After introductory lectures on the MSS and editions of Plautus and Terence, and other critical helps, analyses were given by members of the Seminary of all the plays of Terence, and of the following plays of Plautus, Mostellaria, Captivi, Pseudolus Bacchides, Trinummus, Menaechmi, Rudens, Amphitruo and Miles Gloriosus. Select portions of the Miles Gloriosus and the Andria were made the subject of critical interpretation. Papers were presented on Italian Representations of Plautine Plays, on the Didascaliae of Terence, on the Prologues, on the Periochae and their author G. Sulpicius Apollinaris, on the Present and Future Participle in Plautus, on case-forms with and without prepositions used by Plautus and Terence to express time, and on the Querolus.

Professor Warren also gave in the first half-year a course of weekly lectures on Roman Comedy, and throughout the year a course of weekly lectures on Historical Latin Grammar taking up consonant changes and accentuation. He also lectured on Latin Epigraphy and conducted a course of weekly exercises throughout the year in the Interpretation of Inscriptions, some twenty of the earlier inscriptions being interpreted. In the latter half of the year Aulus Gellius was read rapidly in a class meeting once a week. A Journal Club met throughout the year, once in two weeks, to report on the current periodicals.

During the second half-year Dr. Alfred Gudeman conducted a course in the Dialogus of Tacitus, with introductory lectures on the 'Dialogus Controversy.' *Once a week.*

Undergraduate courses have been conducted during the year as follows:

Professor Warren:

Horace, *Select Odes, Satires and Epistles. Four times weekly, second half-year.*

Dr. K. W. Smith:

Livy. *Four times weekly, first half-year.*
Tacitus. *Four times weekly, second half-year.*
Plautus, *Captivi;* Terence, *Andria. Three times weekly, first half-year.*

Lucretius; Cicero, *de Natura Deorum*. *Three times weekly, second half-year.*
Reading at Sight. *Once a week, through the year.*

Classes in Latin Prose Composition were conducted in connection with each of the courses above named. *Once weekly.*

Students have read privately for examination the following books:
Cicero, *De Natura Deorum*, book iii. (5).
Cicero, *Pro Roscio Amerino*. (12).
Horace, *Epodes*. (12).
Lucretius, book v. (5).
Ovid, *Fasti*, books i, ii. (12).
Plautus, *Menaechmi*. (6).
Quintus Curtius. (12).
Terence, *Heautimorumenos*. (8).

MINTON WARREN,
*Professor of Latin.*

## Sanskrit and Comparative Philology.

The work of this department may be described under two heads, as indicated by its title. On the one hand there are the studies in Indian and Iranian philology; on the other, general linguistic science, comparative grammar of the Indo-European languages, and ethnology of the Indo-European peoples.

During the session of 1892–3 the Vedic Seminary, under the direction of Professor Bloomfield, was engaged in the study of the Rig-Veda, with especial reference to the character of its most representative religious and mythological ideas. The methods of Vedic study which have been developed in this Seminary preclude, however, the restriction to any single document of the Vedas. They are studied as a unit, and no conception or expression of a single given text is regarded as satisfactorily understood unless it has been tested in the light of the related conceptions of the remaining texts of the literature. A considerable part of this study, therefore, leads to new results. Under the stimulus of this work the director has published, or has ready for publication, 'Contributions to the Interpretation of the Veda,' six series of which (altogether more than twenty-five in number) have been printed, or are about to be printed, in various volumes of the American Journal of Philology, and the Journal of the American Oriental Society; a partial account of their method and contents is printed in Johns Hopkins University Circulars, No. 99, pp. 101 ff.

The work on the Concordance of the lyric and liturgical passages of the entire Vedic literature, begun auspiciously last year (see Univ. Circ. No. 99), has advanced materially during the session. Both present and former members of the Seminary are lending energetic assistance, and this phase of Vedic study will form a recognized part of the work of the Seminary for the next few years.

A second and more elementary course of Vedic study was carried on during the second half of the session. The object of this course is to introduce into the Vedic dialect and to mark out its relation to the dialect of the classical Sanskrit. A short preliminary course in Vedic grammar was followed by reading selected specimens of the Rig-Veda. The metres, the accent, the special phonetic, morphological and lexical peculiarities claim the chief attention.

To the study of classical Sanskrit were devoted four hours during the first semester and two during the second. The subjects were the Nala, and the Hitopadeça. The elementary work consisted of a short course of grammar and practical exercises in prose writing, followed by the interpretation of an easy text. Mr. D. H. Holmes, Fellow in Greek and Sanskrit, lent his assistance in this work.

The work in Comparative Philology was threefold. At the beginning of the session a course of twelve lectures on the ethnology of the ancient Indo-European peoples was given in the Historical Seminary with especial reference to the needs of historical students. The themes treated were as follows: The relation of philology and ethnology to history; the Indo-European people, its common character, its subdivisions, and ethnical interrelations; the question of the original home of the Indo-Europeans; India, the Vedas, Brāhmaṇism, Buddhism; Iran, the Achemenidan inscriptions, the Zoroastrian religion and literature; the Indo-European peoples on the boundary between Asia and Europe; Greece, the subdivisions of the Hellenic peoples, and the character of their religion; Italy and the Italic tribes, Roman religion, and the spread of the Latin races.

A course of weekly lectures during the session was devoted to the general principles of linguistic science together with an exposition and criticism of modern methods in scientific grammar. Finally, there were given a series of lectures through the year in the Comparative Grammar of Greek, Latin, German, and Sanskrit. The subject under treatment was the history of the vowels and the vowel relations (*ablaut*). The corresponding work during the coming session (1893–4) will be devoted to the comparative history of the consonants in the same languages, and will be followed by the study of inflections in the year after (1894–5). Opportunity is thus afforded to the students of the classical languages to acquaint themselves with the scientific treatment of the sounds and inflections, in addition to the elaborate studies in syntax which are carried on in the Greek and Latin Seminaries. Students of the comparative grammar of other Indo-European languages, notably the Teutonic, are in this way enabled to acquaint themselves with the chief characteristics of the entire family of speech.

MAURICE BLOOMFIELD,
*Professor of Sanskrit and Comparative Philology.*

## Oriental Seminary.

Seventeen courses were given in the various departments of Oriental research during the past year, special attention being paid to the study of the Old Testament. Professor Haupt being detained abroad during the first half-year, the courses announced by him were conducted by Dr. Adler and Dr. Johnston.

To the study of the Old Testament, six hours weekly were devoted during the first half-year, which number was increased to eight during the second half-year. Professor Haupt gave a critical interpretation of the Messianic Psalms, and of the post-Exilic prophets Haggai and Zechariah, besides conducting a course in Hebrew Prose Composition. Four hours weekly were devoted to a study of the Ancient Versions of the Psalms, Dr. Johnston interpreting the Septuagintal, Syriac and Arabic versions, and Dr. Adler the Targumic version. A class met weekly throughout the year to read at sight selected portions of the Historical Books of the Old Testament under the guidance of Drs. Adler and Johnston during the first and second half-years respectively. Elementary instruction in Hebrew was given weekly during the first half-year by Dr. Adler and by the Fellow in Semitic, Mr. Stevens, and during the second half-year by Dr. Johnston.

During the first half-year Dr. Adler delivered a course of lectures on the History of Israel, with special reference to the period of the Exile describing the political condition of Western Asia previous to the Exile, the causes which led to the Babylonian captivity, and its influence on the Jewish Church and State. During the second half-year Dr. Adler delivered a course of lectures on Biblical Archæology, the subjects discussed being the Siloam Inscription, the Moabite Stone, the black obelisk of Shalmaneser, the historical bearing of the cuneiform documents found at Tell-el-Amarna, and recent discoveries concerning the Hittites. Dr. Johnston lectured, during the first half year, on the History of Babylonia, Assyria and Egypt.

Under the direction of Professor Haupt, the Assyrian Seminary met two hours weekly studying the bilingual hymns and incantations in the fourth volume of Sir Henry Rawlinson's Cuneiform Inscriptions of Western Asia. This work was supplemented by occasional exercises in cuneiform prose composition, the members of the class translating English or Hebrew sentences into Assyrian. Dr. Johnston met the second-year students of Assyrian two hours weekly, reading the historical inscriptions in Delitzsch's *Assyrische Lesestücke* and Abel and Winckler's *Keilschrifttexte*.

In Syriac an elementary course was given by Dr. Johnston in the first half-year, Roediger's Chrestomathy being the text-book used.

Dr. W. Muss-Arnolt lectured three hours weekly on the New Testament and the Septuagint during the first half-year, giving a critical interpretation of the Epistle to the Galatians, a course in textual criticism as applied to the New Testament, and an introduction to the study of the Septuagint.

The first part of the new edition of the Old Testament, published under the editorial direction of Professor Haupt, was issued by the Johns Hopkins

Press at the end of the session. It contains a critical edition of the Book of Job, with notes by Professor Siegfried of the University of Jena. The Johns Hopkins Press also published a modern reproduction of the Chaldean Flood Tablet, containing the cuneiform account of the Deluge as restored in Professor Haupt's edition of the Babylonian Nimrod Epic. Part 4 of the Contributions to Assyriology and Comparative Semitic Grammar, published with the coöperation of the Johns Hopkins University, and edited by Professor Haupt, in conjunction with Professor Delitzsch of Leipzig, a volume of 284 pages, royal 8o, appeared at the beginning of the session. It contains papers by E. T. Harper, Hommel, Jæger, Knudtzon, Muss-Arnolt, Philippi, Prætorius and Zimmern, including a complete bibliography of the works of Julius Oppert, with a portrait of the distinguished French Academician. Part 5, concluding volume II, is in progress.

PAUL HAUPT,
*Professor of the Semitic Languages.*

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## German.

The German Seminary was conducted by Professor Wood. During the first half-year, the poetical pieces in Müllenhoff and Scherer's *Denkmäler* were interpreted. Particular attention was given to the changes in language and in literary form which marked the later period of Old High German. Among the prose extracts, the Confessionary Formulas were studied with reference to new aspects of their use and distribution. During the second half-year Walther von der Vogelweide was the object of study. Walther's style, and especially his figures of speech, were taken as the point of departure, from which a relative chronology of single poems and groups was attempted. The work of the entire course was based upon the theory that Walther is to be studied not so much as a naïve poet, but rather as a conscious literary artist. Heinrich von Morungen and Reinmar were made a part of this study. The Seminary met three hours weekly through the year.

In Gothic, Professor Wood met a class twice weekly through the year. The inflections of Gothic were first learned, after which the extracts in Braune's *Grammmatik* were read, chiefly from the point of view of phonological and morphological development, and as supplying a groundwork for the principles of Teutonic Philology. Kluge's *Vorgeschichte der altgermanischen Dialekte* was read and explained in this course. A third weekly meeting of the class in Gothic was conducted by Mr. H. M. Ferren, Fellow in German. The work of each week in Gothic was reviewed in this class, and selected topics in Teutonic Philology were taken up in detail.

The History of the German Language was studied, weekly through the year, under the guidance of Professor Wood. The grammars of Braune and Kauffmann were used, and Behaghel's *Geschichte der deutschen Sprache*

was read. The parts of Wilmann's *Grammatik* which have already appeared furnished illustrations.

In German Literature Professor Wood gave a course, twice weekly during the first half-year, on the Period of "Sturm und Drang." The successive types of the Faust legend in the works of Lessing, Maler Müller, Goethe, Lenz and Klinger, were the particular object of study. Klinger's Faust romances were considered under the aspect of polemical literature, representing the doctrines of Rousseau and the Philosophy of the Eighteenth Century, and directed against Goethe's Faust Fragment. This theory was presented before the University Philological Association, March 17, 1893, in an article entitled "Goethe's Faust and Klinger's Anti-Faust."

During the second half-year Professor Wood lectured twice weekly on the Poetry of the Swabian School, including the Austrians Lenau and Grillparzer. The poets most fully studied were Uhland for the lyric, Mörike for the classic-idyllic type of literature, and Grillparzer for the modern romantic drama.

The Germanic Society, which is composed of the Director of the Seminary, the Associate and Instructor in German, the members of the Seminary and six other advanced students in German, met fortnightly through the year in an evening session. Besides reviews and reports, the following papers were presented, which gave from time to time the results of studies still in progress, or completed during the year: grammatical gender in Low German (two papers), German American hymnology (two papers), the present participle in Old- and Middle High German, Wenker's sprachatlas, the fourth adventure in the Nibelungenlied, traces of the "Rechtssprache" in Walther von der Vogelweide, the Bärenhäuter legend and Simplicius Simplicissimus, Hofmanns Waldau and his relation to Marini, the style of Wilhelm Hauff, the influence of Sterne on German literature, the language of the Revised Luther Bible of 1892.

In the undergraduate major course, Professor Wood conducted a class, twice weekly from January 1 to the end of the year, in Goethe's *Faust*, the First Part of which was read.

In the minor course, Schiller and Goethe's *Briefwechsel* was read with Professor Wood, weekly, through the year. Among the parts taken up were the letters relating to *Tell, Herman und Dorothea, Wallenstein*, and particularly the correspondence during the "Balladenjahr" (1797). In this connection, selected ballads of Goethe and Schiller were read in Buchheim's *Balladen und Romanzen*.

Dr. M. D. Learned gave the following courses:

1. Nibelungenlied. Twice weekly, first half-year. Lectures were given on the manuscrips, composition, metre, and on the Saga-elements. About half the poem was interpreted in the class.

2. History of the High German Speech. Lectures twice weekly in the second half-year.

Among the subjects treated were the transition period (1050–1170), the vowels of final syllables, umlaut, the development of a "Court language,"

Middle High German prose, reappearance of the dialects in literature, diphthongization.

3. Hartman's *Armer Heinrich.* Weekly, through the year. The two prose pieces, *Amicus und Amelius* and *St. Sylvester's Tag*, were also read. The grammar was studied in Paul's *Mittelhochdeutsche Grammatik.*

4. Undergraduate Courses.

Goethe's *Herman und Dorothea* was read in the major course, twice weekly, first half-year. Buchheim's *Prose Composition* (40 pp.) and Wilmann's *Deutsche Grammatik*, second part, were studied in weekly meetings. The class read Schiller's *Wallenstein* as private reading.

In the minor course, Goethe's *Egmont*, Schiller's *Wilhelm Tell*, Heine's *Harzreise* (half), and Freytag's *Aus dem Staat Friedrichs des Grossen* were read, three times weekly, and there was a weekly exercise in von Jageman's *Prose Composition.* The class read the following works of Schiller, as private reading: *Des Grafen Lamoral Egmont Leben und Tod; Die Jungfrau von Orleans.*

Dr. Hermann Schoenfeld was in charge of the undergraduate minor course B, with the exception of a class in Prose Composition (Whitney's Exercises, first series), one hour weekly, which was conducted by Dr. Learned. In this course, four hours weekly, Otis' *Elementary German* was begun and completed, and the following works were read: Buchheim's *Reader*, Part I; Schiller's *Wilhelm Tell;* Goethe's *Egmont.*

In the major course, Dr. Schoenfeld conducted a class, weekly, in the History of German Literature (from Klopstock to Goethe's death), and in Freytag, *Aus dem Mittelalter* (50 pp.), weekly.

Two classes of graduate students, each meeting three times fortnightly, read with Dr. Schoenfeld essays in Historical and Scientific German, viz: Freytag, *Aus dem Staat Friedrichs des Grossen;* Weizsäcker, *Herzogin Amalia von Sachsen Weimar;* Helmholtz, *Über Goethe's naturwissenschaftliche Arbeiten;* Cohn, *Über Bakterien;* extracts from Humboldt's *Kosmos.*

Dr. Schoenfeld conducted a class, twice weekly, in German conversation.

HENRY WOOD,
*Professor of German.*

## English.

1. Advanced (or Graduate) Courses.

The meetings of the English Seminary, under the direction of Dr. James W. Bright, occupied four hours a week throughout the year. In the first half-year a study was made of the West-Saxon Prose period from Alfred to Ælfric. Prolonged attention was given to the history of the Benedictine Reform in its relation to the thought and literature of the time. The versions of the "Rule" were minutely examined, and the homilists were analysed and compared.

In the second half-year the *Bēowulf* was studied. The entire text was critically interpreted. All the theories relating to the location, composition, date, authorship, etc., of the poem were reviewed, and the elements of history, myth, and customs were treated in detail. Special study was also bestowed upon the theories of Germanic versification, and upon the elements of poetic style in Anglo-Saxon.

A course of lectures (once a week during the first half-year) was given on the Bibliographical History of English Philology. The history of glosses, dictionaries, grammars, and philological treatises was reviewed from Bede to the *Diversions of Purley*.

In the second half-year lectures were given (twice a week) on the Elements of Phonetics and on the History of the English Language from Anglo-Saxon to Modern English.

The advanced students were also met in class (once a week throughout the year) for the interpretation of texts. The first half-year was occupied with a critical reading of the Anglo-Saxon *Phoenix* and *The Harrowing of Hell*. In the second half-year some of the Minor Poems of Chaucer were read, and a special study made of Chaucer's Language and Versification.

The members of the English Seminary met in fortnightly sessions (two hours) for reports on the current journals, reviews of new books, and the presentation and discussion of original papers on various literary and philological topics.

Dr. William Hand Browne delivered a course of lectures (weekly, throughout the year) on the "classical" period of English Literature.

2. College Courses.

The English major class in Anglo-Saxon was conducted by Dr. Bright (twice weekly). The text-books employed were Sievers' *Old English Grammar* (translated by Cook) and Bright's *Anglo-Saxon Reader*.

The English major class met Dr. Browne weekly for the study of the Scottish poets of the fourteenth, fifteenth, and sixteenth centuries. Readings from selected texts were accompanied by a course of lectures on Early Scottish literature. This class also studied the literature of the Elizabethan period (twice weekly, during the first half-year), and the writers of the first half of the nineteenth century (twice weekly, during the second half-year).

The English minor class was conducted entirely by Dr. Browne. For two hours a week it studied Early and Middle English, with the use of Morris and Skeat's *Specimens*, Parts I, II, in an inverse chronological order, beginning with the *Man of Lawes Tales*, and going back to the late Anglo-Saxon of the Peterborough Chronicle. The history, literature, and language of the twelfth to the fourteenth century were illustrated in a weekly lecture. This class also studied English literature two hours a week, using the Morley-Tyler manual as a text-book.

The students of the P. H. E. course (required of all undergraduates) met Mr. C. A. Smith twice weekly, during the year, for the study of Rhetoric, English Composition, and English Literature. The first half-year was

devoted chiefly to a drill in Hill's *Principles of Rhetoric*, accompanied by short written exercises. This was followed in the second half-year by a critical study of Macaulay's style, based chiefly on Mackie's edition of the *Essay on Hastings*, by the study of English Literature with lectures on certain periods, and by more elaborate exercises in composition.

3. Lectures on Literature.

The third course of the Percy Turnbull Memorial Lectures on Poetry were given (March 16 to March 24) by Robert Yelverton Tyrrell, Litt. D., LL. D., Fellow of Trinity College and Regius Professor of Greek in the University of Dublin. The general subject of the course, "The Growth and Influence of Latin Poetry," was treated in eight lectures as follows: 1. Introductory: A General View of Latin Poetry; 2. Early Latin Poetry, especially the Drama; 3. Lucretius and Epicureanism; 4. Catullus and the Transition to the Augustan Age; 5. Virgil; 6. Horace; 7. Satire: Persius and Juvenal; 8. Poetry of the Decline.

On the Caroline Donovan Foundation five lectures were given by F. B. Gummere, Ph. D., Professor of English in Haverford College, on "Poetry of the People and Poetry of the Schools." The special topics of these lectures were: 1. Poetry of the Schools: Characteristics and Tendencies; 2. Poetry of the People: The Question of Popular Origin; 3. A Century of Criticism; 4. Who Composes a Popular Ballad? 5. Poetry of the People and Poetry of the Schools.

JAMES W. BRIGHT,
*Associate Professor of English Philology.*

WILLIAM HAND BROWNE,
*Associate Professor of English Literature.*

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## Romance Languages.

Professor Elliott conducted advanced courses as follows:

Romance Seminary. *Two hours a week through the year.*

The work centered here on the *Fables of Marie de France*, of which it is proposed eventually to issue a critical edition based on the original manuscripts. The object of the course has been to acquire a working knowledge of the fable literature of antiquity and the middle ages; to become acquainted with the characteristics of the Norman and Anglo-Norman dialects in which some of the more important manuscripts are written; to present the fundamental principles of text-criticism and text-constitution, for which about twenty fables were examined. These were based on five English and eight French manuscripts. A clear view of the morphology and phonetics of the language was obtained as contrasted with those of the Isle-de-France and the group of Eastern French dialects, on which the class worked during the winter.

French Dialects. *Weekly.*

This course was a continuation of that of the previous year; three Eastern dialects were especially considered: Burgundian, Champenois, and Franc-Comtois. These were followed by a short survey of the Southwest and Northwest dialect groups. The method of work had in view a sufficient acquaintance with dialect forms to enable the student to discriminate Old French texts belonging to these different domains. To this end the leading characteristics of the old and modern dialect were presented in a few lectures; then through the use of early and later texts the student was required to recognize and name the dialect features as they occurred, contrasting the features of any given dialect with those of dialects previously examined.

Popular Latin. *Weekly.*

The object here was to give the student an introduction to the phonetics and morphology of Folk- and Low-Latin as the common basis for a scientific study of the modern Romance idioms. Meyer-Lübke's treatment of the subject in Gröber's *Grundriss der Romanischen Philologie* was taken as the starting point for this work, in connection with which lectures were given, contrasting the popular forms with the historic development of the classical forms. The material in the *Probi Appendix* was classified and the popular forms worked out on the basis of Schuchardt's *Vocalismus des Vulgärlateins.* Budinszky's *Ausbreitung der Lateinischen Sprache,* D'Arbois de Jubainville's *Déclinaison latine en Gaule,* Bonnet's *Le Latin de Grégoire de Tours,* Wölfflin's *Archiv für lateinische Lexicographie,* and Siebmann's *Die Aussprache des Latein* were constantly used in connection with this course.

French Phonetics. *Weekly.*

This course in practical phonetics was intended for first-year students who desired to become specialists in the Romance Languages, and for those who made French a subsidiary subject for the degree of Doctor of Philosophy. An introduction was given on the physiology of the speech organs and on the general laws of acoustics as applied to stringed and tongued instruments. After this, experimental work was entered upon in order to note the special physiological and acoustic features of French sounds, and to discriminate between them and the corresponding English sounds where differences exist. Passy's *Les Sons du Français, Étude sur les Changements Phonétiques,* Beyer's *Französische Phonetik,* and Sweet's *Primer of Phonetics* were especially used as reference books in connection with this course.

Lectures on Dante. *Weekly.*

The object of this course was to give the student a survey of the Dante science of his day. In a few introductory lectures he was made acquainted with the leading philosophical and literary tendencies of Dante's time, with the *Inferno*-idea before the author's epoch. The three parts of the *Divina Commedia* were then analysed and presented in detail, both with reference to the previously existing ideas of punishment and recompense and to those peculiar to Dante. A critical review followed of the chief editions and

translations in France, Germany, and England, with a characterization of the work now doing in these countries on the *Divina Commedia.*

Romance Club. *Weekly.*

The object of this organization, to which all members of the Romance Language department belong, is to foster a common interest in everything that concerns the study of the Romance idioms. Reviews of important journal articles, papers on original investigations, discussions of literary and scientific subjects, reports of correspondence of a professional nature, represent the chief exercises that claim the attention of the club.

Dr. Matzke conducted the following courses:

Old French Philology. *Three hours weekly.*

The course consisted of lectures on the Phonology and Morphology of Old French, with practical exercises based on *Aucassin et Nicolete*, edited by Suchier. Constant attention has been paid to the modern French forms, and the effort has been to show the gradual growth of the language.

Old French Texts. *Two hours weekly.*

During the first semester the class translated nearly the whole number of texts given in Constans, *Chrestomathie de l'ancien Français.* In the second semester *Chrétien de Troyes' Cliges* was read. The aim has been to gain a good knowledge of Old French forms and idiomatic constructions by reading as rapidly as possible.

History of the Spanish Drama. *One hour weekly.*

A course of lectures was given on the history of the Spanish Drama. The gradual rise of the liturgical drama was emphasized, and this was followed by a chronological study of the dramatic literature, as it developed, and the peculiar Spanish features of this literature were pointed out. It has been possible to cover the period from 1492 to the death of Calderon.

The Romanzo Cavalleresco. *One hour weekly.*

This course began with a rapid survey of French Epic Poetry. It was then shown how this epic material gradually invaded Italy, and the earliest evidences, popular and literary, of its existence in Italy were studied. In the next place minute attention was paid to the Franco-Italian literature of the Po valley, and it was shown how this literature forms the connecting link between French and Italian epic poetry. Then the study was directed towards the Italian prose and rhymed versions of epic stories. The end of the course was reached in Pulci, Bojardo, and Ariosto. The dependence of these writers on the previous literature was pointed out, and throughout the course the gradual growth of the Italian ideas concerning the epic material was emphasized. The ultimate object of the course was to present the correct point of view for the study of the great poets just mentioned.

Italian. *Three hours weekly.*

After a rapid study of the morphology of the language from Grandgent's *Italian Grammar and Exercises*, selections were read from De Amicis' *Pagine*

*Sparse.* This was followed by the reading of Alfieri's *Oreste*, Goldoni's *Un curioso accidente*, and thirty cantos of Dante's *Purgatorio*.

Spanish. *Two hours weekly (January to June).*

The object was to gain a reading knowledge of the language. The morphology was studied from Knapp's *Spanish Grammar*. As early as possible reading was begun, and it was possible to read a number of selections from Knapp's *Spanish Reader*, followed by one hundred pages of Galdos' *Marianela* and Calderon's *La vida es sueño*. From October to December this class was conducted by Mr. Marden.

French Major. *One hour weekly (October to December).*

Three tragedies of Corneille (the *Cid*, *Horace*, and *Polyeucte*) were read and commented on. The aim was to study these plays as literature, and to teach the nature and growth of French classical tragedy.

Dr. Rambeau conducted the following undergraduate courses in French:

Minor A. *Four hours weekly (January to June).*

1. *Contes; Novels; Drama.*

Honoré de Balzac, *Eugénie Grandet*, Ch. I–IV, p. 30 (contents repeated); then Ch. V, p. 31–XIV, p. 118; (private reading) Ch. XV, p. 119–XXX, p. 222. Victor Hugo, *Hernani*. *Choix d'extraits de Daudet*, ed. Price, Part I and Part II, No. 1, 2, 3–p. 40. Corneille, *Polyeucte* (private reading and two hours' examination). *Historiettes Modernes*, ed. Fontaine, Vol. II (private reading, voluntary; examination passed by the best pupils).

Lectures on the life and works of Honoré de Balzac; the realistic and idealistic school; Victor Hugo and the XIXth Century; Victor Hugo's life and some of his works; the principal features of classicism and romanticism were presented, and those of the classical and romantic drama.

2. *Modern French Comedy.*

Augier and Sandeau, *Le Gendre de M. Poirier*. Sandeau, *Mademoiselle de la Seiglière* (private reading). Pailleron, *Le Monde où l'on s'ennuie*, A. I, Sc. 1–13. Labiche, *La Voyage de M. Perrichon* (contents repeated).

Lectures or remarks on the life and works of Augier; French society in the reign of Louis-Philippe; French aristocracy and *bourgeoisie* (M. Poirier); the society ridiculed by Pailleron; Labiche and his comedies.

3. *History of French Literature (XVII–XIX Centuries).*

Demogeot, *Histoire de la littérature française depuis ses origines jusqu'à nos jours*. Ch. XXIX, p. 353–XXXI, p. 395 (outline, and contents repeated); then Ch. XXXI, p. 395–Ch. XLII, p. 548 (beginning of the XVIIIth century).

Final lecture: a short outline of the whole French literature, especially from the XVIIth century to our own times; the last part (XIXth century) more carefully treated in connection with four representative men: Victor Hugo, Honoré de Balzac, Augier, and Alphonse Daudet (cf. Nos. 1, 2).

4. Exercises in *French conversation* and *oral reports* upon authors and subjects connected with class-work (Nos. 1–3).

5. *Phonetics.*

Sound-Tablets. Paul Passy, *Le Français parlé:* Poetry, Nos. 1–6; Prose, No. 1 (partly), 11. Franke, *Phrases de tous les jours,* § 19–25.

6. The Alexandrine verse; *principal laws of French versification* in connection with No. 5 (Phonetics) and No. 1 (Victor Hugo).

This class met Mr. Symington three hours weekly from October to December.

Minor B. *Four hours weekly* (*January to June*).

1. (*a*) For all students:

George Sand, *La Mare au Diable.* Augier and Sandeau, *Le Gendre de M. Poirier.* Victor Hugo, *Hernani,* part of Act I. Rouget de Lisle, *La Marseillaise.*

(*b*) For all except the students of classics:

Alfred de Vigny, *Le Cachet rouge,* ed. Fortier. *Historiettes Modernes,* ed. Fontaine, Vol. II, Nos. 1, 2, 3, 5.

Short lectures or explanatory remarks on

(*a*) George Sand and the village novel; Augier, the French aristocracy and *bourgeoisie* in the reign of Louis-Philippe; Victor Hugo and some of his works, the Spanish character in *Hernani.*

(*b*) Alfred de Vigny.

2. *Elements of French conversation* on subjects connected with the class-work (No. 1).

3. *Elements of Phonetics.*

Sound-Tablets. Franke, *Phrases de tous les jours,* § 42–48. Paul Passy, *Le Français parlé:* Prose, No. 1 (partly); Poetry, Nos. 1, 2.

From October to December this class was conducted by Mr. Marden, using Whitney's *French Grammar* and Super's *French Reader.*

Major. *Four hours weekly* (*January to June*).

1. *Classical Tragedy and Comedy.*

Jean Racine, *Britannicus; Athalie.* Molière, *Les Femmes savantes; Les Précieuses ridicules,* together with *La Société française au XVII^e^ siècle,* ed. Crane (private reading); *Le Tartuffe* (private reading); *L'Avare; Le Misanthrope.* Voltaire, *Zaïre.*

Lectures on the classical drama; the three unities; Hôtel de Rambouillet; lives and works of Jean Racine, Molière, and Voltaire.

2. *The Study of the Romantic Movement.*

Victor Hugo, *Notre-Dame de Paris,* Vol. I, Livre I–V, Ch. I (contents repeated); then Livre V, Ch. II–Livre VI; Vol. II, Livre VII–Livre X, Ch. IV; Livre X, Ch. V–Livre XI, Ch. IV (private reading); *Ruy Blas. Modern French Lyrics,* ed. Bowen. Poems of Victor Hugo, Lamartine, Alfred de Musset, Béranger, and Rouget de Lisle.

Lectures on Romanticism and Classicism; the origin of Romanticism in France; particularities of the Romantic drama; style and art of Victor Hugo; lives and works of Victor Hugo, Lamartine, Béranger, Alfred de Vigny, and Alfred de Musset.

3. *History of French Literature from the beginnings to the XVIIth Century.*

Gaston Paris, *La littérature française au moyen âge*; the whole book except Part II, Section I, Ch. II–VI, and Section II. Demogeot, *Histoire de la littérature française depuis ses origines jusqu'à nos jours*; Ch. I–V, p. 39; Ch. XII, p. 132–XIII, p. 150; short outline of Ch. XIII, p. 150; Ch. XVII, p. 214; XVIII, p. 214–221.

Lectures on the origin of the French language and the French nation; *langue d'or* and *langue d'oïl*; a final lecture on the principal facts and periods of the French literature from the beginnings to the XVIth century (incl.).

4. Exercises in *French conversation* and *oral reports* upon authors and subjects connected with the class-work (Nos. 1–3).

5. *Phonetics.*

Sound-Tablets. Paul Passy, *Le Français parlé:* Poetry, Nos. 6, 7, 8; Prose, Nos. 1, 4, 10. Franke, *Phrases de tous les jours*, § 1–11.

6. The Alexandrine verse, classical and romantic; *laws of French versification* explained in connection with Phonetics (No. 5) and the regular class-work (Nos. 1, 2).

From October to December this class met Mr. Symington three hours weekly.

The classes in French Prose Composition were conducted by Mr. Bonnotte, each meeting one hour weekly:

*Minor B.* The whole of Part I in Whitney's *Grammar* together with Grandgent's *French Composition* based on *Le Siège de Berlin.* These were supplemented by lectures on special subjects connected with the irregular verbs and syntax.

*Minor A.* The Second Part of Whitney, and Grandgent's materials based on *L'Abbé Constantin.* These were supplemented by lectures on Émile Augier and the Modern Theatre, Victor Hugo and the Romantic Movement.

*Major.* The whole of Chardenal's *Book of Idioms*, followed during the second half-year by original essays on subjects connected with Corneille, Racine, Molière, and other authors.

A. M. Elliott,
*Professor of the Romance Languages.*

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## History and Politics.

The total number of students enrolled during the past year was one hundred and ninety-two. The total for 1891–92 was one hundred and sixty-five. There were seventy-six graduate students as compared with fifty-six in the year preceding. Of the seventy-six graduates five were in the fourth year of their university course, thirteen in the third year, fifteen in the second year, and forty-three in the first year. In the college department fifty-four students were regularly enrolled in Group VI, besides special students and those from other groups taking courses in history and politics.

The teaching force included Professors Herbert B. Adams and George H. Emmott; associates, Doctors John Martin Vincent and Sidney Sherwood; instructors, Doctors B. C. Steiner and George Kriehn; and the following lecturers: Dr. James Schouler, in American History; Professors Simon Newcomb, Henry Carter Adams, and John B. Clark, in Economics; Professor Woodrow Wilson, in Politics; Dr. A. G. Warner and Dr. E. R. L. Gould, in Social Science; Dr. James MacAlister and Dr. William T. Harris, on the History and Philosophy of Education; Hon. John A. Kasson and Dr. Frederic Bancroft, on Diplomatic History.

Of remarkable interest have been the educational lectures, given weekly to a general audience of graduate students from various departments of the University. Young men who are here preparing themselves for educational work in other colleges and universities have appreciated the world's educational experience and historic ideals of culture as presented in the lectures of the U. S. Commissioner of Education and the President of the Drexel Institute. In these courses the philosophical and practical elements of education were admirably reviewed and combined. Abstracts of Dr. Harris's lectures, with a bibliography of educational works, were published in the *University Circulars* for May, 1893, and also in the *University Studies in Historical and Political Science* for May and June, 1893.

It is noteworthy that the first graduate of the Department of Historical and Political Science in this University, Professor Henry Carter Adams, who took his Doctor's degree in Baltimore in 1878, now of the University of Michigan, returned this year to the Johns Hopkins University and gave to its students an advanced course on Finance, with relation to such topics as public expenditures, budgets, financial administration and control, public domain, public industries, taxation, and public debts. Professor H. C. Adams devoted considerable attention to the work of the Economic Conference, a special class of advanced students, which has met fortnightly throughout the year under the guidance of Dr. Sidney Sherwood.

Professor John B. Clark, author of the "Philosophy of Wealth," and now professor of political economy in Amherst College, gave the graduate students a course of twenty-five lectures on Economic Theory, and took an active part in the discussions of the Economic Conference. His influence proved very stimulating, as will be seen in the numerous contributions to economic theory reported in the *University Circulars* for May, 1893, where also may be found a brief account of Professor Clark's lectures, which will soon be published in book form.

A coöperative course on Social Science was introduced by the President of the University in a few special lectures, and was continued by Dr. A. G. Warner, a graduate of this University, U. S. Commissioner of Charities in the District of Columbia, and now professor of social economics in the Leland Stanford Jr. University. Abstracts of Dr. Warner's lectures, together with suggestive lists of authorities, were published in the *University Circulars* for May, 1893. Dr. Warner was followed by another graduate of the University, Dr. E. R. L. Gould, who, for several years past, has been

connected with the U. S. Department of Labor. His course of fifty lectures represented the results of a long and systematic inquiry into the present social and economic problems of European States. (See abstract in *University Circulars*, May, 1893). In connection with Dr. Gould's lectures was held a Social Science Conference, in which original social studies were presented by graduate students. Among these papers were (1) The Problem of Dealing with the Unemployed in a Large City, by A. C. Hall, who, in May, 1893, was appointed assistant in the Social Science Section of the Department of Liberal Arts at the Columbian Exposition; (2) The Natural Rights of Street Beggars, by Frank I. Herriott, an abstract of whose paper was published in the *University Circulars* for May, 1893; (3) The Charitable Institutions of Maryland, by David I. Green, whose paper forms a chapter of the "Maryland Book" prepared for the world's fair by members of the Johns Hopkins University at the request of the Maryland Commission. Under the guidance of Mr. David I. Green, the class in Social Science made occasional tours of observation during the winter months through various public and charitable institutions of Baltimore city and county. A report of this itinerary visitation of hospitals, asylums, alms-houses, prisons, houses of refuge, and industrial schools, is printed in the *University Circulars* for May, 1893.

A very successful and stimulating course was that by a former U. S. Minister to Austria and Germany, Hon. John A. Kasson, of Washington, D. C., who gave to a general audience of undergraduate and graduate students a course of eloquent and scholarly lectures on the History of European Diplomacy from classical times down to the epoch-making careers of Cavour and Bismarck. In connection with this course Dr. Frederic Bancroft gave a few lectures upon American Diplomatic History.

The lectures of Professor Woodrow Wilson on Administration and Comparative Politics, and those of Dr. Schouler on American Constitutional Law have possessed unusual interest for students of political science. An arrangement has been made with Professor Wilson for a continuance of his three years' course of graduate instruction in public law. Dr. Schouler will also continue his three years' course in (1) American Political History, (2) American Constitutional Law, and (3) American State Constitutions.

Professor Herbert B. Adams has continued to direct the organized work of the Department of History and Politics. The Seminary has met fortnightly throughout the year and has discussed a variety of original papers upon historical, political, social, and economic subjects. Among the papers of special interest and scientific value are: (1) Some Recent Aspects of Institutional Study, by Dr. C. M. Andrews, of Bryn Mawr College, a graduate of the department and author of the "Old English Manor," whose Seminary contribution is published in the *Yale Review* for February, 1893; (2) A Nineteenth Century Monastery, by J. S. Bassett, of North Carolina, published in the *Magazine of American History*, February, 1893; (3) English Institutions and the American Indian (a Doctor's thesis), by J. A. James, of Wisconsin; (4) Slavery in Connecticut, by Dr. B. C. Steiner, of Balti-

more, published in the *Johns Hopkins University Studies*, September, 1893; (5) The Negro in the District of Columbia, by Edward Ingle, of Washington, D. C., published in the *Studies*, March and April, 1893; (6) The Economic History of a Nebraska Township, by A. F. Bentley, of Nebraska, published in the *Studies*, July and August, 1893; (7) Political Institutions of Maryland, by J. H. Hollander, published in the "Maryland Book," 1893; (8) Evolution of Markets and World's Fairs, by T. N. Carver, of California, abstract in *University Circulars*, May, 1893; (9) Merging of National and State Politics, by John Haynes, of Massachusetts, published in the *Yale Law Journal*, March, 1893; (10) Representation and Suffrage in Massachusetts (Doctor's thesis), by G. H. Haynes, of Massachusetts; (11) The Struggle of Protestant Dissenters for Religious Toleration in Virginia (Doctor's thesis), by Henry R. McIlwaine, of Virginia; (12) Contemporary American Opinions of the French Revolution (Doctor's thesis), by Charles D. Hazen, of Vermont. All of these studies are by Johns Hopkins graduate students. The papers published in the *Studies* are now confined almost exclusively to original work by Hopkins men.

Since the close of the last academic year the Tenth Series of the *Studies* has been completed by the publication of the following monographs: Maryland's Attitude in the Struggle for Canada, by J. William Black, Ph. D., now professor of economics in Oberlin College; The Quakers in Pennsylvania (1682–1776), by A. C. Applegarth, Ph. D., of Baltimore; Columbus and his Discovery of America, an Historical Oration delivered in the Peabody Institute by H. B. Adams at the opening of the University in October, 1892, with an oration by Professor Henry Wood, delivered at the Columbus celebration in Baltimore, October 21, 1892; Causes of the American Revolution, by James A. Woodburn, a graduate of this department, and now professor of American History in the Indiana State University. Since the opening of the year 1893 there have been published, in addition to the monographs already mentioned, the following Studies: (1) The Social Condition of Labor, by Dr. E. R. L. Gould; (2) The World's Representative Assemblies of To-Day, by Edmund K. Alden, a graduate of Amherst College, and some time in residence at this University.

Besides conducting the Historical Seminary and editing the University Studies in History and Politics, Professor Adams has conducted the following class courses:

1. Early German History, with a class of seventy graduate students, two hours weekly through the first half-year. In this course special attention was called to the original sources of the history of the leading Germanic peoples, including the Goths, Vandals, Franks, Lombards, Saxons, Norsemen, and Danes. The beginnings of Germanic state-life in Southern Europe and England were reviewed by the lecturer and private reading by the students was encouraged in both standard and original authorities. Occasional written examinations were given to test the results of class instruction and private reading.

2. Early English and American Colonial History, with a class of sixty-eight graduate students during the second half-year. In this course lectures were given upon the Germanic conquest and settlement of England, the survival of Celtic influences, the conversion and centralization of the various petty kingdoms, Scotch-Irish and Roman influences, educational development, local institutions and their continuity throughout English and American history. Special attention was paid to the Spanish, French, and English discoveries in the new world, to the original sources of colonial history, and to the leading features of colonial life and institutional development. In connection with this part of the general subject, occasional oral reports upon assigned themes were given by individual students as a means of training in the art of historical presentation. In some cases original investigations have grown out of these pedagogical exercises.

3. Church History, with a class of eighteen graduates and twenty-one undergraduates two hours weekly throughout the year. Lectures were given introductory to the study of Jewish and Christian institutions. The continuity of Jewish influence throughout the Middle Ages and modern times was emphasized and the Jewish question of to-day in various European countries was stated by the lecturer. A liberal course of class reading was encouraged in connection with the history of the Christian Church and its influence upon European civilization. In this connection attention was paid to the rise of schools and universities, the revival of learning, and the Renaissance in general.

4. History of Commerce and Early International Relations, with a class of five graduates and twenty-two undergraduates two hours weekly throughout the year. The lecturer traced the origin and development of early commercial relations with reference to Oriental and classical nations, the international significance of the slave trade, the earliest treaties, intermunicipal life and institutions among the Greeks, the jus gentium, Roman law and its international influence, commercial codes of the Middle Ages, municipal leagues and confederations, international influence of the Church and the origin of the State system of Europe. After these introductory lectures, Dr. Adams conducted a class course in the principles of international law. The work of the year was concluded by Dr. Bancroft's and Mr. Kasson's class lectures on Modern Diplomatic History.

Professor George H. Emmott lectured on:

1. On the History and Development of the Common and Statute Law of England, to thirty graduate and advanced students, twice weekly. The lectures traced the outlines of the history of the laws of England, with special reference to those relating to real property, and set forth their leading principles, showing how those laws were until recently administered by distinct tribunals, the Courts of Common Law and the Court of Chancery, and pointed out the limits of their respective jurisdictions. The course commenced with an examination of the effects of the Teutonic settlement in England, and of the laws and customs of the Anglo-Saxons relating to

property, together with an account of the judicial institutions of the Anglo-Saxons and of the Anglo-Saxon vassalage. It then treated of the sources of the Feudal system, of the origin of feudal vassalage, and of the effects of the Norman Conquest upon the pre-existing laws and institutions of England, and leading principles of the common law of England.

2. On English Constitutional Law and History, to eighteen graduate and twenty-two undergraduate students, for three hours a week, during the first half-year. The origin and development of the English Constitution and of the fundamental principles of English constitutional law were carefully and systematically traced in chronological order from the earliest period down to the present time. Taswell Langmead's English Constitutional History was taken as containing an outline sketch of the ground covered, with references to the works of Freeman, Stubbs, Hallam, Erskine May, Dicey, Anson, Hearn, Bagehot, Traill, Spencer Walpole, and other writers. The instruction was given by means of lectures delivered by the instructor, by frequent recitations, and by lectures given and reports carefully prepared by the students themselves on assigned topics.

3. On Sources of English History and the Early History of Historical Writing in England, to forty-three graduate and advanced students once weekly from October to Christmas, 1892. It is hoped that during the next academic year this course may be given weekly throughout the year. The lectures contained a careful presentation of the lives and works of the early English historical bibliographers, of the materials from which our knowledge of early English history is drawn and of the general nature and contents of the Year Books, Court Rolls, and other early records, and of the work accomplished by the Record Commission.

Dr. J. M. Vincent conducted the following courses:

1. Science of Historical Research, with a class of thirty-six graduates, one hour a week throughout the year. The various classes of historical materials were defined, their relative values compared and the method of use in each case indicated. The general rules of historical evidence, the principles which must govern the student in making up his conceptions of history, the composition of historical works, the appropriate literary style and other kindred topics were discussed.

2. Historical Conference, two hours fortnightly, November to April inclusive. To this conference a limited number of advanced students (8) were admitted, to whom special topics were given for study and report. The object of the work was to cultivate critical examination of sources and the weighing of historical evidence. The topics were chosen from fields in which it was possible to gather all the available materials, so that the student, although working an old problem, might feel that he was solving it for himself, or might know exactly how nearly it could be solved. Among the subjects discussed were the Origin of the Aryans; the Earliest Inhabitants of Scandinavia; the Original Home of the Saxons; the Migration of

the Anglo-Saxons to England; the Conversion of Kent; and the Origin of Guilds.

3. Continental History (part of History major), with twenty-three students, three hours weekly through the year. The work embraced mediæval and modern history, partly by means of lectures and partly by the use of text-books. The greater portion of Emerton's Beginnings of the Middle Ages, Duruy's France, Myers' Mediæval and Modern History, Bryce's Holy Roman Empire, and Green's Short History of the English People was read by the class.

4. Greek and Roman History (P. H. E.), with twenty-six students, using as a basis Myers' History of Greece and Allen's Rome, three hours weekly, January to June, 1893.

5. Herodotus and Thucydides (in translation), with eighteen students, one hour weekly through the year.

Dr. Bernard C. Steiner conducted a class course in American Politics, with twenty-three students, three hours weekly during the second half-year.

Dr. Christopher Johnston gave a course of lectures on the History of the Ancient East to twenty students, graduate and undergraduate, one hour weekly from October, 1892 to March, 1893.

Professor Maurice Bloomfield gave a course of weekly lectures, from October, 1892 to January, 1893, on the Ethnological History of Indo-European Peoples, to forty-three graduate students in the Historical Department.

Dr. George Kriehn conducted a class of fourteen undergraduate students in the Outlines of European History, three hours weekly from January to June, 1893. He also gave to graduate students a short course upon Popular Uprisings in the 14th, 15th, and 16th centuries. For an outline of this course see *University Circulars*, May, 1893.

## Economics.

The instruction in Economics has been carried forward upon a coöperative plan by Professors John B. Clark, Simon Newcomb, Henry Carter Adams, and Dr. Sidney Sherwood.

1. Graduate courses.

Four courses of lectures, aggregating eighty-five in number, were given to graduate students. The first course of twenty-five lectures was given by Professor John B. Clark on the Theory of Distribution to a class of forty-one students, and occupied six weeks, beginning in October, 1893. The second course was one of eight lectures delivered by Professor Newcomb, two hours weekly throughout the year, on the Application of the Mathematical Method of Economics. Beginning in January, 1893, Professor Henry Carter Adams gave a course of twenty-five lectures on Finance to a class of forty-five students. The fourth course of graduate lectures was one of twenty-five lectures on Money and Banking delivered by Dr. Sherwood, two hours weekly beginning in March. This class numbered thirty-nine.

2. Economic Conference.

Dr. Sherwood has conducted on alternate Fridays throughout the year a voluntary conference of nineteen graduate students, giving special attention to economics. The work was devoted mainly to the investigations of recent tendencies in economic theory, and was carried on with great enthusiasm by the members. Several valuable contributions were made to economic literature. Among the papers read and discussed at the Conference may be mentioned the following: "The Theory of Final Utility in its Relation to Money and the Standard of Deferred Payments," by L. S. Merriam, published in the Annals of the American Academy of Political and Social Science, January, 1893; "Value and its Measurement," by David I. Green, published in abstract in the *University Circulars*, May, 1893; "The Place of Abstinence in the Theory of Interest," by T. N. Carver, published in abstract in the above named *Circular;* "Mill's Fourth Fundamental Proposition concerning Capital," by J. H. Hollander, published in abstract in the above named *Circular;* "The Logical Content of the Terms Labor and Capital," by Frank I. Herriott, published in abstract in the above named *Circular;* "The Wage Theory of Von Thünen," by H. L. Moore, published in abstract in the above named *Circular;* and "Marshall's Theory of Distribution," by A. F. Bentley.

3. During the latter half of the year Dr. Sherwood organized and conducted a smaller class of advanced students, meeting weekly on Wednesday afternoons, for the systematic study of Professor Marshall's Principles of Economics. This club was restricted in membership to six of the most advanced students of economics. Marshall's theories were critically discussed and compared with the systems of other recent writers, especially Clark, Patten, and Böhm-Bawerk.

4. Undergraduate Economics.

The work in this course with Dr. Sherwood was mainly a systematic drill in the elements of the science. The average attendance was thirty-three, of which number fourteen were graduate students. The text-books used were F. A. Walker's Political Economy (advanced course) and J. S. Mill's Principles. A course of lectures and recitations on the history of economic theory was also given, with assigned reading in Ingram's History of Political Economy, in Adam Smith, Ricardo, and other writers. Essays were written by all the members of this class and read and discussed in the class-room.

H. B. Adams,
*Professor of American and Institutional History.*

## Philosophy.

The following report of the work in Philosophy during the academic year 1892–3 is respectfully submitted.

The undergraduate instruction in Logic, Psychology, and Ethics has been under the care of Professor Griffin. Five hours a week, for a year, are assigned to these subjects, and all candidates for the degree of Bachelor of Arts are required to follow this course during their last year of residence. Logic was studied by the class until December 15th; then the time was given to Psychology, until about April 15th; the remainder of the year was devoted to the study of Ethics. Forty-five students attended the course. The effort has been to keep particularly in view the needs of those to whom these subjects are new, and to make the treatment as simple and untechnical as possible, and at the same time to call attention to fundamental problems, so that the work may serve as an introduction to general philosophical study. Text-books have been used in each subject, as affording definite material of acquisition; but informal lectures, discussions in the class, and passages from various authors specially assigned for reading, have been largely relied upon in the presentation. Each member of the class has been required to prepare two essays in the course of the year.

Jevons's *Elementary Lessons in Logic* and Fowler's *Elements of Inductive Logic* were made the basis of instruction in deductive and inductive logic, respectively, with frequent references to the works of Mill, Bain, Keynes, and other writers. Attention was given to the general theory of deduction and of induction, to the several forms of thought—the notion, judgment, and reasoning—and to the methods of scientific investigation and proof. Exercises were given in definition and division, in the opposition and conversion of propositions, in the application of the rules of the syllogism, and in the detection of fallacies.

The instruction in Psychology attempted to give a general view of the results of the more recent methods of study. Especial emphasis was laid also upon the facts of conscious experience as known through introspection. The most important end to be secured being, it is believed, such an understanding of the facts and laws of mental life as shall fit one for wise self-government and effective influence, such powers and states of mind as attention, memory, association, habit, imagination, the feelings, the will, were discussed in as concrete and practical a way as possible. Baldwin's *Handbook of Psychology* and Ladd's *Outlines of Physiological Psychology* were used as text-books, supplemented by many references to the works of other authors.

The work in Ethics was mainly confined to the theoretical and historical aspects of the subject; questions of applied ethics were, for lack of time, but slightly considered. The various forms of feeling native to our constitution and constituting the possible motives of conduct; the conditions and nature of the sense of obligation; the authority of conscience; the diversities of moral sentiment; the historic theories of morals—hedonism,

utilitarianism, intuitionism; the application to ethical theory of the doctrine of evolution; the characteristic features of Christian morality; these were some of the topics discussed. While a more detailed application of the principles reached to personal and social conduct would have been desirable, the consideration of the speculative side of ethics is well adapted to produce a habit of moral thoughtfulness. Fowler's *Principles of Morals*, Part II, was the text-book employed.

A brief outline of the History of Philosophy was given during the last weeks of the year, for the benefit of those who were able, at so disadvantageous a time, to attend the lectures.

Professor Griffin conducted during the year a course in the History of Philosophy, for graduate students, consisting of the reading and discussion of representative works in modern philosophy from Descartes to Kant. The works read were as follows: Bacon's *Novum Organum*, book I and a part of book II; Descartes's *Method* and *Meditations;* portions of Spinoza's *Ethics;* Locke's *Essay on Human Understanding*, books I, II, IV; Berkeley's *Principles of Human Knowledge;* Hume's *Treatise on Human Nature*, book I; a portion of Kant's *Critique of Pure Reason*. The class met once a week for discussion and criticism. Certain important works in modern ethics were studied by a number of graduate students, meeting one evening each fortnight.

EDWARD H. GRIFFIN,
*Professor of the History of Philosophy.*

## Drawing.

The Undergraduate Course in Drawing has included: (*a*) representative or free-hand drawing from natural forms and geometric models, in outline and in light and shade, with pencil, pen and ink, charcoal and crayon studies of landscape contours; and large charts finished with crayon or ink brush, such as the student may be called upon to make later on, when teaching or in illustrating lectures; (*b*) constructive or mechanical drawing, with exercises in the use of instruments, and elements of descriptive geometry,—simple projections, sections and developments, isometric projections, and the elements of linear perspective.

The Special Instruction in Drawing has been adapted to the wants and abilities of those seeking it, and has been chiefly in the line of advanced free-hand drawing, in light and shade, from casts, and personal directions for individual improvement in some line of drawing helpful to the student in his scientific work.

The Technical Instruction in Drawing has already been referred to under the head of Electrical Engineering.

S. EDWIN WHITEMAN,
*Instructor in Drawing.*

# TABULAR STATEMENT OF COURSES OF INSTRUCTION, 1892-93.

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | **Mathematics and Astronomy.** | | | |
| Newcomb. | Celestial Mechanics. | 2 | 3 | 3 |
| Poor. | Theoretical and Practical Astronomy. (First half-year.) | 3 | 18 | |
| Poor. | Astronomy: Advanced Course. | 3 | 3 | 3 |
| Poor. | Gravitational Astronomy, etc. (Second half-year.) | 3 | | 14 |
| Poor. | Astronomical Seminary. | 1 | 14 | 16 |
| Poor, Hoffman. | Laboratory Work. | | | 16 |
| Craig. | Theory of Functions. | 2 | 23 | 23 |
| Craig. | Partial Differential Equations. (First half-year.) | 2 | 6 | |
| Craig. | Mathematical Seminary. | 1 | 23 | 23 |
| Craig. | Algebraic Differential Equations. (Second half-year.) | 4 | | 3 |
| Craig. | Linear Differential Equations. (First half-year.) | 3 | 3 | |
| Franklin. | Calculus: Special Topics. (First half-year.) | 2 | 37 | |
| Franklin. | Determinants and Theory of Equations. (First half-year.) | 3 | 27 | |
| Franklin. | Theory of Invariants; Higher Plane Curves; Calculus of Finite Differences; Theory of Probability. (First half-year.) | 5 | 11 | |
| Franklin. | Geometry of Three Dimensions. (Second half-year.) | 3 | | 32 |
| Franklin. | Theory of Surfaces and Curves in Space. (Second half-year.) | 3 | | 7 |
| Franklin. | Riemann Theory of Algebraic Functions, etc. (Second half-year.) | 2 | | 9 |
| Franklin. | Modern Plane Analytic Geometry. (First half-year.) | 3 | 27 | |
| Hulburt. | Theory of Substitutions. (First half-year.) | 3 | 3 | |
| Hulburt. | Theory of Plane Algebraic Curves. (Second half-year.) | 2 | | 14 |
| Hulburt, Cohen. | Differential Equations; Major Course. (Second half-year.) | 2 | | 34 |
| Hulburt, Landis. | Differential and Integral Calculus. (Second half-year.) | 5 | | 35 |
| Hulburt, Cohen. | Analytic Geometry: Minor Course. (First half-year.) | 5 | 31 | |
| Cohen. | Analytic Geometry: Elementary. (Second half-year.) | 3 | | 14 |
| Landis. | Trigonometry. (First half-year.) | 3 | 10 | |
| | **Physics.** | | | |
| Rowland. | Electricity and Magnetism. | 4 | 20 | 17 |
| Ames. | Physical Seminary. | 1 | 19 | 17 |
| Ames. | General Physics: Major Course. | 5 | 52 | 55 |
| Ames. | General Physics: Minor Course. | 5 | 45 | 45 |
| Ames. | Mechanics: Advanced. (First half-year.) | 2 | 28 | |
| Ames. | Hydrodynamics and Sound. (Second half-year.) | 2 | | 23 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Duncan. | Applied Electricity. (First Year's Course.) | 3 | 28 | 28 |
| Duncan. | Applied Electricity. (Second Year's Course.) | 2 | 20 | 21 |
| Hering. | Steam and Hydraulic Engineering. | 2 | 16 | 17 |
| Hering. | Laboratory Methods. | 1 | 19 | 21 |
| Head. | Applied Kinematics. (First Year's Course.) (Second half-year.) | 2 | | 20 |
| Head. | Applied Kinematics. (Second Year's Course.) (First half-year.) | 2 | 16 | |
| Head. | Machine Design and Mechanics of Engineering. | 2 | 19 | 20 |
| Rowland, Duncan, Ames, Hering, Head. | Laboratory Work. | | 129 | 125 |
| Rowland, Ames. | Journal Club. | 1 | 15 | 13 |
| | **CHEMISTRY.** | | | |
| Remsen. | History of Chemistry. (First half-year.) | 2 | 43 | |
| Remsen. | Compounds of Carbon: Advanced Course. (Second half-year.) | 5 | | 33 |
| Remsen. | General Chemistry: Minor Course. (First half-year.) | 3 | 70 | |
| Morse. | Analytical Chemistry: Selected Topics. (First half-year.) | 2 | 18 | |
| Morse. | Compounds of Carbon: Major Course. (Second half-year.) | 3 | | 18 |
| Morse. | Crystallography and Mineralogy: Major Course. (First half-year.) | 2 | 24 | |
| Renouf. | Inorganic Chemistry: Major Course. | 3 | 23 | 21 |
| Renouf. | General Chemistry: Minor Course. (Second half-year.) | 3 | | 61 |
| Renouf, Randall, Gilpin. | Reviews in General Chemistry: Minor Course. | 2 | 59 | 57 |
| Remsen, Morse, Renouf, Randall. | Laboratory Work. | | 124 | 118 |
| | Historical Lectures. (Thirteen lectures by advanced students, second half-year.) | | | |
| | Journal Meeting. | 1½ | | |
| | **GEOLOGY, MINERALOGY, ETC.** | | | |
| Williams. | General Mineralogy. | 4 | 21 | 19 |
| Williams. | Petrography. | 3 | 12 | 7 |
| Williams. | Petrography: Laboratory Work. | | 11 | 10 |
| Clark, W. B. | General Geology. | 4 | 8 | 9 |
| Clark, W. B. | Palæontology: Laboratory Work. | | 12 | 11 |
| Clark, W. B. | Physical Geography. (P. H. E.) (First half-year.) | 3 | 46 | |
| | Journal Meeting. | 1 | | |
| | **BIOLOGY.** | | | |
| Martin. | Physiology: Advanced Course. (Second half-year.) | 1 | | 12 |
| Martin, Dreyer. | Physiological Seminary. (Second half-year.) | 1 | | 8 |
| Martin, Dreyer. | Physiology and Histology. | 3 | 10 | 10 |
| Martin, Andrews. | General Biology. | 3 | 23 | 22 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Brooks. | Zoölogy: Advanced Course. | 1½ | 11 | 11 |
| Brooks. | Zoölogical Seminary. | 2 | 9 | 9 |
| Brooks. | Human and Comparative Osteology. | 2 | 20 | 19 |
| Andrews. | Mammalian Anatomy. (During October.) | 5 | 11 | |
| Andrews. | General Zoölogy. | 2 | 11 | 15 |
| Andrews. | Embryology of the Chick. (During April and May.) | 3 | | 22 |
| Dreyer. | Normal Histology. (For Physicians.) (First half-year.) | 3 | 14 | |
| Barton. | Systematic Botany. (During April and May.) | 2 | | 19 |
| Lotsy. | Cryptogamic Botany. (Second half-year.) | 3 | | 11 |
| Martin, Brooks, Andrews, Dreyer, Barton, Lotsy. | Laboratory Work. | | 55 | 53 |
| Martin, Brooks. | Journal Club. | 1 | 13 | 13 |
| | **Greek.** | | | |
| Gildersleeve. | Greek Seminary: Attic Orators. | 2 | 24 | 25 |
| Gildersleeve. | Greek Syntax. | 1 | 23 | 26 |
| Gildersleeve. | Greek Rhetoric. (Second half-year.) | 1 | | 25 |
| Gildersleeve. | Greek Lyric Poetry. (Second half-year.) | 1 | | 25 |
| Gildersleeve. | Practical Exercises. (First half-year.) | 2 | 22 | |
| Spieker. | Thucydides. (First half-year.) | 3 | 6 | |
| Spieker. | Lysias. (First half-year.) | 4 | 10 | |
| Spieker. | Homer; Euripides. (Second half-year.) | 4 | | 11 |
| Spieker. | Aischylos; Sophokles. (Second half-year.) | 3 | | 4 |
| Spieker. | Greek Literature. | 1 | 6 | 4 |
| Spieker. | Greek at Sight. | 1 | 7 | 4 |
| Spieker. | Prose Composition. (Two classes.) | 2 | 16 | 15 |
| Miller. | Greek Orators; Pindar; Tragic Poets. | 2 | 16 | 19 |
| Miller. | Greek Palaeography. (Second half-year.) | 2 | | 14 |
| Gudeman. | History of Alexandrian Literature. (First half-year.) | 1 | 5 | |
| Gudeman. | History of Classical Philology. (First half-year.) | 1 | 5 | |
| Gudeman. | Plutarch's Life of Cicero. (Second half-year.) | 1 | | 11 |
| Arnolt. | New Testament Greek and the Septuagint. (First half-year.) | 3 | 8 | |
| | **Latin.** | | | |
| Warren. | Latin Seminary: Plautus and Terence. | 2 | 30 | 29 |
| Warren. | Latin Comedy. (First half-year.) | 1 | 28 | |
| Warren. | Historical Latin Grammar. | 1 | 26 | 26 |
| Warren. | Journal Club. (Alternate weeks.) | 1 | 19 | 17 |
| Warren. | Aulus Gellius. (Second half-year.) | 1 | | 25 |
| Warren. | Latin Epigraphy. | 1 | 24 | 25 |
| Warren. | Horace. (Second half-year.) | 4 | | 15 |
| Smith, K. F. | Tacitus. (Second half-year.) | 4 | | 19 |
| Smith, K. F. | Terence; Plautus. (First half-year.) | 3 | 8 | |
| Smith, K. F. | Lucretius; Cicero. (Second half-year.) | 3 | | 8 |
| Smith, K. F. | Reading at Sight. | 1 | 8 | 8 |
| Smith, K. F. | Livy. (First half-year.) | 4 | 34 | |
| Smith, K. F. | Prose Composition. (Two classes.) | 2 | 22 | 22 |
| Gudeman. | Tacitus, Dialogus. (Second half-year.) | 1 | | 5 |
| | **Sanskrit, Etc.** | | | |
| Bloomfield. | Vedic-Seminary: Atharva-Veda and Rig-Veda. | 1 | 6 | 6 |
| Bloomfield. | Advanced Sanskrit: Nala and Hitopadeça. (First half-year.) | 2 | 6 | |
| Bloomfield. | Introduction to the Vedas. (Second half-year.) | 1 | | 5 |
| Bloomfield. | Introduction to Zend and the Avesta. (Second half-year.) | 1 | | 3 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Bloomfield. | Ethnological History of the Indo-European Peoples. (Lectures.) (First half-year.) | 1 | 43 | |
| Bloomfield. | Introduction to the Study of Comparative Philology. | 1 | 14 | 13 |
| Bloomfield. | Comparative Grammar of Latin and Greek. | 1 | 26 | 27 |
| Bloomfield. | Elementary Sanskrit. | 2 | 12 | 10 |
| Holmes. | Advanced Sanskrit: Nala and Hitopadeça. (Second half-year.) | 1 | | 5 |
| | **Semitic Languages.** | | | |
| Haupt. | Assyrian Seminary. (Second half-year.) | 2 | | 2 |
| Haupt. | Hebrew Prose Composition. (Second half-year.) | 1 | | 5 |
| Haupt. | Messianic Psalms. (Second half-year.) | 1 | | 6 |
| Haupt. | Haggai and Zechariah. (Second half-year.) | 1 | | 5 |
| Adler. | Post-Biblical Hebrew. | 1 | 2 | 2 |
| Adler. | Targumic Version of the Psalms. (First half-year.) | 1 | 3 | |
| Adler. | History of Israel. (Lectures.) (First half-year.) | 1 | 16 | |
| Adler. | Biblical Archæology. (Lectures.) (Second half-year.) | 1 | | 9 |
| Adler. | Jewish Antiquities. (Lectures.) (Second half-year.) | 1 | | 6 |
| Adler, Johnston, Stevens. | Hebrew: Elementary. | 3 | 9 | 3 |
| Adler, Johnston. | Old Testament: Historical Books. | 1 | 6 | 5 |
| Johnston. | Assyrian: Advanced. | 2 | 3 | 2 |
| Johnston. | Assyrian: Elementary. (First half-year.) | 1 | 1 | |
| Johnston. | Septuagintal, Syriac and Arabic Versions of the Psalms. | 1 | 1 | 1 |
| Johnston. | Syriac. (First half-year.) | 1 | 1 | |
| Johnston. | History of the Ancient East. (Lectures.) (First half-year.) | 1 | 20 | |
| Stevens. | Hebrew Exercises. (First half-year.) | 1 | 2 | |
| Arnolt. | New Testament Greek and the Septuagint. (First half-year.) | 3 | 3 | |
| | **German.** | | | |
| | *Advanced Work.* | | | |
| Wood. | German Seminary: Old High German. (First half-year.) | 2 | 3 | |
| | Middle High German. (Second half-year.) | 3 | | 3 |
| Wood. | Germanic Society. (Alternate weeks.) | | 13 | 14 |
| Wood. | German Literature. | 2 | 12 | 12 |
| Wood. | Outlines of Teutonic Philology. | 1 | 18 | 16 |
| Wood. | Gothic. | 2 | 9 | 11 |
| Learned. | Nibelungenlied. (First half-year.) | 2 | 9 | |
| Learned. | Middle High German. | 1 | 6 | 4 |
| Learned. | History of Middle High German. (Second half-year.) | 2 | | 3 |
| | *Major Course.* | | | |
| Wood, Learned. | Goethe (Hermann and Dorothea; Faust). | 2 | 18 | 15 |
| Learned. | Prose Composition. | 1 | 18 | 15 |
| Schoenfeld. | Selected Prose Readings: Freytag. | 1 | 18 | 15 |
| Schoenfeld. | History of German Literature. (Lectures.) (First half-year.) | 1 | 18 | |
| | *Minor Course: Class A.* | | | |
| Wood. | Briefwechsel zwischen Schiller und Goethe. | 1 | 29 | 24 |
| Learned. | Prose Composition | 1 | 29 | 24 |
| Learned. | Selected Prose Readings: Freytag. | 1 | 29 | 24 |
| Learned. | Schiller (Wilhelm Tell). | 2 | 29 | 24 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | *Minor Course: Class B.* | | | |
| Schoenfeld. | Otis, Elementary German; Goethe (Egmont); Buchheim, I; Schiller (Wilhelm Tell). | 4 | 19 | 17 |
| Schoenfeld. | Prose Composition. | 1 | 19 | 17 |
| | *Supplementary Courses.* | | | |
| Schoenfeld. | Scientific and Historical Readings: Helmholtz, Cohn, Freytag, Humboldt. | 3 | 19 | 13 |
| Schoenfeld. | German Conversation. | 2 | 11 | 11 |
| | **Romance Languages.** | | | |
| Elliott. | Advanced Courses. (Romance Seminary, Dante, French Dialects, French Phonetics, Romance Club and Journal Meeting, Folk Latin.) | 7 | 24 | 26 |
| Matzke. | Italian Literature. | 1 | 13 | 12 |
| Matzke. | Old French Philology. | 3 | 22 | 19 |
| Matzke. | Interpretation of Old French Texts. | 2 | 15 | 12 |
| Matzke. | Spanish Literature. | 1 | 13 | 12 |
| Matzke. | Italian. | 3 | 5 | 5 |
| Matzke, Marden. Rambeau, | Spanish. | 2 | 4 | 8 |
| Matzke, Symington, Bonnotte. Rambeau, | French: Major Course. | 5 | 7 | 7 |
| Symington, Bonnotte. Rambeau, | French: Minor Course (Class A.) | 5 | 15 | 17 |
| Marden, Bonnotte. | French: Minor Course (Class B.) | 5 | 23 | 16 |
| | **English.** | | | |
| Bright. | English Seminary. | 4 | 20 | 21 |
| Bright. | History of English Philology. (Lectures.) | 1 | 24 | 22 |
| Bright. | Historical English Grammar. (Second half-year.) | 1 | | 18 |
| Bright. | Interpretation of Texts. | 2 | 18 | 19 |
| Bright. | Anglo-Saxon. (Sweet's Reader.) | 2 | 9 | 7 |
| Bright. | Journal Meeting. (Alternate weeks.) | 2 | 21 | 20 |
| Bright. | Classical Period of English Literature. | 1 | 16 | 16 |
| Browne. | Early Scottish Poets. | 1 | 7 | 7 |
| Browne. | English Literature. (Major Course.) | 2 | 7 | 7 |
| Browne. | Middle English. | 2 | 10 | 10 |
| Browne. | English Literature. (Minor Course.) | 3 | 10 | 10 |
| Smith, C. A. | Rhetoric and Composition. (P. H. E. Course.) | 2 | 43 | 44 |
| | **Historical and Political Science.** | | | |
| Adams, H. B. | Seminary of History and Politics. (Alternate weeks.) | 2 | 58 | 60 |
| Adams, H. B. | Germanic History. | 2 | 70 | 68 |
| Adams, H. B. | History of Church and Empire. | 2 | 39 | 39 |
| Adams, H. B. | International Law. | 2 | 27 | 27 |
| Emmott. | Historical Jurisprudence. (English Law.) | 2 | 32 | 20 |
| Emmott. | English Constitution. (First half-year.) | 3 | 39 | |
| Emmott. | Sources of English History. (First half-year.) | 1 | 42 | |
| Schouler, Steiner. | American Constitutional History. (Second half-year.) | 3 | | 54 |
| Vincent. | Methods of Historical Research. | 1 | 36 | 34 |
| Vincent. | Historical Conference. (Second half-year.) (Alternate weeks.) | 2 | | 8 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Vincent. | Continental History. | 3 | 23 | 18 |
| Vincent. | Herodotus and Thucydides. | 1 | 18 | 19 |
| Vincent. | Greek and Roman History. (P. H. E.) (Second half-year.) | 3 | | 30 |
| Sherwood. | Money and Banking. (Second half-year.) | 2 | | 34 |
| Sherwood. | Marshall's Principles of Economics. (Second half-year.) | 1½ | | 6 |
| Sherwood. | Economic Conference. (Second half-year.) (Alternate weeks.) | 2 | | 20 |
| Sherwood. | Elements of Political Economy. | 5 | 30 | 36 |
| Kriehn. | European History. (P. H. E.) (Second half-year.) | 3 | | 15 |
| Gilman. | Social Science. (First half-year.) (Six lectures.) | 1 | 40 | |
| Clark, J. B. | Economic Theory of Distribution. (First half-year.) | 4 | 41 | |
| Wilson. | Administration. (Second half-year—five weeks.) | 5 | | 38 |
| Adams, H. C. | Finance. (Second half-year—four weeks.) | 5 | | 45 |
| Gould. | Social Science. (Second half-year.) | 4 | | 39 |
| Bloomfield. | Ethnological History of the Indo-European Peoples. (First half-year.) | 1 | 43 | |
| Johnston. | History of the Ancient East. (First half-year.) | 1 | 20 | |
| | **Philosophy.** | | | |
| Griffin. | History of Modern Ethics. (Alternate weeks.) | 2 | 7 | 5 |
| Griffin. | History of Philosophy. | 1 | 12 | 9 |
| Griffin. | Logic. (L. E. P. Course.) (Until Christmas.) | 5 | 45 | |
| Griffin. | Psychology. (L. E. P. Course.) (January to April.) | 5 | | 44 |
| Griffin. | Ethics. (L. E. P. Course.) (April and May.) | 5 | | 44 |
| | **Drawing.** | | | |
| Whiteman. | Freehand, Constructive, and Perspective Drawing. | 9 | 72 | 70 |
| Whiteman. | Special Instruction. | 9 | 5 | 4 |
| Head. | Mechanical Drawing. | 15 | 37 | 34 |

# DEGREES CONFERRED, 1893.

## Doctors of Philosophy.

Henry Harold Ballard, of Baltimore, A. B., Johns Hopkins University, 1888. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* Action of Phenylhydrazine upon the Chlorides of Orthosulphobenzoic Acid.

Miss Florence Bascom, of Williamstown, Mass., S. B., University of Wisconsin, 1884. *Subjects:* Inorganic Geology, Palæontology, and Chemistry. *Thesis:* A Contribution to the Geology of South Mountain, Pennsylvania.

Jasper Luther Beeson, of Keener, Ala., A. B., University of Alabama, 1889. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* A Study of the Action of Certain Diazo-Compounds on Methyl and Ethyl Alcohols under varying conditions.

Alexander Mitchell Carroll, of Asheville, N. C., A. M., Richmond College, 1888. *Subjects:* Greek, Sanskrit, and Latin. *Thesis:* Aristotle's Method of Homeric Study as shown in the treatment of the Contradictions of Homer by the Ἐνστατικοί and Ἀντικοί.

Andrew Fuller Craven, of Oakland, Cal., A. B., Harvard University, 1889. *Subjects:* History, Economics, and Philosophy. *Thesis:* The History of Absolutism and Individuality in Education.

John Bascom Crenshaw, of Ashland, Va., A. M., Randolph Macon College, 1881. *Subjects:* German, French, and Latin. *Thesis:* The Present Participle in German (Old High German, Middle High German).

Ulysses Sherman Grant, of Minneapolis, Minn., S. B., University of Minnesota, 1888. *Subjects:* Geology, Palæontology, and Biology. *Thesis:* The Geology of Kekequabic Lake in Northeastern Minnesota, with special reference to an Augite or Soda-Granite.

David I. Green, of Alfred Centre, N. Y., A. B., Alfred University, 1885. *Subjects:* Economics, History, and Social Science. *Thesis:* Value and its Measurement.

William Richard Grey, of Huntersville, N. C., A. B., Davidson College, 1884. *Subjects:* Greek, Latin, and German. *Thesis:* The Treatment of Philosophy and Philosophers by the Greek Comic Poets.

George Henry Haynes, of Worcester, Mass., A. B., Amherst College, 1887. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* History of Representation and Suffrage in Massachusetts, 1620–1691.

Charles Downer Hazen, of St. Johnsbury, Vt., A. B., Dartmouth College, 1889. *Subjects:* History, Economics, and Philosophy. *Thesis:* The French Revolution as seen by Contemporary Americans.

Frank Irving Herriott, of Stuart, Iowa, A. B., Iowa College, 1890. *Subjects:* Economics, History, and Jurisprudence. *Thesis:* Sir William Temple on the Origin and Nature of Government.

David Hull Holmes, of Delaware, O., A. B., Ohio Wesleyan University, 1885. *Subjects:* Greek, Sanskrit, and Latin. *Thesis:* The Limitations of the Composition of Verbs with Prepositions in Thucydides.

Arthur John Hopkins, of Bridgewater, Mass., A. B., Amherst College, 1885. *Subjects:* Chemistry, Physics, and Mathematics. *Thesis:* The Reaction between Manganese Dioxide and Potassium Permanganate.

Theodore Hough, of Baltimore, A. B., Johns Hopkins University, 1886. *Subjects:* Physiology, Morphology, and Chemistry. *Thesis:* On the Escape of the Heart from Vagus Inhibition.

James Alton James, of Hazel Green, Wis., B. L., University of Wisconsin, 1888. *Subjects:* History, Economics, and Philosophy. *Thesis:* English Institutions and the American Indians.

Henry Read McIlwaine, of Petersburg, Va., A. B., Hampden Sidney College, 1885. *Subjects:* History, English, and Economics. *Thesis:* The Struggle of Protestant Dissenters for Religious Toleration in Virginia.

Louis Emil Menger, of Clinton, Miss., A. B., Mississippi College, 1888. *Subjects:* French, Italian, and History. *Thesis:* The Historical Development of the Possessive Pronouns in Italian.

Colyer Meriwether, of Clark's Hill, S. C., A. B., Johns Hopkins University, 1886. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* History of Higher Education in South Carolina, with a Sketch of the Free School System.

Lucius Salisbury Merriam, of Chattanooga, Tenn., S. B., Vanderbilt University, 1889. *Subjects:* Economics, History, and Jurisprudence. *Thesis:* The Theory of Final Utility in its Relation to Money and the Standard of Deferred Payments.

Maynard Mayo Metcalf, of Elyria, O., A. B., Oberlin College, 1889. *Subjects:* Animal Morphology, Physiology, and Botany. *Thesis:* The Anatomy and Development of the Eyes and Sub-Neural Gland of Salpidæ, with certain considerations as to the homology of the nervous system in the different groups of Tunicata.

Daniel Alexander Murray, of New York City, A. B., Dalhousie University, 1884. *Subjects:* Mathematics, Astronomy, and Physics. *Thesis:* Associate Equations of Linear Differential Equations.

William Peters Reeves, of Richmond, Ind., A. B., Johns Hopkins University, 1889. *Subjects:* English, French, and German. *Thesis:* A Study in the Language of Scottish Prose before 1600.

Charles Alphonso Smith, of Greensboro, N. C., A. B., Davidson College, 1884. *Subjects:* English, History, and German. *Thesis:* The Order of Words in Anglo-Saxon Prose.

George Owen Squier, First Lieutenant, U. S. Army, United States Military Academy, 1887. *Subjects:* Physics, Mathematics, and Chemistry. *Thesis:* Electro-Chemical Effects due to Magnetization.

John Nesbit Swan, of New Wilmington, Pa., A. B., Westminster College (Pa.), 1886. *Subjects:* Chemistry, Physics, and Mathematics. *Thesis:* Some Double Halides of Mercury.

Frederick Tupper, Jr., of Charleston, S. C., A. B., Charleston College, 1890. *Subjects:* English, History, and Jurisprudence. *Thesis:* Anglo-Saxon Daegmael.

Frank Alfred Wolff, Jr., of Baltimore, A. B., Johns Hopkins University, 1890. *Subjects:* Physics, Chemistry, and Astronomy. *Thesis:* On the Influence of Magnetism on Chemical Action.

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## Bachelors of Arts.

John Robert Abercrombie, of Baltimore.
Adolph Hall Ahrens, of Ruxton, Md.
Theodore George Ahrens, of Ruxton, Md.
Delaware Clayton Andre, of Baltimore.
Frank Andrews, of Washington, D. C.
William Steenbergen Blackford, of Baltimore.
George Stewart Brown, of Baltimore.
William Lawrence Clark, of Baltimore.
Frank Angier Clarke, of Baltimore.
Edward Lowell Cox, of Ohio.
Noah Ernest Dorsey, of Annapolis Junction, Md.
Howard Blake Dowell, of Baltimore.
John Hooper Edmondson, of Baltimore.
Henry Simpson Greenleaf, of Washington, D. C.
Wilmot Griffiss, of Baltimore.
Louis Philip Hamburger, of Baltimore.
John Hampden Hazelton, of Washington D. C.
Lloyd Lowndes Jackson, Jr., of Baltimore.
John Leypold Griffith Lee, of Belair, Md.
Millard Langfeld, of Baltimore.
Jacob Moses Moses, of Baltimore.
Clayland Mullikin, of Easton, Md.
Charles Watson Newhall, of Illinois.
Frederick Bogue Noyes, of Illinois.
Eugene Lindsay Opie, of Baltimore.
Charles Bingham Penrose, Jr., of Baltimore.
Clement Andariese Penrose, of Baltimore.
Charles Carroll Schenck, of Baltimore.
Siegmund Bacharach Sonneborn, of Baltimore.
Morris Ames Soper, of Baltimore.
Francis Edgar Sparks, of Corbett, Md.
Alfred Earnest Speirs, of Pennsylvania.
Hugo Paul Thieme, of Indiana.
Douglas Hamilton Thomas, Jr., of Baltimore.
Edwin Litchfield Turnbull, of Baltimore.
John Ogle Warfield, of Baltimore.
Henry Skinner West, of Baltimore.
Frederick Wallace Wilson, of Oregon.
Leo Wolfenstein, of Ohio.
William Hamilton Kirk, of Philadelphia (*extra ordinem.*)

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### Proficients in Electrical Engineering.

Certificates of Proficiency were given, June 13, 1893, to the following persons who had completed the two years' course in Electrical Engineering:

Shellman Baer Brown, of Baltimore (A. B., Johns Hopkins).
Sidney Hand Browne, of Ruxton, Md. (A. B., Johns Hopkins).
Eugene Russell Carichoff, of Virginia (A. M., Washington and Lee).
Harold Mills Dyar, of Ohio (Ph. B., Marietta).
Irenus Kittredge Hamilton, of Illinois (S. B., Trinity, Conn.).
William Winder Handy, of Lake Roland, Md. (S. B., Haverford).
Louis Minturn Aspinwall, of Washington, D. C.
Howard Waters Doughty, of Baltimore.
Charles Roy McKay, of Utah.
William Robinson Molinard, of Baltimore.
Arthur Lacy Reese, of Baltimore.
Arthur John Rowland, of Baltimore.
William Frederick Schulz, of Baltimore.
Robert Isaac Todd, of Virginia.
John Boswell Whitehead, Jr., of Virginia.

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## REPORT ON THE MARYLAND STATE WEATHER SERVICE.

I have the honor to transmit, in accordance with your request, the following report of meteorological work carried on in connection with the University during the year ending September 1st, 1893.

The Maryland State Weather Service, which was organized in May, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College, and the United States Weather Bureau, was authorized by the Legislature of the State, in the Spring of 1892. By the provisions of the bill the management and control were vested in the three institutions named, and the headquarters of the service were permanently established at the Johns Hopkins University. Office rooms were assigned on the fourth and fifth floors of the Physical Laboratory, while the instruments and signals were displayed upon the roof of the building. During the past year an additional room has been granted upon the first floor, a change which has been welcomed by the employees of the Service and by the public, since it has facilitated the spread of weather information.

The bill, as passed, carried an appropriation of two thousand dollars annually, but as mentioned in my last report to you, was signed by the Governor on condition that only one thousand dollars of this appropriation should be used annually. On account of the excellent showing made by the State Service during its first year, this restriction was withdrawn by the Governor, and the full amount is now expended.

This increase in the resources of the service has rendered it possible to largely extend its work. As the amount appropriated by the State is intended primarily for publishing results, the size of the reports and the number issued has been much enlarged.

The edition of the monthly Meteorological Report has been increased from 2,000 to 6,000 copies, and several pages of printed matter added. A series of special articles on the resources of the State has been prepared in anticipation of a wide distribution of the reports at the World's Fair.

The Weekly Crop Bulletin has also been enlarged and a greater number circulated. This is chiefly sent within the State, and about 2,000 copies have been distributed weekly.

A series of ten charts of large dimensions that represent the seasonal and annual temperature and rainfall of Maryland has been prepared during the year, and will greatly aid in bringing to the attention of all the typical features of the climate of the State. The work has been based upon a very exhaustive compilation and study of all the data bearing upon Maryland climate, and the greatest praise is due to the members of the service who were engaged upon it. The charts will be published in port-folio form, together with the geological and soil maps and three large sheets of explanatory text. They will form a valuable contribution to the physical geography of the State.

The materials have also been collected for the publication of a report on the Climatology of Maryland, which it is proposed to publish during the next few months in the form of a biennial report to the next Legislature. During the past year the number of those acting in the capacity of observers and reporters for the State service has been much increased. Over a hundred scattered throughout the different counties are now connected with the force. With the exception of the observers stationed at the central office, and who are furnished by the U. S. Weather Bureau, all are volunteers and receive no further aid from the State service beyond the stationery forms and instruments connected with their work. The latter have been furnished by the U. S. Weather Bureau from the first, and have rendered the rapid extension of the stations possible.

The year has been a most prosperous one for the Maryland State Weather Service, and by the favorable reports received from every source its increasing value to the people of the State is attested.

WILLIAM B. CLARK,
*Director, Maryland State Weather Service.*

TO THE PRESIDENT OF THE JOHNS HOPKINS UNIVERSITY.

# REPORT OF THE MARINE LABORATORY: SESSION OF 1893.

To the President of the Johns Hopkins University:

*Sir*:—In accordance with your request, I beg leave to submit the following report of the fourteenth session of the Marine Zoölogical Laboratory.

The Laboratory was located at Port Henderson, Jamaica, under the immediate direction of Dr. R. P. Bigelow, and it was open for the prosecution of research from April 20th to July 22d.

The members of the party were:

R. P. Bigelow, Ph. D., Bruce Fellow, and acting Director of the Marine Laboratory.
Theodore Hough, Ph. D., Fellow in Biology.
George Lefevre, A. B., University Scholar.
Reid Hunt, A. B., Graduate Student.
A. L. Lamb, A. B., Graduate Student.
C. P. Sigerfoos, B. S., Graduate Student.
W. S. Windle, M. S., Graduate Student.

I inclose the report of Dr. Bigelow on the scientific results of the work.

W. K. Brooks.

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Considerable general morphological study was done by several members of the laboratory, who had but little previous experience in sea-side work, and the facilities which the laboratory afforded gave them a great opportunity to acquire a knowledge of the marine life of the Tropics. Besides this, nearly every one was engaged in some special study. Some material was collected for the study of the regeneration of lost parts in Asterids and Ophiurans, and for the study of the embryology of the latter. The small viviparous Synaptas discovered during the previous expedition were found to be very abundant among the algae, growing in shallow water near the boat channel that leads into "The Lakes" from the east. A quantity of embryological material was easily obtained, and was preserved for study.

The hydromedusae and hydroids received much attention. A number of species of hydroids were discovered, that had not been found in that locality before, and it was possible, in several species, to trace the connection between the hydroids and medusae, taken at the surface in the tow net. A large

amount of material was also collected for the study of the process of budding, in both hydroids and alcyonarians, a subject of unusual scientific interest in view of recent theories of heredity. For the same reason, and in order to complete the previous work on Cassiopea, the study of this medusa was renewed, with special reference to its mode of budding. The formation of buds and their subsequent fate were studied in the living animals as far as they could be in the laboratory, and material was preserved for finer histological study at home. The fauna of Kingston Harbor is very rich in Ascidians, and a large number of the social and compound forms were collected, in order to compare the process of budding in these animals, with the formation of the proliferating stolon in Salpa.

Crustacea are also present in great abundance and variety. Specimens of crabs and Anomura that were picked up from time to time were preserved in alcohol provided for that purpose by the U. S. National Museum, and when the collection was finally sent to Washington, it contained between forty and fifty species, a number of which are probably new to science.

Terrestrial animals were sought for in the neighborhood and brought into the laboratory for study. This included considerable material preserved for a continuation of the research into the embryology and metamorphosis of the Termites, which was commenced in 1891. Some zoölogical exploring was done also in other parts of the island. The Botanic Gardens at Castleton were visited, a collecting trip was made through the Bog Walk, and after the laboratory was closed a journey was undertaken to Bath, in the hope of collecting Peripatus, that very interesting creature having been found there recently by Mrs. Swainson. This trip to Bath was unsuccessful in its main object, but those who took part in it were rewarded by a view of tropical vegetation of a luxuriance equalled in few other parts of Jamacia.

R. P. Bigelow.

# ABSTRACT OF THE REPORT OF THE JOHNS HOPKINS PRESS.

The several journals published by The Johns Hopkins Press have appeared at regular intervals during the year.

1. Volume fourteen of the American Journal of Mathematics, under the editorial direction of Professors Newcomb and Craig, has been completed and three numbers of volume fifteen have appeared. The series of portraits of mathematicians was continued in this volume with the portrait of Professor Halphen.

2. Of the American Chemical Journal, under the editorial direction of Professor Remsen, volume fourteen has been completed and five numbers of volume fifteen have been issued.

3. Of the American Journal of Philology, of which Professor Gildersleeve is the editor, volume thirteen has been completed and two numbers of volume fourteen have appeared.

4. Of the Studies in Historical and Political Science, edited by Professor Adams, eight numbers of the tenth series and eight numbers of the eleventh series have been published.

Extra volumes eleven, twelve, and thirteen of these Studies have also been issued during the year, viz.:

An Introduction to the Study of the Constitution, by Morris M. Cohn.

The Old English Manor, by Charles M. Andrews.

America: Its Geographical History, 1492–1892, by Walter B. Scaife.

5. Of the Studies from the Biological Laboratory, edited by Professors Martin and Brooks, numbers two, three, and four, completing volume five, have been issued.

6. Numbers 101–107 of the University Circulars have appeared during the year.

7. The fourth number of the Beiträge zur Assyriologie, of which Professor Haupt is one of the editors, is ready for issue. This number completes the second volume.

8. The Seventeenth Annual Report of the President of the University was issued in December, 1892, and the Annual Register in May, 1893.

9. The Press has continued in charge of the publications of the Johns Hopkins Hospital, viz.: The Hospital Bulletin, appearing nine times yearly; The Hospital Reports, of which three numbers have been published during the year.

10. The second part of the Bibliographia Hopkinsiensis (a list of publications by members of the University, 1876–1893) is ready for issue. It contains the bibliography in chemistry, edited by Dr. W. W. Randall, and the bibliography in mineralogy and geology, edited by Professor G. H. Williams.

11. A new Topographical Map of the vicinity of Baltimore, and the new Geological Map of the same region, based upon the work of the U. S. Geological Survey, have been issued under the editorial direction of Professor Williams.

12. The monograph on the Genus Salpa, by Professor W. K. Brooks, is ready for publication. It will contain 400 pages, quarto, and 57 plates.

13. The first part of the New Critical Edition of the Hebrew Text of the Old Testament, edited by Professor Haupt (Siegfried, The Book of Job), was issued in May.

14. A few copies of the reproduction of the Chaldean Flood Tablet, prepared under the direction of Professor Haupt, and a small edition of the Address of Bishop Brooks to the students of the University in October, 1892, were issued in the Spring.

15. The University exhibit for the Columbian Exposition was brought together in April and was in position at the Exposition on May 1. A separate exhibit is also made in the Maryland State Building.

16. There have been received, in accordance with the regulations, one hundred and fifty copies of the theses accepted for the degree of Doctor of Philosophy from the following named graduates:

Allen, E. T.—The Reaction between Lead Dioxide and Potassium Permanganate.

Applegarth, E. C.—The Latent Time of the Knee-Jerk.

Ballard, H. H.—The Action of Phenylhydrazine on the Chlorides of Ortho-sulpho-benzoic Acid.

Beeson, J. L.—A Study of the Action of Certain Diazo-Compounds on Methyl and Ethyl Alcohols.

Bowen, E. W.—An Historical Study of the ē-Vowel in Accented Syllables in English.

Dreyer, G. P.—The Effects of Hemorrhage and of Fasting on the Proteids of the Blood of Cats.

Ebeling, H. L.—A Study of the Messeniaca of Pausanias.

Field, G. W.—The Larva of Asterias Vulgaris.

Gilpin, J. E.—Orcin-Sulphon-Phthalein and the Action of Phosphorus Pentachloride on Aniline and its Salts.

Herriott, F. I.—Sir William Temple on the Origin and Nature of Government.

Hopkins, A. J.—The Reaction between Manganese Dioxide and Potassium Permanganate.

Kellogg, J. L.—A Contribution to our Knowledge of the Morphology of Lamellibranchiate Mollusks.

Kohler, E. P.—The Action of Aniline on the Chlorides of Ortho-sulpho-benzoic Acid.

Logie, T—Phonology of the Patois of Cachy (Somme).

Mather, F. J., Jr.—The Conditional Sentence in Anglo-Saxon.

Menger, L. E.—The Historical Development of the Possessive Pronouns in Italian.

Meriwether, C.—History of Higher Education in South Carolina.

Merriam, L. S.—The Theory of Final Utility in its Relation to Money and the Standard of Deferred Payments.

Milroy, W. M.—The Participle in the Vulgate New Testament.

Prince, J. D.—Mene, Mene, Tekel, Upharsin: An Historical Study of the Fifth Chapter of Daniel.

Reeves, W. P.—A Study in the Language of Scottish Prose before 1600.

Robertson, J. C.—The Gorgianic Figures in Early Greek Prose.

Rosa, E. B.—The Specific Inductive Capacity of Electrolytes.

Ross, C. H.—The Absolute Participle in Modern and Middle English.

Russell, H. L.—Bacteria in their Relation to Vegetable Tissue.

Scott, W. A.—The Repudiation of State Debts.

Sherwood, S.—The University of the State of New York: Origin, History, and Present Organization.

Smith, C. A.—The Order of Words in Anglo-Saxon Prose.

Squier, G. O.—Electro-Chemical Effects due to Magnetization.

Stubbs, M. B.—On Nitro-ortho-sulpho-benzoic Acid and some of its Derivatives.

Swan, J. N.—Some Double Halides of Mercury.

Ullmann, H. M.—On Para-chlor-meta-sulpho-benzoic Acid and some of its Derivatives.

Woodford, A. B.—On the Use of Silver as Money in the United States.

17. The system of exchanges has been conducted as in previous years.

N. MURRAY.

September 1, 1893.

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# ABSTRACT OF THE REPORT OF THE LIBRARIAN.

The number of bound volumes now in the library is 62,186. The number of unbound volumes and pamphlets is estimated at 40,000.

The recorded increase in the number of bound volumes during the year is 6,903. Of this number 1,955 were purchased, 1,846 were presented, 3,102 were volumes now bound for the first time. The number of pamphlets and unbound volumes added during the year was 1,000, and of university theses and academic publications, 1,200. The serials received exceed one thousand.

Special acknowledgment of gifts should be made:—

To the Misses Eaton, of Baltimore, for seven hundred bound volumes from the library of Mr. C. J. M. Eaton.

To Dr. F. E. Chatard, of Baltimore, for two hundred and fifty bound volumes and one hundred and fifty valuable pamphlets from the libraries of his father, Dr. F. E. Chatard, and his grandfather, Dr. Petrus Chatard, a graduate of the University of Montpellier in 1788; these volumes are of much bibliographical and historical interest to students of medicine.

To Mr. Mendes Cohen for the gift of twenty-three volumes of the Description de l'Égypte.

To the municipal authorities of Berlin, Vienna, and Paris for valuable gifts of municipal maps.

Mention should also be made of gifts from Miss Alice S. Morison, Professor S. B. Weeks, Captain J. Donnell Smith, and the American Geographical Society; and of gifts from the President of the University, Professor Remsen, Professor Adams, Messrs. John Glenn, J. M. Glenn, B. C. Steiner, S. V. Hoffman, and Henry Holt.

The general library and reading room has been open daily from 9 a. m. to 10 p. m. Mr. H. C. F. Miller has been the special custodian. Dr. Arnolt acted as assistant librarian until March 1.

The several departmental libraries have been open daily from 9 a. m. to 10 p. m., as follows: the Historical under the charge of Dr. J. M. Vincent; the Classical under the charge of Dr. C. W. E. Miller; the Sanskrit and Semitic under the charge of Mr. D. G. Stevens; the Modern Language under the supervision of Professor Wood and under the charge of Mr. H. F. Krafft; the Mathematical and Physical under the supervision of Professor Craig and Dr. Ames; the Chemical under the charge of Mr. A. P. Saunders; the Biological under the charge of Mr. T. Hough; the Geological under the supervision of Professor Williams and Dr. Clark.

The books relating to medical subjects, received during the year, have been deposited in the library of the Johns Hopkins Hospital.

Detailed statements of expenditures for the library and classified lists of accessions have been separately submitted.

During the year the New Book Department has received 6,150 volumes of the estimated value of $9,000. Since the opening of this department, 70,900 volumes of the invoiced value of $112,000 have been exhibited on its shelves.

N. Murray,
*Librarian.*

September 1, 1893.

# GIFTS TO THE LIBRARY.

The following list enumerates the principal gifts to the Library from September 1, 1892 to September 1, 1893. The list does not include many exchanges received from the correspondents of the University, nor a large number of official reports and catalogues received from public and private institutions.

ACLAND, SIR T. D. (through President Gilman). Introduction to the Chemistry of Farming for Practical Farmers. 2d edition. London, 1892. D.

ADAMS, PROF. H. B. Papers of the American Historical Association. 5 vols. O.

AIX, UNIVERSITY OF. Seven Academic Publications.

ALGIERS, UNIVERSITY OF. Four Academic Publications.

ALVORD, HON. W. Schaeberle, J. M. Terrestrial Atmospheric Absorption of the Photographic Rays of Light. Sacramento, 1893. O.

AMERICAN GEOGRAPHICAL SOCIETY. Journal of the Society. New York. 6 vols. O.
Bulletins of the Society. 1879–90. 6 vols. O.

AMES, JOHN G. Finding List of Congressional Documents. Washington, 1892. O.

AMHERST COLLEGE. Addresses at the Inauguration of President Gates. Amherst, 1891.

ANDRE, TONY. (Author). L'Esclavage chez les Anciens Hébreux. Paris, 1892. O.

APPLEDORE PRIVATE PRESS. Linton, W. J. Religion of Organization. New Haven, 1892. O.

ARNOLT, W. MUSS- (Author). The Names of the Assyro-Babylonian Months and their Regents. Baltimore, 1893. O.

BACKUS, J. B. (Compiler). Genealogical Chart of the Chester family. 1893. O.

BAIRD, H. C. Schulze-Delitzsch, Cours d'Économie Politique, trad. B. Rampal. 2 vols. Paris, 1874. D.
Six other publications.

BALCH, E. S. (Author). Mountain Exploration. Philadelphia, 1893. O.

BALTIMORE, CITY OF. (Hon. J. A. Robb, Register). Annual Report of Register, 1892.
Financial Reports of the Mayor and City Council, 1892. O.
Health Department, Annual Report for 1891. Baltimore, 1892. O.
Trustees of the Poor, Annual Report for 1891. Baltimore, 1892. O.

BARTLETT, D. L. Annual Reports of the McDonogh School, 1859–92. 3 vols. O.

BARTLETT, T. E. (Author). The Bartletts, Ancestral, etc. O.

BAYLEY, PROF. W. S. (Author). A Summary of Progress in Mineralogy and Petrography in 1892. Waterville, 1893. O.

BECKER, G. F. (Author). Finite Homogeneous Strain, Flow and Rupture of Rocks. Rochester, 1893. O.

BELL, PROF. A. GRAHAM. (Author). Address upon the Condition of Articulation Teaching in American Schools for the Deaf. Boston, 1893. O.

BELL, PROF. A. MELVILLE. (Author). Souvenir (containing eight of his publications). O.

BERLIN, MUNICIPAL AUTHORITIES OF. Maps and Charts of the City of Berlin and Vicinity.

BERLIN, UNIVERSITY OF. Two hundred and seventy-seven Academic Publications.

BESANÇON, UNIVERSITY OF. Programme des cours et conférences pour l'année scolaire, 1891–92.

Rentrée Solennelle des Facultés et de l'école préparatoire de Médecine et de Pharmacie de Besançon. Besançon, 1891.

BIBBINS, A. (Author). On the Distribution of Cordylophora in the Chesapeake Estuaries, and the Character of its Habitat. 1892. O.

BODLEIAN LIBRARY. Conybeare, F. C. Aristotle's Categories. Oxford, 1892. O.

Cowell, E. B. *ed.* The Buddha-Karita of Asvaghosa. Oxford, 1893. O.

Pollard, A. F. The Jesuits in Poland. Oxford, 1892.

BORDEAUX, UNIVERSITY OF. Eighty Academic Publications.

BOSTON MERCHANTS' ASSOCIATION. Addresses before the Association. Boston, 1893. O.

BOSTON PUBLIC LIBRARY. Hazard's U. S. Commercial and Statistical Register, 6 vols. Philadelphia, 1840-2. O.

BOSTONIAN SOCIETY. Catalogue of the Library of the Society. Boston, 1893. O.

BROOKS, DR. E. (Author). Address before the Educational Club of Philadelphia. Philadelphia, 1892. O.

BRUSSELS OBSERVATORY. Annuaire de l'Observatoire Royal de Bruxelles. 10 vols. Bruxelles, 1876-92. D.

Essai sur la vie et les ouvrages de Quetelet, par E. Mailly. Bruxelles, 1875. D.

BULKLEY, DR. L. D. (Author). Three of his recent medical publications, 1891-93.

CAEN, UNIVERSITY OF. Thirteen Academic Publications.

CALDERWOOD, PROF. H. (Author). Evolution and Man's Place in Nature. London, 1893. D.

CAMBRIDGE, UNIVERSITY OF. Studies from the Morphological Laboratory. Vol. V, part 2. London, 1892. O.

CAPPS, E. (Author). Studies in Classical Philology. Chicago, 1893. O.

CARA, C. A. DE. Degli Hittim O'Hethei e delle loro migrazioni. O.

CAYLEY, PROF. ARTHUR. (Author). Collected Mathematical Papers. Vol. V. Cambridge, 1892. O.

CHANCELLOR, DR. C. W. (Author). Observations on Cholera and Quarantine. O.

CHARLESTON, CITY OF. (Through Hon. A. M. Courtenay, Mayor). Annual Reports of the City Officials, 1891. Charleston, S. C. O.

CHATARD, DR. F. E. (JR.). 314 volumes and 130 pamphlets from the library of the late Dr. F. E. Chatard, Baltimore. (See p. 18 of this Report).

CHILI, UNIVERSITY OF. Annals of the University. 5 vols. 1892-93. Santiago. O.

CLARKE, R. & CO. (Publishers). Bibliotheca Americana, 1893. Cincinnati, 1893. O.

COBDEN CLUB. Rawson, Sir R. W. Analysis of the Maritime Trade of the United Kingdom, 1889-91. 2d edition. London. O.

COHEN, MENDEZ. Description de l'Égypte. 9 vols. text, 14 vols. of plates. Paris, 1809-13. F. (See p. 18 of this Report).

COLE, T. E. (Author). A Rare Wisconsin Book. 1892. O.

COLORADO, UNIVERSITY OF. Addresses at the Inauguration of President Baker. Denver, 1892. O.

COPE, PROF. E. D. (Author). Five of his recent publications.

COPENHAGEN, UNIVERSITY OF. Nineteen Academic Publications.

CROSSE, W. H. (Author). Notes on the Malarial Fevers met with on the River Niger. London, 1892. D.

CRUIKSHANK, E. (Author). A Century of Municipal History, County of Welland, Ontario. Part I. 1792-1841. O.

DAVES, E. G. Kamphausen, A. Das Buch Daniel und die neuere Geschichtsforschung. Leipzig, 1893. O.

DAVIDSON, C. (Author). Studies in the English Mystery Plays. 1892. O.

DEDHAM HISTORICAL SOCIETY. Twenty volumes of historical records of Dedham, Mass.

DIJON, UNIVERSITY OF. Four Academic Publications. 1891-92.

DISTRICT OF COLUMBIA, COMMISSIONERS OF. Report of the Health Department, 1891. Washington, 1892. O.

Report of the Trustees of Public Schools, 1891-92. Washington, 1892. O.

DIXON, L. G. (Author). Involution form of the Tubercle Bacillus, etc. 1891. O.

The Possibility of Establishing Tolerance for the Tubercle Bacillus. 1889. D.

DODD, MEAD & Co. (Publishers). Wagner, C. Youth, tr. by E. Redwood. New York, 1893. D.

DRESDEN, ROYAL PUBLIC LIBRARY OF. Katalog der Handschriften. Vols. 1 and 2. Leipzig, 1882–83. O.

EATON, THE MISSES. 706 volumes from the library of Mr. C. J. M. Eaton of Baltimore, also a number of Indian and other relics from the collection of Mr. Eaton. (See p. 18 of this Report).

ECUADOR, UNIVERSITY OF. Annals of the University. Quito, 1889–93. O.

EGLESTON, G. W. (Author). Some Observations on Various Political Evils, etc. O.

EMERSON, J. (Author). Treatise relative to the Testing of Water-Wheels and Machinery. 4th edition. Williamsett, 1892. D.

FERRARIS, PROF. CARLO F. Four volumes published in connection with the celebration of the Ter-Centenary of Galileo's Election to the chair of Mathematics in the University of Padua. Q and O.

FEWKES, PROF. J. W. (Author). An Aid to a Collector of Coelenterata and Echinodermata of New England. Salem. O.

Catalogo de la Expedicion Hemenway. Madrid, 1892. O.

FLEXNER, DR. SIMON. Davis, W. J. A Monograph of the Fossil Corals of the Silurian and Devonian Rocks of Kentucky. Part II. Frankfort, 1885. Q.

FORSHAW, C. F. Kaye, W. J. The Leading Poets of Scotland from early times. London, 1891. O.

FRAZER, PERSIFOR. (Author). Thomas Sterry Hunt. 1893. O.

FREIBURG, UNIVERSITY OF. One hundred and four Academic Publications.

FRIEND OF INTERNATIONAL PROGRESS. Hunter, Sir W. W. Bombay, 1885 to 1890. A Study in Indian Administration. London. O.

GIESSEN, UNIVERSITY OF. Thirty Academic Publications.

GILMAN, PRESIDENT D. C. Twelve Volumes of Miscellaneous Works.

GLENN, JOHN. Niles' Register, Supplement to Vol. XLIII. Baltimore, 1833. O.

GÖTTINGEN: GESELLSCHAFT DER WISSENSCHAFTEN. Wilhelm Weber's Werke. Vol. I, II, III. Berlin, 1892–93. 3 vols. O.

Astronomische Mittheilungen von der königl. Sternwarte zu Göttingen, I. Göttingen, 1869. O.

GÖTTINGEN, UNIVERSITY OF. One hundred and two Academic Publications.

GOODALE, G. L. (Author). Some of the Possibilities of Economic Botany. New Haven, 1891. O.

GORE, DR. G. Relation of Volta Electromotive Force to Pressure. O.

GOULD, DR. E. R. L. Photograph of M. Émile de Laveleye.

GRADY, DR. R. (Author). Dental Infirmary Patients. Chicago, 1891. D.

GREEN, DR. SAMUEL A. Proceedings of the Trustees of the Peabody Education Fund. 1887–92. Vol. IV. Cambridge, 1893. O.

Remarks on an original portrait of Rev. Increase Mather, D. D., and on some of the engravings taken from it. Cambridge, 1893. O.

Remarks on the Bequests of the Rev. Robert C. Waterston, and on an original portrait of Franklin. O.

Eight pamphlets of historical interest.

GREGORY, C. N. (Author). The Corrupt Use of Money in Politics, and Laws for its Prevention. Madison, 1891. O.

GRENOBLE, UNIVERSITY OF. Six Academic Publications and one Map.

GRIFFITH, G. S. Proceedings of the Annual Congress of the National Prison Association held at Baltimore, 1892. Pittsburgh, 1893. O.

GROLIER CLUB. The Bradford Exhibition; Catalogue of Books exhibited at the Grolier Club, April, 1893. New York. D.

GRONINGEN, UNIVERSITY OF. Year-book of the University, 1878–1892. 15 vols. Groningen. O.

GWINN, HON. C. J. M. Oldfield. History of the House of Commons of the United Kingdom. London, 1816. 6 vols. O.

HADDEN, REV. A. (Author). Congregationalism in Minnesota, 1851–91. Minneapolis, 1891. O.

HALE, G. W. (Author). Police and Prison Cyclopaedia. Cambridge, 1892. O.
HALLE, UNIVERSITY OF. Seventy-nine Academic Publications.
HAMAN, B. H. (Author). Oysters and Roads. Baltimore, 1893. O.
HAMILTON COLLEGE. Addresses at the Inauguration of President Stryker. Utica, 1893. O.
HAMILTON, J. C. (Author). The Great Centre. O.
HARJES, J. H. Say, Leon. Dictionnaire des finances. 20me fasc. Paris, 1891. O.
HARRIS, DR. W. T. Romero Matias. Articulos sobre México publicados en los Estados Unidos de America en 1891-92. Mexico, 1892.
(Author). The Function of the Library and the School in Education. O.
(Author). The Philosophy of Crime and Punishment. 1890. O.
Two other Pamphlet Publications. Washington, 1892. O.
HARVARD COLLEGE ASTRONOMICAL OBSERVATORY. Annals, Vols. XXX$^3$, XXX$^1$, XL$^1$. Cambridge, 1892. Q.
HAVERFORD COLLEGE ALUMNI ASSOCIATION. History of Haverford College for the First Sixty Years of its Existence. Philadelphia, 1892. O.
HAVERFORD COLLEGE OBSERVATORY. Proceedings for 1892. O.
HAYES, DR. C. W. (Author). Report on the Geology of Northeastern Alabama, etc. Montgomery, 1892. O.
An Expedition through the Yukon District. Washington, O.
The Overthrust Faults of the Southern Appalachians. Rochester, 1891. O.
HEIDELBERG, UNIVERSITY OF. Seventy-four Academic Publications.
HEMENWAY EXPEDITION. Journal of American Ethnology and Archæology, Vol. III. Boston, 1892. Q.
*HEMPL, PROF. G. Old English Phonology. Boston, 1893. D.*
HENNEMAN, J. B. (Author). The XIXth Century Woman in Literature. 1892. O.
Shall Virginians write Virginian History? O.
HENRY, DR. JAMES. TRUSTEES OF,—(through Miss Malone). Aeneidea, or Critical, Exegetical and Aesthetical Remarks on the Aeneis: Indices. Meissen, 1892. O.
HINSDALE, B. A. (Author). President Eliot on Popular Education. 1893. Q.
HOFFMAN, S. V. Conway, M. D. Barons of the Potomack and the Rappahannock. O.
HOLLISTER, A. G. (Author). Three Pamphlets. Mount Lebanon, 1892. S.
HOLT, H. & Co. (Publishers). Moore, C. L. A Book of Day Dreams. New York, 1892. Q.
Ten Brink, B. History of English Literature, Vol. II, Pt. 1. New York, 1893. O.
McLaughlin, E. T. Literary Criticism for Students. New York, 1893. O.
Pancoast, H. S. Representative English Literature. New York, 1893. O.
Elliott, S. B. John Paget. A Novel. New York, 1893. D.
HOPKINS, C. T. (Author). Congressional Reform. O.
[HOUSATONIC]. A Case of Hereditary Bias. Henry Adams as a Historian. O.
HOYT, HON. J. W. (Author). Memorial in regard to a National University. Washington, 1892. O.
HURD, JOHN CODMAN, EXECUTORS OF. Hurd, J. C. The Law of Freedom and Bondage in the United States. Boston, 1858. 2 vols. O.
INDIA, GEOLOGICAL SURVEY OF. Records, Vol. XXVI, Part 1, 1893. Calcutta, 1893. O.
JACOBY, DR. H. (Author). The Parallaxes of $\mu$ and $\theta$ Cassiopeiae deduced from Rutherford Photographic Measures. New York, 1893. O.
JAMAICA, INSTITUTE OF. Journal. Vol. I. Kingston, 1891-93. O.
JAMES, PROF. E. J. (Author). Plea for the Establishment of Commercial High Schools. New York, 1893. O.
JENA, UNIVERSITY OF. Seventy-one Academic Publications.
JOHNSTON, W. J., COMPANY. (Publishers). Bedell & Crehore. Alternating Currents. New York, 1893. O.
JOINT COMMITTEE ON THE STANDARD PRAYER BOOK (through Rev. Dr. W. R. Huntington). Book of Common Prayer after the Standard of 1892. New York, 1892. Q.
KARLSRUHE TECHNICAL HIGH SCHOOL. Festgabe zum Jubiläum der vierzigjährigen Regierung seiner königl. Hoheit des Grossherzogs Friedrich von Baden. Karlsruhe, 1892. Q.
Six pamphlets. Karlsruhe, 1892. Q.

KEELER, PROF. J. E. (Author). The Spectroscope of the Alleghany Observatory. O.
Visual Observations of the Spectrum of $\beta$ Lyrae and Note on the Spectrum of P. Cygni. O.

KIEL, UNIVERSITY OF. Seventy-five Academic Publications.
Portraits von zweiundzwanzig Professoren Kieler Universität am Ende des vorigen Jahrhunderts. Kiel, 1892. O.

KNOTT, HON. A. L. (Author). Christopher Columbus. An Oration, 1892. Washington, 1893. O.

KRIEHN, DR. G. (Author). The English Rising in 1450. Strassburg, 1892. O.

KROHN, W. O. (Author). Atrophy of the Cerebellum in a Cat. 1892. O.
Pseudo-chromesthesia, or the Association of Colors with Words, Letters and Sounds. 1892. O.

LAFAYETTE COLLEGE. Cattell, W. C. Memorial Address on Founder's day, October 23, 1892. Easton, 1892. O.

LATROBE, HON. F. C. (Mayor of Baltimore). The Mayor's Message and Reports of City Officers for 1892. 2 vols., morocco. Baltimore, 1893. O.

LAWRENCE, MARGARET W. (Author). Lander, Meta. The Tobacco Problem. 5th edition. Boston, 1885. D.

LEIPSIC, ASTRONOMICAL SOCIETY OF. Wislicenus, Dr. W. F. Tafeln zur Bestimmung der jährlichen Auf- und Untergänge der Gestirne. Leipzig, 1892. Q.

LEIPSIC, UNIVERSITY OF. One hundred and fifty-one Academic Publications.

LELAND STANFORD JR. UNIVERSITY. Sanford, F. Some Observations upon the Conductivity of a Copper Wire in Various Dielectrics. Palo Alto, 1892. O.

LEMOINE, ÉMILE. (Author). Résultats et théorèmes divers concernant la géométrie du triangle, etc. Paris. O.
La géométrographie ou l'art des constructions géométriques. Paris. O.
Application d'une méthode d'évaluation de la simplicité des constructions à la comparaison de quelques solutions du problème d'Appollonius. Paris. O.
Application de la Géométrographie a l'examen de diverses solutions d'une même problème. Paris. O.

LENOX LIBRARY, TRUSTEES OF THE. The Letter of Columbus on the Discovery of America. A Facsimile, etc. New York, 1892. O.

LEUMANN, E. Persönliche Erinnerungen an den neunten Orientalisten-Congress, London, September 5-12, 1892. Strassburg, 1892. D.

LEVASSEUR, E. (Author). La statistique de l'enseignement primaire. Rome, 1892. O.
Résume historique d'enseignement de l'économie politique et de la statistique en France de 1882 a 1892. Paris, 1893. O.

LEYDEN, UNIVERSITY OF. Thirty-one Academic Publications.

LIÉGE, UNIVERSITY OF. Six Academic Publications.

LILLE, UNIVERSITY OF. Twenty-one Academic Publications.

LISBON, ROYAL ACADEMY OF SCIENCES. Chagas, M. P. Os Descobrimentos Portuguezes e os Colombo. Lisbon, 1892. O.

LIVERPOOL BIOLOGICAL SOCIETY. Proceedings and Transactions, Vol. VI. Liverpool, 1892. O.

LONDON, CLINICAL SOCIETY OF. Transactions and Supplement. London, 2 vols. 1892. O.

LOOMIS LABORATORY. Researches, Vol. II. New York, 1892. O.

LOUVAIN, UNIVERSITY OF. Sixteen Academic Publications.

LUBBOCK, SIR JOHN. A Contribution to our Knowledge of Seedlings. London, 1892. 2 vols. O.

LUND, UNIVERSITY OF. Lunds Universitets Ars-skrift, Tom XXVIII. Lund, 1891-92. O.
Accessions-katalog. 1892. Stockholm, 1893. O.

LYMAN, B. S. (Author). Shippen and Wetherill Tract. Philadelphia, 1893. O.

LYONS, OBSERVATORY OF. Travaux de l'Observatoire de Lyon, II. Lyon, 1892. O.

LYONS, UNIVERSITY OF. One hundred and fourteen Academic Publications.

LYTLE, J. J. Journal of Prison Discipline and Philanthropy, 1892. Philadelphia. O.

MACDONALD, DR. A. (Author). Insanity and Genius. O.

MACFARLANE, PROF. A. (Author). The Imaginary of Algebra. Salem, 1892. O.
The Fundamental Theorems of Analysis Generalized for Space. Boston, 1893. O.

MACMILLAN & CO. (Publishers). Hoskins, L. M. The Elements of Graphic Statics. New York, 1892. O.

MACMILLAN, PROF. CONWAY. Quarterly Bulletin of the University of Minnesota. 1893. Q.

(Author). The Metaspermae of the Minnesota Valley. Minneapolis, 1892. O.

MACOUBREY, REV. A. R. (Author). The Relation of Presbyterianism to the Revolutionary Sentiment in the Province of New York. 1891. O.

MADRID ASTRONOMICAL OBSERVATORY. Observaciones Meteorológicas efectuadas en el Observatorio de Madrid, 1890–91. Madrid, 1892. O.

MARSHALL, HENRY R. (Author). Pleasure-pain and Sensation. O.

MARYLAND HISTORICAL SOCIETY. Archives of Maryland, Vol. XI. Baltimore, 1892. Q.

MASSACHUSETTS COMMISSIONERS OF PUBLIC RECORDS. Report on the Public Records of Mass. Boston, 1893. O.

MASSACHUSETTS: SECRETARY OF COMMONWEALTH. Acts and Resolves of the Province of the Massachusetts Bay. Vol. VII. Boston, 1892.

MEADVILLE THEOLOGICAL SCHOOL. Gladden, W. Tools and the Man. Boston, 1893. D.

MENDENHALL, PROF. T. C. (Author). Report of Studies of Atmospheric Electricity. Q.

Determinations of Gravity with Half-second Pendulums on the Pacific Coast, in Alaska and at Washington, D. C., and Hoboken, N. J. Washington, 1892. O.

MERIDEN SCIENTIFIC ASSOCIATION. Annual Address by President J. T. Pettie. Meriden, Conn., 1893. O.

MICHIGAN STATE LIBRARY. Collections and Researches made by the Michigan Pioneer Society. Vols. XIX and XX. Lansing, 1892. 2 vols. O.

MICHIGAN, UNIVERSITY OF. Kies, M. The Ethical Principle and its Application in State Relations. Ann Arbor, 1892. D.

McClintock, C. T. Corrosive Sublimate as a Germicide. D.

MINISTER OF PUBLIC INSTRUCTION, PARIS. Catalogue des Thèses et Écrits Académiques. Vol. I, Nos. 1–5, 1884–89. Paris, 1892. O.

MINOT, PROFESSOR C. S. Human Embryology. New York, 1892. O.

MONACO, S. A. LE PRINCE, ALBERT DE. Résultats des Campagnes Scientifiques Accomplies sur son yacht. Fasc. 1 and 2. 1889–92. Q.

Sur le Gulf-stream. Paris, 1886. O.

Zur Erforschung der Meere und ihrer Bewohner. Wien. 1891. O.

Eighteen Pamphlet Publications containing Studies and Researches of Prince Albert of Monaco on Ocean Currents and Marine Zoölogy. Paris, 1889-90. O.

MONTPELLIER, UNIVERSITY OF. Seventy-five Academic Publications.

MONROE, W. S. (Author). Comenius. 1892. O.

MONTT, HON. PEDRO. La Legislacion de Chile, por Josi Clemente Fabres. Santiago, 1892. O.

MORGAN, R. P. AND SON. (Authors). Report to the R. R. Commissioners of California, upon equitable rates of freights. 1892. O.

MOSES, JOHN. (Author). Illinois, Historical and Statistical. Chicago, 1889–92. 2 vols. O.

MURPHY, JOHN & CO. (Publishers). Guide to the City of Baltimore. 1893. D.

MUSTARD, W. P. (Author). On the Eight Lines usually Prefixed to Horat. Serm. 1.10. Colorado Springs, 1893. O.

NANCY, UNIVERSITY OF. Seventeen Academic Publications.

NAPLES: ORIENTAL INSTITUTE. Tagliabue, C. Grammatica Indostana o Urdû. Vol. 1. Napoli, 1892. O.

NATIONAL ACADEMY OF SCIENCES. Publications (1863–92). Washington. 12 vols. O.

NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletins of the Association. Boston. 4 vols. O.

NEW BEDFORD FREE PUBLIC LIBRARY, TRUSTEES OF.

Gifford, W. L. R. George Howland, Jr. New Bedford, 1892. O.

Annual Report of the Trustees. New Bedford, 1893. O.

NEW JERSEY HISTORICAL SOCIETY. Proceedings, Vols. IX and X; Collections, Vols. VI and VII; New Jersey Archives, Vol. XVII.

Biographical Sketch of Moses Bigelow.

NEW MERCANTILE LIBRARY, BALTIMORE. Commercial and Financial Chronicle for 1893. Fourteen Miscellaneous Volumes.

NEW SOUTH WALES ROYAL SOCIETY. Historical Records of New South Wales. Vol. I, Part 2. Sydney, 1892. O.

NEW YORK STATE LIBRARY. New York State Senate Documents and Journals. 114th Session, 1891. 18 vols.

New York State Assembly Documents and Journal. 114th Session, 1891. 16 vols.

NUTTALL, DR. G. H. F. (Author). Hygienic Measures in Relation to Infectious Diseases. New York, 1893. D.

Eine Methode zur Bestimmung der absoluten Anzahl der Tuberkelbacillen in tuberkulosem Sputum. O.

ORSER, LEVI. (Author). The Natural Method of Writing Music. Boston, 1893. O.

OSLER, PROF. WILLIAM. Collected Reprints, Second Series, 1882-92. O.

PACKARD, PROF. A. S. (Author). Six of his Writings. O.

PACKARD, J., JR. Harrison, G. Treatise on the Greek Prepositions and on the Cases of Nouns with which these are used. Philadelphia, 1858. O.

PARIS: MUNICIPAL AUTHORITIES. Maps and Charts of City of Paris and Vicinity.

PARIS, UNIVERSITY OF. Five hundred and thirty-four Academic Publications.

PAUL (KEGAN) TRENCH, TRÜBNER & Co. (Publishers). Byrne, J. General Principles of the Structure of Language. 2d Edition. 2 vols. London, 1892. O.

PECK, G. G. Raum, G. E. A Tour around the World. New York, 1886. D.

PENNSYLVANIA GEOLOGICAL SURVEY. Summary; Description. Vol. II. Upper Silurian and Devonian Formations. Harrisburg, 1892. O.

PENNYPACKER, S. W. (Author). The Pennypacker Pedigree. Philadelphia, 1892. F.

PEYTON, J. LEWIS. (Author). Tom Swindel, or the Adventures of a Boomer. Staunton, 1893. S.

PIERCE, G. W. (Author). The Life-Romance of an Algebraist. Boston, 1891. O.

PILLING, J. C. (Author). Bibliography of the Athapascan Languages, Washington, 1892. Q.

PIZZETTI, PROF. P. (Author). I Fondamenti matematici per la critica dei resultati sperimentali. Genova, 1892. Sm. F.

PLUMB, H. B. (Author). Farm Prices in Two Centuries. Washington, 1892. O.

POPE, COL. ALBERT A. Three books on the construction and maintenance of Roads. O. Errors in School Books. Boston, 1892. O.

POWELL, DR. A. H. Nos. of the journal "John Bull," etc.

PRINCETON COLLEGE LIBRARY. Harper, G. McL. The Legend of the Holy Grail. 1893. O.

PROVIDENCE, RECORD COMMISSIONERS. Early Records of the Town of Providence. Vol. II. Providence, 1893. Sm. Q.

RATH, G. VOM. (Author). Sach- und Orts-Verzeichnis zu den mineralogischen und geologischen Arbeiten. Leipzig, 1893. O.

REDDING, J. Schematic Histological Chart of Sections of Human Kidneys, etc.

REED, G. (Author). The Alpha of Money. Caldwell (Idaho), 1893. O.

REEMELIN, C. (Author). Life. Cincinnati, 1892. O.

REMSEN, PROF. IRA. Annual Report, Board of Health of Mass. 1892. O.

Hempel's Gas Analysis. London, 1892. D.

Bernthsen's Organic Chemistry. New York, 1889. D.

Muir & Wilson. Elements of Thermal Chemistry. London, 1885. O.

Ostwald's Outlines of General Chemistry. London, 1890.

Ost. Lehrbuch der technischen Chemie. Berlin, 1890. O.

Carrière, Justus. Berzelius und Liebig, 1831-45. München, 1893. O.

Blair, A. A. Chemical Analysis of Iron, 2nd edition. Philadelphia, 1891. O.

Charles, T. C. Elements of Physiological and Pathological Chemistry. Philadelphia, 1884. O.

RENNES, UNIVERSITY OF. Three Academic Publications.

RENWICK, HON. A. L. E. Threlkeld. An Australian Language as spoken by the Awabakal. Sydney, 1892. O.

REYNOLDS, W. (Author). Address before the Alumni Association of William and Mary College. Hampton, 1892. O.

RIO DE JANEIRO, OBSERVATORY OF. O clima do Rio de Janeiro. Rio de Janeiro, 1892. O.
Annuario publicado pelo Observatorio do Rio de Janeiro, 1892. Rio de Janeiro, 1892. O.
RITTINGHAUSEN, M. (Author). La Législation directe par le peuple et ses adversaires. Bruxelles. D.
Die direkte Gesetzgebung durch das Volk. Köln, 1877. D.
ROSENGARTEN, J. G. (Author). Sources of History. Philadelphia, 1892. O.
ROYAL HISTORICAL SOCIETY. Transactions of the Society. London, 1884-92. 5 vols. O.
RUTGERS COLLEGE LIBRARY. Duryee, W. R. The English Bible. 1892. O.
Addresses commemorative of George Hammel Cook. Newark, 1891. O.
ST. MARY'S SEMINARY OF ST. SULPICE (through Rev. J. Tracy). Memorial Volume of the Centenary of St. Mary's Seminary, 1791-1891. Baltimore, 1891. O.
SAWYER, E. F. (Author). Catalogue of the Magnitudes of Southern Stars from 0° to -30° Declination, to the Magnitude 7.0 inclusive. Cambridge, 1893. Q.
SCHAFF, REV. P. Semi-Centennial of Philip Schaff. New York, 1893. O.
SCHURMANN, PRES. J. G. (Author). Grounds of an Appeal to the State for aid to Cornell University. Ithaca, 1892. O.
Proceedings, etc., at the Inauguration of President Schurman. Ithaca, 1892. O.
SCRIPTURE, DR. E. W. (Author). Syllabus of a course of six lectures on Educational Psychology. O.
Ist eine cerebrale Entstehung von Schwebungen möglich? O.
SHARP, G. M. Chancellor, Dr. C. W. The Climate of the Eastern Shore of Maryland. Baltimore, 1889. D.
SHELDON, W. L. (Author). Ethics and the Belief in a God. St. Louis, 1892. D.
The Meaning of the Ethical Movement. St. Louis, 1891. D.
SHINN, MILICENT W. (Author). The Lick Astronomical Department of the University of California. O.
SLATER MEMORIAL MUSEUM. Reproductions of Photographs of Casts in the Museum. Norwich, 1890.
SMITH, CAPT. J. DONNELL. Bentham, G. Flora Hongkongensis. London, 1861. O.
SNOWDEN, S. G. Drew Theological Seminary: Celebration of 25th Anniversary. New York, 1892. D.
SOLIS-COHEN, DR. S. (Author). Two Cases Illustrating the Therapeutic Uses of the Nitrites. O.
A Case of Akromegaly. D.
SOUTHWORTH, PROF. G. C. S. (Author). The Making of our Civilization.
STABLER, EDWARD, JR. Baltimore Yearly Meeting of Friends: Proceedings. Baltimore, 1892. O.
STEINER, DR. B. C. Thirty-five Pamphlets: a collection of the minor publications of his father, Dr. Lewis H. Steiner.
STOCK, C. J. (Author). Translations in Verse from the French, etc. London, 1891.
STOKVIS, DR. B. J. (Author). Voordrachten over Geneesmiddelleer, I. Deel, I. and II. Stuk. Haarlem, 1891-92. O.
STRASSBURG, UNIVERSITY OF. Eighty-nine Academic Publications.
STREET RAILWAY REVIEW. Current Numbers for 1892 and 1893.
SULLIVAN, DR. J. C. (Author). Celestial Physics. Cairo (Ill.), 1892. O.
SULLIVAN, J. W. (Author). Direct Legislation. New York, 1893. O.
SWAN SONNENSCHEIN & Co. (Publishers). (Through President Gilman). Hinton, C. H. Scientific Romances. London, 1886. O.
Hinton, C. H. A New Era of Thought. London, 1888. O.
SWITZERLAND. Department of Interior. Salis, A. de. La correction des torrents en Suisse. 2me livraison. Berne, 1892. O.
SYDNEY, UNIVERSITY OF. Catalogue of Books in Library. Sydney, 1892. O.
TACOMA ACADEMY OF SCIENCE. Wickersham, J. Is it "Mt. Tacoma" or "Rainier?" Tacoma, 1893. O.
TALMAGE, PROF. J. E. (Author). Domestic Science. Salt Lake City, 1892. D.
First Book of Nature. 2d Edition. Salt Lake City, 1892. D.
TEXAS GEOLOGICAL SURVEY. (E. T. Dumble, State Geologist). Report on the Brown Coal and Lignite of Texas, by E. T. Dumble. Austin, 1892. O.

THOMPSON, H. O. Smithsonian Institution: Annual Report. Washington, 1856. O.

TISCHNER, DR. AUGUST. (Author). Le pouvoir grossissant de l'atmosphère. Leipzig, 1892. O.

Le mouvement universel. Leipzig, 1893. O.

Les astronomes. Leipzig, 1893. O.

TOULOUSE, UNIVERSITY OF. Thirty-eight Academic Publications.

TOYNBEE HALL. London. Annual Report, and Toynbee Record. London, 1892-93. O.

TREVOR, J. E. (Author). Über die Messung kleiner Dissociationsgrade. Leipzig, 1892. O.

TYRRELL, PROF. R. Y. (Editor). Dublin Translations into Greek and Latin Verse. Dublin, 1890. O.

VAN NOSTRAND, D. CO. (Publishers). Eulogies on Wadsworth and Porter. New York, 1865. O.

Dedication of the Statue of Major-General John Sedgwick, U. S. A., at West Point. New York, 1869. O.

VENEZUELA, GOVERNMENT OF. Boletin de la Riqueza Publica. Caracas, 1892-93.

VERMONT, UNIVERSITY OF. Centennial Addresses by R. D. Benedict and J. E. Goodrich. Burlington, 1892. O.

Catalogue of the Library of George P. Marsh. Burlington, 1892. O.

VIENNA, DIRECTOR OF THE STADTBAUAMT.

Sample Sheets of the Government Plan of the City of Vienna.

VIENNA, UNIVERSITY OF. Five Academic Publications.

VOLTA BUREAU. (Publishers). Twenty-seven of the publications of the Bureau. O. and Q.

WALLIS, HON. S. T. (Author). Selected Addresses, Lectures and Reviews. Baltimore, 1893. O.

WATERHOUSE, PROF. S. (Author). Thirteen of his writings. St. Louis. O. and D.

WAYLAND, PROF. FRANCIS. National Prison Association. Report of the Criminal Law Committee. New Haven, 1892. O.

WEEKS, PROF. STEPHEN B. Revised Statutes of North Carolina. 2 vols. Raleigh, 1837. O.

Laws of North Carolina. (Published by J. Iredell), 1791. Edenton, 1791. F.

Narrative of Military Operations, by J. E. Johnston. New York, 1874. O.

Climatology of North Carolina. Raleigh, 1892. O.

Moore, B. and Briggs, A. Revised Code of North Carolina. Boston, 1855. O.

Ruffin, E. Sketches of Lower North Carolina. Raleigh, 1861. O.

McGehee, M. Life and Character of Hon. W. A. Graham. Memorial Oration. Raleigh, 1876. O.

WELSH, H. (Author). Report of a Visit to some of the Sioux Reservations of South Dakota and Nebraska. Philadelphia, 1893. O.

WINCHELL, PROF. N. H. (State Geologist, Minnesota). Herrick, C. L. The Mammals of Minnesota. Minneapolis, 1892. O.

WISCONSIN STATE HISTORICAL SOCIETY. Proceedings at the Annual Meeting. Madison, 1893. O.

Second Triennial Catalogue of Library, compiled by R. G. Thwaites, Sec. Madison, 1892. O.

WRIGHT, ALBERT A. (Author). Extra-morainic Drift in New Jersey.

WYATT, J. B. NOEL. Smollett, T. History of England. 9 vols. London, 1758. O.

Clarendon (Earl of). History of the Rebellion. Basel, 1798. 12 vols. O.

Juvenal. Satires. Philadelphia, 1814. O.

Pope, Alexander. Poetical Works. London, 1824. O.

YALE UNIVERSITY. Bibliographies of the Present Officers of Yale University. 1893. O.

Davidson, C. Studies in the English Mystery Plays. 1893. O.

Transactions of the Observatory. Vol. I., Parts III and IV. New Haven. Q.

ZERR, G. B. M. Döllen, W. Stern-Ephemeriden auf das Jahr 1893. Dorpat, 1893. O.

ZÜRICH NATURAL HISTORY SOCIETY. Vierteljahrsschrift. Bde. 1-34. Zurich, 1886. 34 vols. O.

Reports and other current publications of the year have also been received from the Societies and Institutions named below. This list does not include publications received from many of the foreign and American correspondents of the University to whom exchanges are sent.

American Association for the Advancement of Science; American Bankers Association; American Historical Association; American Museum of Natural History; Arkansas Geological Survey; Astor Library; Atlanta Board of Education; Australian Association for the Advancement of Science; Baltimore and Ohio Railroad Relief Department; Baltimore Presbyterian Eye, Ear and Throat Hospital; Baltimore Real Estate Exchange; Baltimore Board of Trade; Boston Museum of Fine Arts; Boston Record Commissioners; Brooklyn Department of Public Instruction; Brooklyn Library; Buffalo Historical Society; Buffalo Library; California Bureau of Labor Statistics; Chicago Law Institute; Cleveland Public Library; Cincinnati Public Library; Connecticut Bureau of Labor Statistics, Enoch Pratt Free Library; Fletcher Free Library; Friends Free Library (Germantown); General Society of Mechanics and Tradesmen (N. Y.); Harvard University Library; Illinois Board of Public Charities; Illinois State Laboratory of Natural History; Indian Rights Association; Indiana Academy of Sciences; Indiana Bureau of Statistics; Indiana Hospital for the Insane; Japan, Governmental Departments and Bureaus; Jersey City Public Library; Jewish Hospital Association (Phila.); Kansas Board of Railroad Commissioners; Los Angeles Public Library; McDonogh School; Maryland Agricultural Experiment Station; Maryland Hospital for the Insane; Maryland Lunacy Commission; Maryland Penitentiary; Maryland Prisoners' Aid Society; Maryland Society for the Prevention of Cruelty to Animals; Massachusetts Board of Education; Massachusetts Board of Railroad Commissioners; Massachusetts Gas and Electric Light Commissioners; Massachusetts State Library; Melbourne Public Library; Michigan Bureau of Labor; Michigan Commissioners of Railroads; Minneapolis Public Library; Minnesota Historical Society; Minnesota Natural History Survey; Missouri Botanical Garden; Montana Historical Society; New Hampshire State Library; New York Board of Education; New York Free Circulating Library; New York State Hospital for the Insane; New York Mercantile Library; New York State Commission in Lunacy; New York, Regents of the University; New York State Charities Aid Association; New York Reform Club; North Carolina Board of Public Charities; North Carolina Agricultural Experiment Station; North Carolina Department of Public Instruction; North Carolina Board of Agriculture; Nova Scotia Legislative Library; Omaha City Engineer's Office; Ontario Department of Agriculture; Ontario Minister of Education; Pennsylvania State Library; Philadelphia Mercantile Library; Providence Public Library; St. Louis Municipal Offices; St. Louis Mercantile Library; Salem Public Library; San Francisco Board of Supervisors; San Francisco Board of Education; Springfield (Mass.) City Library; Wilmington (Del.) Institute; Wisconsin Bureau of Labor Statistics; Wisconsin Treasury Department; Worcester Free Public Library.

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The University is indebted, as in previous years, for many and valuable gifts from the several Governmental Departments in Washington. In addition to a large number of unbound books and pamphlets the following should be specially acknowledged.

Department of Agriculture, including the Weather Bureau. 12 vols.
Department of the Interior, including the Geological Survey and Bureau of Education. 38 vols.
Commissioner of Fish and Fisheries. 9 vols.
Coast and Geodetic Survey. 6 vols.
Interstate Commerce Commission. 3 vols.
Department of Labor. 2 vols.
Navy Department, including the Naval Observatory. 8 vols.
Department of State, including the Bureau of American Republics. 20 vols.
Treasury Department. 8 vols.
U. S. Senate and House of Representatives. 29 vols.
Smithsonian Institution, including the Bureau of Ethnology. 25 vols.
War Department, including the Surgeon-General's Office. 31 vols.
Post Office Department. 6 vols.

# PAPERS PERTAINING TO THE JOHNS HOPKINS MEDICAL SCHOOL.

## I.

## THE MARY ELIZABETH GARRETT FUND.*

TERMS OF THE GIFT, AS ACCEPTED BY THE TRUSTEES, FEBRUARY 21, 1893.

Miss Mary Elizabeth Garrett, in order to make up the sum of $500,000, which the Board of Trustees required should be secured as an endowment before the Medical School of the University was opened, has contributed to that fund the sum of $306,977 upon the following terms, which have been agreed to by the University:

1. That women shall enjoy all the advantages of the Medical School o. the Johns Hopkins University on the same terms as men, and shall be admitted on the same terms as men to all prizes, dignities or honors that are awarded by competition, examination or regarded as rewards of merit.

2. That not more than $50,000 of the original endowment of $500,000 shall be expended on a building or buildings; and that in memory of the contributions of the Committees of the Women's Medical School Fund, this building, if there be but one, or the chief building, if there be more than one, shall be known as the Women's Fund Memorial Building.

3. That the Medical School of the University shall be exclusively a graduate school as hereinafter explained, that is to say: That the Medical School of the Johns Hopkins University shall form an integral part of the Johns Hopkins University, and like other departments of the University, shall be under the management and control of the Trustees of the said University; that it shall provide a four years' course, leading to the degree of Doctor of Medicine; that there shall be admitted to the School those students only who by examination or by other tests equally satisfactory to the Faculty of the Medical School (no distinction being made in these tests or examinations between men and women), have proved that they have completed the studies included in the Preliminary Medical Course (Group Three, Chemical-Biological Course) as laid down in the University Register (but this condition is not meant to restrict the Trustees from receiving as hearers, but not as candidates for the degree of Doctor of Medicine, those who have received the degree of Doctor of Medicine, or its equivalent in some school of good repute); and that the degree of Doctor of Medicine of the Johns

*So designated by the Trustees, December 24, 1892.

Hopkins University shall be given to no Doctors of Medicine who have not proved by examination or by other tests equally satisfactory to the Faculty of the Medical School that they have completed the studies included in the Preliminary Course, besides completing the course of instruction of the Medical School of the Johns Hopkins University.

The aforegoing provisions shall not be construed as restricting the liberty of the University to make such changes in the requirements for the admission to the Medical School of the Johns Hopkins University or to accept such equivalents for the studies required for admission to this school as shall not lower the standard of admission specified in this clause: provided that the requirements in modern languages other than English shall not be diminished, and provided also that the requirements in non-medical scientific studies shall include at least as much knowledge of natural science as is imparted in the three minor courses in science now laid down in its university register, the subjects and arrangements of these scientific studies being subject to such modifications as may from time to time seem wise to its Board and to the Faculty of the Medical School, but being at all times the same for all candidates for admission. (For such requirements always see University Register.)

4. That the terms of this gift and the Resolutions of October 28th, 1890, by which the Trustees accepted the gift of the Women's Medical School Fund, shall be printed each year in whatever annual calendars may be issued announcing the courses of the Medical School.—See appended Resolutions.

5. That there shall be created a committee of six women to whom the women studying in the Medical School may apply for advice concerning lodging and other practical matters, and that all questions concerning the personal character of women applying for admission to the School, and all non-academic questions of discipline affecting the women studying in the Medical School shall be referred to this committee, and by them be in writing reported for action to the authorities of the University; that the members of this committee shall be members for life; that the committee, when once formed, shall be self-nominating, its nominations of new members to fill such vacancies as may occur being subject always to the approval of the Board of Trustees of the University.

6. That in the event of any violation of any or all of the aforesaid stipulations, the said sum of $306,977 shall revert to her, or such person or persons, institution or institutions, as she by testament or otherwise may hereafter appoint.

It will be observed that by the tenor of the aforegoing terms no university course will be in any way modified by any conditions attached to her gift. Those conditions relate exclusively to preparation for the Medical School, and have received, in the shape in which they are now presented, the unanimous approval of the Medical Faculty of the University.

The terms of admission to the Medical School of the University as formulated and interpreted by the Medical Faculty of the University, February

4, 1893, and here subjoined, are therefore in entire accordance with the terms of her gift.

(Signed) MARY E. GARRETT.

REQUIREMENTS FOR ADMISSION TO THE MEDICAL SCHOOL OF THE JOHNS HOPKINS UNIVERSITY, UNANIMOUSLY APPROVED BY THE MEDICAL FACULTY, FEBRUARY 4, 1893.

A course of four years' instruction will be provided leading to the degree of Doctor of Medicine.

To this course there will be admitted as candidates for the degree:

1. Those who have satisfactorily completed the Chemical-Biological Course which leads to the A. B. degree in this University.

2. Graduates of approved Colleges or Scientific Schools who can furnish evidence: (*a*) That they have a good reading knowledge of French and German; (*b*) That they have such knowledge of Physics, Chemistry and Biology as is imparted by the regular Minor Courses, given in these subjects in this University.

3. Those who give evidence by examination that they possess the general education implied by a degree in arts or in science from an approved College or Scientific School, and the knowledge of French, German, Physics, Chemistry and Biology, already indicated.

By approved Colleges and Scientific Schools are meant those whose standard for graduation shall be considered by this University as essentially equivalent to its standard for graduation in the undergraduate department.

It is to be understood that at least one year's study in the Chemical and Biological Sciences in their immediate relations to medicine shall be required from students after their entrance to the medical school.

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## II.

## THE WOMEN'S MEDICAL SCHOOL FUND.

At a meeting of the Board of Trustees of the University, October 28, 1890, the following letter was presented:

"The committees formed for the purpose of raising a fund to procure the most advanced medical education for women, can now place at your disposal the sum of one hundred thousand dollars for the use of your medical school, if you will, by resolution, agree that women whose previous training has been equivalent to your preliminary medical course, shall be admitted to the school, when it shall open, upon the same terms which may be prescribed for men. There can be no doubt that women ought to be trained to act as nurses for sick women. There is as little doubt that a sufficient number of women ought to be educated and trained in such manner as to

be fully able to care for sick women who may wish or ought to be treated by women. We have devoted ourselves to the furtherance of this object. We have reason to hope that a university which proposes to found a medical school intended to teach advanced methods in the treatment of those diseases which afflict mankind, will not refuse to women the opportunity of learning such methods. There is now a general interest in our movement. In order that this interest may be sustained we ask you to consider our offer at the earliest possible period.

NANCY MORRIS DAVIS,
*Chairman of the Baltimore Committee.*"

The following minute was adopted by the Trustees:

The President and Board of Trustees of the Johns Hopkins University have received from Mrs. Nancy Morris Davis, chairman of one of the committees formed for the purpose of raising a fund to procure the most advanced medical education for women, the gratifying intelligence that $100,000 has been raised for the use of their intended Medical School, and is at their disposal, if they will, by resolution, agree to the terms upon which the money was contributed by its donors.

These terms are that this Board, if it accepts the funds thus raised, shall agree, by resolution, that, when its Medical School shall be opened, women whose training has been equivalent to the preliminary medical course prescribed for men, shall be admitted to such school upon the same terms as may be prescribed for men.

The offer to this University of the particular fund is the free voluntary act of women residing in this State and in other States, made without the suggestion or solicitation of this Board, and we accept it under and subject to the terms which are made a part of the gift, with the understanding and declaration, however, that such preliminary training in all its parts shall be obtained in some other institution of learning devoted, in whole or in part, to the education of women, or by private tuition.

The fund so contributed shall be invested and known as "The Women's Medical School Fund," and that fund, and all interest to accrue thereon, and all additions made thereto for the same purpose, shall remain invested for the purposes of increase only until, with its aid as a foundation, a general fund has been accumulated amounting to not less than $500,000, and sufficient for the establishment and maintenance of a Medical School worthy of the reputation of this University and fully sufficient as a means of complete medical instruction. Then, and not until then, will a Medical School be opened by this University; and then, and not until then, will the gift now offered be used by this University; and then, and not until then, will the terms attached thereto be operative.

The utility of a training school for women nurses has been demonstrated by the experience and practice of the Johns Hopkins Hospital, and by the necessities of home life among our people.

This Board is satisfied that in hospital practice among women, in penal institutions in which women are prisoners, in charitable institutions in which women are cared for, and in private life, when women are to be attended, there is a need and place for learned and capable women physicians; and that it is the business and duty of this Board, when it is supplied with the necessary means for opening its proposed Medical School, to make provision for the training and full qualification of such women for the abundant work which awaits them in these wide fields of usefulness.

Nothing contained in this minute shall be construed as abridging, in any manner, the right of the Board of Trustees of the Johns Hopkins University to make such rules and regulations as they may deem necessary for the government of its School of Medicine, when it is organized; and in making such rules and regulations, the terms of this minute shall always be respected and observed.

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## III.

## THE BAXLEY PROFESSORSHIP.

On the death of Dr. Henry Willis Baxley, a well-known physician of Baltimore, (March 13, 1876), it appeared that he had made the Johns Hopkins University his residuary legatee, by a codicil dated February 26, 1876,—authorizing the Trustees of the University "to endow any medical professorship therein they may think proper."

The interpretation of some provisions of the will gave rise to litigation which was finally settled, and the University has received from the Baxley estate the sum of $23,836.52 which, by accretion, amounted, September 1, 1893, to the sum of $40,787.63.

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## IV.

## ANNOUNCEMENT OF THE PROPOSED OPENING OF THE JOHNS HOPKINS MEDICAL SCHOOL.

The following historical statement was made by the President of the University, February 22, 1893, preliminary to the public announcement required by Miss Garrett's gift:

I am about to make an announcement sure to be received with pleasure by all the friends of this University. But before I do so, give me your patience as the successive steps are recounted in the evolution of a great idea. The end in view, once seen from afar, now near at hand, has been the establishment, in close connection with an endowed university and an endowed hospital, of an endowed medical school fitted to give instruction

of the best and highest character to students especially prepared to receive it by the previous study of modern languages, the natural sciences, and other liberal arts.

The germ of this idea was planted twenty years ago. On the tenth of March, 1873, the founder of this university attached his name to an instrument in which he declared it to be his "wish and purpose" that the Johns Hopkins Hospital should "ultimately form a part of the medical school of that university, for which he had made ample provision by his will."

In accordance with his injunction, the trustees of the Johns Hopkins University, as soon as they were organized, began to form a plan for opening a medical school when the hospital should be completed. On the 22d of February, 1876, their purpose had become so definite that, in their behalf and with their authority, the president of the university referred to the advantage to be derived from the co-operation of the hospital and the university, and then proceeded to say:

"It will doubtless be long, after the opening of the university, before the opening of the hospital, and this interval may be spent in forming plans for the department of medicine.

"But in the meantime we have an excellent opportunity to provide instruction antecedent to the professional study of medicine. At the present moment medical students avoid the ordinary colleges. A glance at the catalogues is enough to show that the usual classical or academic course is unattractive to such scholars. The reasons need not be given here. But who can doubt that a course may be maintained, like that already begun in the Sheffield School at New Haven, which shall train the eye, the hand and the brain, for the later study of medicine? Such a course should include abundant practice in the laboratories of chemistry, zoölogy and physics; the study of the anatomy, physiology and pathology of the lower forms of life; an investigation of the elements of physics and mechanics, and of climatic and meteorological laws; the geographical distribution of disease; the remedial agencies of nature and art; and, besides these scientific studies, the student should acquire enough of French and German to follow with ease European science, and enough of Latin for his professional needs. In other words, in our scheme of a university, great prominence should be given to the studies which bear upon Life,—the group now called Biological Sciences."

There is an interesting incident connected with that announcement, which, so far as I remember, has not hitherto been recorded. Immediately after the delivery of that address, its author received a call from a distinguished lawyer of this city, who inquired whether the university would like further aid. It presently appeared that he came in behalf of Dr. Henry Willis Baxley, of Baltimore, who died a short time afterward, bequeathing a considerable sum of money for the establishment of a professorship of medicine, a legacy that now amounts to nearly $40,000. This was the first of a long line of benefactions that this institution has received since its foundation.

You may have observed that the paragraph which has been read concludes with the words "biological sciences," which were used as synonymous

with the studies which bear upon life. At that time the word "biology" in its modern significance was unfamiliar. Its origin was suspicious, its tendency unknown. Now that every leading institution in this country, including the oldest stronghold of orthodoxy and the newest college for women, has a biological laboratory, it is easy to forget what a panic was produced by the employment of this word only seventeen years ago. It was like a ghost, alarming enough to those who were timid or who dwelt in the dark. But it did not take long for intelligent people to discover that the biological sciences were only their old familiar friends—anatomy and physiology, botany and zoölogy,—sporting under a new name, employing modern methods and making free use of modern instruments of precision. In 1893 it may afford us reasonable pleasure to remark that in the medical school of Harvard University, in the Massachusetts Institute of Technology, among the physicians and surgeons of Columbia College in New York, in New Jersey, Pennsylvania, Ohio, Michigan, Wisconsin, Virginia, North Carolina and Georgia, and in other States, the biologists trained in our biological laboratory, not a few of whom are men of renown, have been or are now engaged in the work of preparing young men to enter the medical profession with a proper preliminary scientific training.

In Baltimore, a distinct course of studies, (in which physics, chemistry and biology, with the modern languages were dominant,) intended to be a preparation for the subsequent study of medicine, was arranged and offered to students (who might be or might not be candidates for the degree of bachelor of arts) as early as 1878. We must frankly acknowledge that this "preliminary medical course," as it has commonly been called, was not perfect nor final, nor as good as we can now make it, but it has remained upon our register, with hardly any changes, awaiting the time to come when the organization of a medical school and the enlistment of additional teachers should give both the impulse and the opportunity to prune and graft our promising vines, so that in the future they may bear more fruit than leaves. I am sorry to say that the number of those who have graduated as bachelors of arts in the preliminary course has not been large, the total being seventy-three in thirteen years from 1880 to 1892, inclusive; but I am glad to add that we have not lost an iota of our faith in the fundamental principles upon which that course was laid down.

An additional recognition of the value of the biological sciences was secured a little later, when a psychological laboratory was opened at the suggestion and under the guidance of Dr. Stanley Hall. There are now, I am told, some twenty psychological laboratories in this country, Yale, Princeton and Chicago being among the most recent, but the first of the group was opened in Baltimore. Some of you may remember the apprehensions which this new ghost awakened. It seemed as if mind was to be treated like matter, as if the human eye was trying to penetrate with profane curiosity the sacred mysteries of the soul, as if something was going to happen which would destroy the foundations of intellectual and spiritual life. But, again, it did not take long for intelligent persons to discover that every investiga-

tion that throws light upon the healthy or the diseased action of the brain and the nervous system, everything that tends to show how derangements of the mind may be prevented or corrected, everything that brings clearly to view the sanitary effects of good habits and the mortal tendencies of bad habits, would promote and not hinder the development of man's noblest faculties. So experimental psychology assumed an honorable place among the sciences relating to medicine.

In the year when the university was opened, Dr. Joseph Lister came to Baltimore and explained to some members of the medical profession, in the parlor of Dr. Christopher Johnston, the noteworthy antiseptic precautions of which he was the discoverer. It was several years later, within the memory of all but the youngest students of this university, when the pathological discoveries of Koch, which had been preceded by those of Pasteur, were announced, sending thrills of hope and expectation, blended with admiration and surprise, throughout the civilized world. It was apparent that a new epoch in the progress of medicine had been initiated by the study of bacteria. The relations of these micro-organisms to health and disease are now recognized as of prime importance in the science and arts of medicine and surgery. The wonderful success of modern operations is largely due to these advances in pathology. I remember well, when these discoveries were first talked about, that one of the best physicians of this place, speaking of the possibilities of the Johns Hopkins Medical School, said to me with almost a pathetic plea, "bring here a modern pathologist." So the university called into its service one whom the great Cohnheim nominated, and encouraged him to study with Koch and other eminent leaders, and then placed him at work in one of the buildings of the hospital, where his services might always be at command in the detection of the nature and the causes of disease. Certainly, amid all the recollections of perplexity and disappointment, we may look back with satisfaction to the early introduction in this university of the studies of biology, experimental psychology and bacteriology.

Thus from 1876 onward the university was getting ready to begin its medical school. The construction of the hospital was more costly and was slower than any one anticipated. Its opening was postponed from year to year. At length that auspicious day (May 7, 1889) was near at hand. The hospital trustees selected a staff of physicians and surgeons, and the university gave them the title of professors, without emoluments and duties, without even opportunities, for in that year the university was in distress, sailing close-reefed and asking for aid. The munificent income with which it began had been greatly diminished, and its principal source was absolutely dry. It was an anxious time,—a period of peril, from which we have not yet entirely escaped, for our income from the source referred to is less than it was by $75,000 annually. The university at that time had all it could do to keep its obligations without increasing them. It could not begin a medical school. The anticipations which had been cherished since 1873 were grown dim.

I cannot begin to tell you how much thought had been given to the subject of medical education during all the period that preceded the opening of the hospital,—what long journeys were made; how many hospitals and medical schools in this country and in Europe were visited; what distinguished physicians were consulted at home and abroad; what valuable suggestions were made by all the members of the resident staff; what numbers of catalogues and reports were brought together for future reference,—nor will I say how many of the brightest young men of the country, and especially of Baltimore, were disappointed as year after year they heard the lugubrious words, "The Johns Hopkins Medical School is indefinitely postponed."

Relief came in a manner that was both unsolicited and unexpected. The increasing importance of giving the best possible training to such women as desire to become doctors of medicine had deeply impressed the minds of several ladies of Baltimore, most of whom were near of kin to members of the board of trustees, and who were thus familiar with all the difficulties of the environment. These ladies, with great enthusiasm and energy, and with a degree of perseverance, in the face of obstacles, which should excite both admiration and emulation, undertook to raise a considerable sum for the endowment of the Johns Hopkins Medical School, and so far succeeded that on the 28th of October, 1890, they offered to present to the trustees the sum of $100,000, subsequently increased to the sum of $111,300, and since augumented, by accrued interest, so that it now stands as a little over $119,000 on the treasurer's books. This generous gift was accepted on the condition that men and women should be admitted to the Johns Hopkins Medical School upon the same terms; and with the additional stipulation that the school should not be opened until its endowment should reach the amount of $500,000. Toward this endowment the trustees were willing to count the value of a lot of land adjacent to the hospital which had been bought for a medical school, and also the gift already mentioned as received from the estate of Dr. Baxley. Still the subscription halted. More than three fifths of the sum desired was wanting. No accessions came to the endowment, and when our present academic year began the possibility of opening the Johns Hopkins Medical School seemed more remote than it did sixteen years before, when the university began. Darkness preceded dawn.

The Christmas gift of Miss Garrett has already been announced through the newspapers in every part of this land. Indeed, a lady writing from Mentone, the well-known resort, says that as she walked along the street her eye was arrested by the placard of a newspaper office, headed Johns Hopkins University, and as she read she discovered what a gift had been made to medical science.

In view of this wide publicity, you need only to be reminded at the present moment of the principal fact that Miss Mary Elizabeth Garrett (in addition to previous gifts which amounted to more than $53,000) now offered to give the sum of $306,977 toward the endowment of our medical

school. Such a welcome gift should receive, and has received, and will receive the most grateful appreciation of the Johns Hopkins University.

To me and to almost every one of my colleagues the letter of Miss Garrett was a great surprise. We could hardly believe it possible that the uncertainties and disappointments which had delayed the opening of our school of medicine were gone, and that one benefactor had rendered the service which many had been invited to undertake. To those who for years had been hoping for the realization of a great idea, and especially to those who desired to see a school of medicine in which men and women should be received on the same terms, and still more particularly to those who asked or gave contributions toward the woman's fund, it seemed as if the promised land was now visible from the height of Pisgah. Anxieties and perplexities began to vanish like unpleasant phantoms.

There was, however, one point on which the watchful guardians of the Johns Hopkins trusts desired explicit assurance. They knew that the strength of a university is freedom, and that among its principal functions is the right to determine freely and to change freely the conditions on which students may be received and graduated. It is almost superfluous to say that this right has come down to our day from ancient times with the force of common law. A large gift was now proffered, with an obvious desire on the part of the donor to establish a school of medicine of high character such as was projected many years before. There was no difference of opinion between the giver and the recipients of the gift as to the importance of maintaining the highest practicable standard of admission, instruction and graduation. But the university was not willing to be bound forever by specific limitations. Thus, jealous of liberty for themselves and their successors, the trustees consulted Miss Garrett repeatedly and freely in regard to the interpretation of the conditions of her gift, and from her they received this clear, courteous, and conclusive reply:

"No attempt has been made in my letter to confine you for all time to the matriculation requirements and the preliminary medical course now indicated in your register. By that letter you were, on the contrary, expressly left at liberty to change those requirements from time to time as you might see fit, the only restrictions being that such changes of the preliminary medical course at present laid down in your university register shall leave undiminished the time required for preparation for that course and the time required for completion of that course and the time devoted before and during that course to modern languages other than English and to non-medical scientific studies."

The trustees having been finally assured that the right of the university to determine and to change the conditions of admission and of graduation is not restricted by the terms of the gift, at a meeting held on the twenty-first of February, by a formal vote, authorized the announcement that the Johns Hopkins Medical School will be opened for students in October, 1893. This announcement I now make.

## V.

## PLANS OF THE MEDICAL SCHOOL.

The following address was made by the Dean of the Medical School, Dr. W. H. Welch, at the Public Commencement, June 13, 1893.

On the twenty-second of last February, at the seventeenth anniversary of the Johns Hopkins University, President Gilman, in behalf of the Trustees, announced that the Johns Hopkins Medical School will be opened in October next. In his address on that occasion, he showed that the purpose of the founder of the University and Hospital in providing for such a school as a part of the University and in association with the Hospital had been kept in view since the beginning of the University, and had influenced the establishment and development of several departments of science in this University. It had been contemplated that the medical department would be fully organized at the time of the opening of the Hospital, but when that time came financial difficulties rendered impossible the fulfilment of this long cherished purpose.

This apparently indefinite postponement of the opening of the Medical School was the more keenly appreciated because enough had already been done to make clear that here was a great opportunity for medical education. The University had already provided professorships of chemistry, physiology and pathology; the Hospital had secured a staff of able physicians and surgeons, who received from the University the title of professors; many details in construction of the Hospital, which added much to its cost, were intended for the use of the Medical School; in various ways the resources of these two great institutions, University and Hospital, were available for the benefit of the Medical School. Additional buildings, laboratories and professorships, however, were needed to complete the organization of a medical department worthy of the University. I need not rehearse how, by the generous gift of Miss Garrett, these difficulties were overcome. This was all told by President Gilman on last Commemoration Day.

It seems appropriate on this occasion to say a few words about what has already been done toward the organization of the Medical School and about the aims of the School.

Much needed to be done to prepare for the opening of the School in October, and no time could be or was lost in beginning these preparations. One of the first things to engage the attention of the Medical Faculty was the determination of the amount and character of preliminary education to be required of students admitted to the Medical School as candidates for the doctor's degree. This is, in my opinion, the most perplexing problem concerning medical education, especially in this country. A few words will make the difficulties clear. At present in this country no medical school requires for admission knowledge approaching that necessary for entrance into the Freshman class of a respectable college; many schools demand only

the most elementary education, and some require no evidence of any preliminary education whatever. Foreign medical schools differ in this respect, but all in Europe have far more rigid requirements for admission than has any school in this country. In Germany, which in recent years has done more than any other country for the advancement of medical science, the student passes from the gymnasium to the university, where, at an average age of nineteen years, he begins the study of medicine with physics, chemistry and other subjects, which are included in this country in the so-called preliminary medical courses. It is to be noted that training at a classical gymnasium is required and cannot be substituted by that at a Real-gymnasium, in which a scientific takes the place of a classical course.

For many years in Germany and elsewhere there has been much discussion as to the preliminary education which should be required of students of medicine and there is still great difference of opinion on this subject. In his earlier years DuBois Reymond said Greek by all means should be required; later he cried "More Conic Sections and less Greek." Virchow, in his recent rectorate address, demands an improvement in methods, especially in such as train the senses, particularly of sight and touch. "At present," he says, "we must complain that the majority of our students have no accurate knowledge of colors, that they make false statements regarding the form of objects which they see, and that they have no sense for the consistence and characters of the surface of bodies," and yet "knowledge of this kind is of the greatest importance for the medical man as often the diagnosis of the most important conditions depends upon it."

Even if there were agreement of opinion as to the best education preparatory for the study of medicine, there would still remain for us very serious and important difficulties peculiar to the system of education in this country. These difficulties result from the anomalous development of those American colleges which are half college and half university, but are neither one thing nor the other, and from which students are graduated at an average age of twenty-two to twenty-three years. The flower of our youth seek a collegiate education and it is eminently desirable that they should have it. We believe that those who have had a liberal education are best fitted for the study of medicine, but it is important that the study of medicine should begin at an age not exceeding twenty or at the utmost twenty-one years. The period of professional study should not be less than four years, and after this many will wish to spend a year or a year and a half in hospital service and an equal length of time in special study in this country or in Europe.

How are we to adapt to the embarrassing and anomalous development of American colleges a system of medical education for which a liberal education is demanded as a prerequisite? We are not prepared to recognize a high school training as sufficient, and between this and training in a college or scientific school there is no intermediate grade. We must therefore endeavor to conform to the peculiar conditions in our colleges and scientific schools. We do not claim to furnish an entirely satisfactory solution of the problem, but we have endeavored to do the best we could under all of the

circumstances by asking that students who are admitted to the medical school as candidates for the doctor's degree shall possess the liberal education implied by a degree in arts or in science, and shall also have a specified amount of knowledge in certain sciences fundamental to the study of medicine, as well as a reading knowledge of French and German. In other words we ask the colleges which keep students two years after the age when the study of medicine should begin, to teach them during these two years such subjects as physics, chemistry and general biology, which in most European schools are included in the medical curriculum, but which can be better taught in the faculty of arts, or of science, than in a medical school. This means that a student taking a four years' academic course in one of these colleges shall have made up his mind at the end of sophomore year to study medicine. It means also that, if compared with European systems of medical education, the course of medical study required for our degree of Doctor of Medicine covers five to six years. We fully realize that the number of students who will meet these rigid requirements is not likely to be large.

I have dwelt thus upon the requirements in education preliminary to the study of medicine, not for the purpose of discussing these requirements for which neither time permits nor is the occasion suitable, but in order to make clear that there are especial difficulties in determining what these requirements should be and that these difficulties are greater in this country than elsewhere. Only experience can determine whether or not the plan which we have adopted is the best one for our purpose. It is to be expected and desired that, with improvements in educational methods and systems in this country, there will be corresponding improvements in the character of the training to be required in preparation for the study of medicine. At any rate we can feel sure that we shall not be subject to the reproach most frequently brought against American Medical Schools, viz: a low standard of admission,—for our standard is not only vastly higher than has ever before been attempted in this country, but is not surpassed in any medical school in the world.

Before opening the medical department it was necessary to fill three professorships, viz: those of anatomy, of pharmacology, and of physiology. The Trustees confirmed the appointment of the three men recommended for these chairs by the Medical Faculty. Dr. Mall has accepted the professorship of anatomy, Dr. Abel that of pharmacology, and Dr. Howell that of physiology. We believe that we have been most fortunate in securing these young men, who are enthusiastic and well trained in their special departments, and who have shown distinguished ability both as teachers and investigators. Each relinquished, in order to come here, important professorships with brilliant prospects in other institutions: Dr. Mall in the University of Chicago, Dr. Abel in the University of Michigan, and Dr. Howell at Harvard. It is a source of no slight gratification that these three new professors were all formerly connected with this University,—Dr. Mall as fellow and assistant in pathology, Dr. Abel as a graduate

student, and Dr. Howell first as student and ultimately as associate professor of physiology.

By Dr. Martin's resignation of the professorship of Biology, we have been deprived of his aid in the organization of the Medical School. He had formed a part of the small nucleus of a medical faculty which had existed in the University for many years. He had looked forward for years to helping to start the new school from which so much was expected. It was largely by his scientific work in this University that the Johns Hopkins Medical School had a distinguished reputation before it really existed. He has done a great work not for this University alone, but for the whole country, in the advancement of higher physiology; and the Medical School should not and will not forget Dr. Martin's services in lighting here the flame of one of the chief medical sciences. That this flame will be kept bright by his successor in the chair of physiology, we all believe.

At present the Pathological Building on the grounds of the Johns Hopkins Hospital is receiving two additional stories, which will accommodate the departments of anatomy and physiological chemistry until other buildings of the Medical School are constructed.

The length of time required to complete the course of study in the Medical School will be four years. The first year will be devoted chiefly to the study of anatomy, physiology, and physiological chemistry. At the end of this year the student will have reached about that point in the course which corresponds to the *examen physicum* in the German Universities. With us, however, there will follow three years of strictly professional, mostly practical, study, instead of two years of such study in the German system. Pathology, pharmacology, and the general principles of medicine and surgery will be taken up in the second year, and during the last two years the work will be very largely clinical, that is bed-side and dispensary instruction. At present only the details of the first year's course have been worked out and announced, as students at the beginning will be admitted only to the first year of study.

In the methods of instruction especial emphasis will be laid upon practical work in the laboratories and dissecting room and at the bedside. There will be close personal contact between teacher and student. Graduates of the School may look forward to securing places as internes in the Hospital.

The aim of the School will be primarily to train practitioners of medicine and surgery, that is to qualify persons to take care of diseased and injured conditions of the human body. We hold that the medical art should rest upon a thorough training in the medical sciences, and that, other things being equal, he is the best practitioner who has this thorough training. The medical sciences have made great progress in the last quarter of a century, greater than has the practice of medicine with which alone the general public has much concern. The prevention and treatment of disease have, however, also made important advances, and it can not be doubted

that they will derive still greater benefits in the future from the discoveries which have been made and are to come in physiology and pathology.

But medical education is not completed at the medical school; it is only begun. Hence it is not only or chiefly the quantity of knowledge which the student takes with him from the school which will help him in his future work; it is also the quality of mind, the methods of work, the disciplined habit of correct reasoning, the way of looking at medical problems.

In order to cultivate in the student this habit of thought, this method of work, I believe that there is no one thing so essential as that the teacher should be also an investigator and should be capable of imparting something of the spirit of investigation to the student. The medical school should be a place where medicine is not only taught but also studied. It should do its part to advance medical science and art by encouraging original work, and by selecting as its teachers those who have the training and capacity for such work. In no other department of natural science are to be found problems awaiting solution more attractive, more significant than those in medicine; and certainly these problems do not lose in dignity because they relate to the physical well-being of mankind.

The Johns Hopkins Medical School will start unhampered by traditions and free to work out its own salvation. It will derive inestimable advantage from being an integral and coördinate part of this great university, which will see to it that university ideals and methods are not lost sight of in the new school. It will have the support of a great hospital, the trustees of which have already shown the most enlightened spirit in the encouragement of medical research. May the Johns Hopkins Medical School not only receive lustre from the University and the Hospital, but may it also add to the renown and usefulness of both these institutions, of which it is to form a part.

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[Issued November 29, 1893.]

NINETEENTH

# ANNUAL REPORT

OF THE PRESIDENT OF THE

# Johns Hopkins University

Baltimore, Maryland

1894

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BALTIMORE
THE JOHNS HOPKINS PRESS
1894

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**1894.**

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*Arranged in the order of their accession to office.

# REPORT.

To the Trustees of the Johns Hopkins University:—

*Gentlemen:*

I have the honor to present my nineteenth Annual Report as President of the Johns Hopkins University.

The academic staff numbered during the year eighty-three teachers, including seventeen professors and instructors in the Johns Hopkins Medical School. The number of students enrolled was five hundred and twenty-two, of whom two hundred and sixty were residents of Maryland, and two hundred and forty came here from forty other States of the Union, and twenty-two from foreign countries. Among the students were three hundred and forty-four already graduated, coming from one hundred and forty-three colleges and universities; there were one hundred and twenty-three matriculates (or candidates for the degree of Bachelor of Arts); and there were fifty-five admitted as special students, to pursue courses of study for which they seemed fitted, without reference to graduation. The degree of Bachelor of Arts was conferred upon forty-one candidates, and thirty-three candidates were promoted to the degree of Doctor of Philosophy.*

* The statistics have been prepared, as in former years, by the Registrar, Mr. T. R. Ball.

The following table indicates the enrolment of students in each year since the University was opened in the autumn of 1876:

| | Total Enrolled. | Graduates, (incl. Fellows.) | Matriculates. | Non-Matriculates. |
|---|---|---|---|---|
| 1876–77 | 89 | 54 | 12 | 23 |
| 1877–78 | 104 | 58 | 24 | 22 |
| 1878–79 | 123 | 63 | 25 | 35 |
| 1879–80 | 159 | 79 | 32 | 48 |
| 1880–81 | 176 | 102 | 37 | 37 |
| 1881–82 | 175 | 99 | 45 | 31 |
| 1882–83 | 204 | 125 | 49 | 30 |
| 1883–84 | 249 | 159 | 53 | 37 |
| 1884–85 | 290 | 174 | 69 | 47 |
| 1885–86 | 314 | 184 | 96 | 34 |
| 1886–87 | 378 | 228 | 108 | 42 |
| 1887–88 | 420 | 231 | 127 | 62 |
| 1888–89 | 394 | 216 | 129 | 49 |
| 1889–90 | 404 | 229 | 130 | 45 |
| 1890–91 | 468 | 276 | 141 | 51 |
| 1891–92 | 547 | 337 | 140 | 70 |
| 1892–93 | 551 | 347 | 133 | 71 |
| 1893–94 | 522 | 344 | 123 | 55 |

During eighteen years, two thousand four hundred and fifty-seven individuals have been enrolled as students, of whom ten hundred and fifty-eight are registered as from Maryland (including eight hundred and fifty-eight from Baltimore), and thirteen hundred and ninety-nine from fifty-eight other States and countries. Fourteen hundred and thirty-nine persons entered as graduate students, and ten hundred and eighteen entered as undergraduates. Of the undergraduates, two hundred and thirty-two have continued as graduate students, many of them proceeding to the degree of Doctor of Philosophy. It thus appears that sixteen hundred and seventy-one persons have followed graduate studies here.

The following table indicates the geographical distribution of the students each year since the opening, as shown by the Annual Registers:

| | *Of Md.* | *Not of Md.* | | *Of Md.* | *Not of Md.* |
|---|---|---|---|---|---|
| 1876–77 | 59 | 30 | 1885–86 | 130 | 184 |
| 1877–78 | 71 | 33 | 1886–87 | 162 | 216 |
| 1878–79 | 76 | 47 | 1887–88 | 199 | 221 |
| 1879–80 | 97 | 62 | 1888–89 | 183 | 211 |
| 1880–81 | 95 | 81 | 1889–90 | 215 | 189 |
| 1881–82 | 97 | 78 | 1890–91 | 235 | 233 |
| 1882–83 | 106 | 98 | 1891–92 | 273 | 274 |
| 1883–84 | 123 | 126 | 1892–93 | 266 | 285 |
| 1884–85 | 130 | 160 | 1893–94 | 260 | 262 |

The attendance upon the courses given in some of the principal subjects has been as follows during the last five years:

| | 1889–90. | 1890–91. | 1891–92. | 1892–93. | 1893–94. |
|---|---|---|---|---|---|
| Mathematics and Astronomy, | 83 | 85 | 98 | 118 | 115 |
| Physics, | 85 | 98 | 138 | 145 | 123 |
| Chemistry, | 137 | 114 | 135 | 127 | 119 |
| Mineralogy and Geology, | 33 | 30 | 27 | 28 | 32 |
| Biology, | 64 | 59 | 72 | 58 | 60 |
| Pathology and Bacteriology, | 34 | 40 | 44 | 57 | 35 |
| Greek, | 55 | 61 | 59 | 49 | 45 |
| Latin, | 69 | 70 | 73 | 77 | 67 |
| Sanskrit, etc., | 38 | 35 | 46 | 41 | 46 |
| Semitic Languages, | 35 | 26 | 22 | 18 | 18 |
| German, | 116 | 104 | 121 | 110 | 103 |
| French, Italian, etc., | 88 | 84 | 91 | 80 | 83 |
| English, etc., | 90 | 84 | 94 | 84 | 85 |
| History and Political Science, | 142 | 143 | 165 | 192 | 154 |
| Psychology, Ethics, etc., | 60 | 72 | 61 | 58 | 63 |

Since degrees were first conferred, in 1878, four hundred and twenty-two persons have attained the Baccalaureate degree, and three hundred and ten have been advanced to the degree

of Doctor of Philosophy, as appears from the following table, —the whole number of individuals graduated being six hundred and seventy-five:

| | *B. A.* | *Ph. D.* | | *B. A.* | *Ph. D.* |
|---|---|---|---|---|---|
| 1877–78 | 0 | 4 | 1886–87 | 24 | 20 |
| 1878–79 | 3 | 6 | 1887–88 | 34 | 27 |
| 1879–80 | 16 | 5 | 1888–89 | 36 | 20 |
| 1880–81 | 12 | 9 | 1889–90 | 37 | 33 |
| 1881–82 | 15 | 9 | 1890–91 | 50 | 28 |
| 1882–83 | 10 | 6 | 1891–92 | 41 | 37 |
| 1883–84 | 23 | 15 | 1892–93 | 40 | 28 |
| 1884–85 | 9 | 13 | 1893–94 | 41 | 33 |
| 1885–86 | 31 | 17 | | 422 | 310 |

Death has removed from the Board of Trustees one of the original members of that Board and of the Hospital Board, the Honorable Charles J. M. Gwinn, who died at his residence in this city, February 11th, 1894, in his seventy-second year. He drafted the will of the founder of this University, and, from that time onward until the last days of his life, he paid very close attention to all the interests of the University, and especially to every question in which legal principles were involved. During the last four years of his life, he was the Chairman of the Executive Committee of the Trustees, a post of great responsibility. The esteem in which he was held is shown by a minute presented at a joint meeting of the Trustees of the University and of the Hospital, adopted, and ordered to be entered on their records.

MINUTE.

In founding and administering institutions as complex as this University and this Hospital, there are many parts and many actors. One contributes capital, another suggestion, another experience, another learning, and

another counsel. The resultant of all these forces is the progress of the undertaking, which, according to their adjustment, may be slow or quick, irregular or steady, disheartening or inspiring.

In the organization and development of the Johns Hopkins foundations the Hon. Charles J. M. Gwinn has been from the beginning a counsellor. It is never to be forgotten that his pen drafted the instruments by which both the Hospital and the University were created, and that in no small degree it is due to his wise foresight that the fundamental articles of both institutions were kept free from those needless restrictions and those embarrassing requirements which often fetter the noblest plans.

With Francis White and the late Francis T. King he was an executor of the will of Mr. Hopkins. He was an original member of both boards, and on the death of Judge George William Brown, in 1890, he succeeded in the University Board to the important office of chairman of the executive committee.

His eminence as a lawyer caused him to be the counsellor upon whom both boards relied for legal advice. He never encouraged litigation, but always sought for conciliatory action. In the art of exact and discriminating expression he was remarkably successful, and nothing seemed to give him more pleasure than to reduce to an acceptable form the conclusions reached by his colleagues upon difficult or controverted points. His attendance upon the meetings of the Trustees during a period of nearly twenty years was regular and punctual, and when absent he rarely, if ever, failed to send a written apology. His manners were dignified and courteous; his language was graceful and seasoned with wit. He earnestly advocated the admission of women to the Johns Hopkins Medical School upon exactly the same terms as men, and he drafted the papers by which this result was reached. Under all circumstances he was in favor of maintaining high standards of education and scholarship.

A man of noble mien, of great natural ability, of liberal education, of wide reading in literature, history, and jurisprudence, he naturally came into varied and confidential intercourse with the leaders of public opinion in politics and in law, while his abilities as a counsellor were recognized not only by his colleagues, but by the public, who called him repeatedly to stations of dignity and responsibility.

His name is sure to be remembered in the annals of the two foundations to whose interests he was thoroughly devoted.

The University has met with another severe loss. Professor George H. Williams, who was with us in good health and spirits until the end of the last session, was soon afterwards taken with a fever and died at the home of his parents in Utica, New York, on the twelfth day of July, 1894, at the age of 38 years. He had been a member of this university since 1883, beginning as a fellow by courtesy, and receiving promotion from time to time until he became a professor. He organized with great skill the instruction in geology, mineralogy, and crystallography; secured the co-operation of other geologists, and introduced to the universities of this country the methods of microscopic petrography, in which he had become proficient under the instruction of the distinguished Professor Rosenbusch, of Heidelberg; and he brought to Baltimore a body of advanced and enthusiastic students, many of whom now hold conspicuous stations. His contributions to science were numerous and valuable.

Professor Williams had many rare qualities. His intellectual habits were accurate and orderly; his enthusiasm never failed; his judgment was sound; he was ready to co-operate in the promotion of all the interests of the University to which he owed his first allegiance, and of the community with which he became thoroughly identified; he was a good expounder of scientific truth, not only before those who were qualified to follow him by special studies, but also before public audiences; he had a fine sense of humor; he was equally fond of work in the open field and of work in the library and laboratory. In all the relations of life he was upright, considerate, helpful, and exemplary.

The affection with which he was regarded by his colleagues is shown in the following minute, which was adopted at a

commemorative meeting, after a memoir of his life had been read by Professor Clark and remarks had been made by several of his associates and friends.

MINUTE.

The President and Trustees of the Johns Hopkins University, the members of the Academic Staff, and the advanced students in the department of Geology, assembled to give expression to their common sorrow at the death of their beloved associate, instructor, and friend, George Huntington Williams, now place on record their appreciation of the eminent service rendered, in his brief career, to the University, and to the wider interests of science, through his work as a teacher and investigator; and bear testimony to the varied and admirable intellectual gifts, and the charming personal traits, which so commended him to the esteem and affection of those who knew him that they cannot cease to cherish his memory and to mourn his early death.

Becoming connected with the University in 1883, a young and untried man, he displayed such marked powers that he speedily gathered around him a body of attached and enthusiastic pupils, and through his inspiring qualities as a teacher, and the repute acquired by his scientific work, he was able to organize and develop a department of instruction which has been highly influential and useful. The loss sustained by this institution in the removal of an officer and teacher of his high intelligence, his wide acquisitions, and his unique personal force, cannot be measured in words.

It is a melancholy satisfaction to recall at this time some of the qualities of mind and of character which were so conspicuous in him. His alert, inquisitive observation; the clear judgment and sound reasoning which he brought to the interpretation of what he saw; his excellent power of statement, whether with voice or pen; his cultivated appreciation of literature; the energy, hopefulness, and enthusiasm which he carried into his work and imparted to his associates; his genuine individual interest in his students; the friendliness and helpfulness of his relations to his colleagues, and his readiness to coöperate in every worthy undertaking;—these marks of a pure, refined, generous, and highly gifted nature were characteristic of him. The recollection of these delightful traits makes more keen the sense of loss. Yet with reverent gratitude must it be accounted no ordinary privilege to hold the precious memory of his active mind, his joyous nature, and his loving heart.

The year 1894 will always be remembered in our annals as that in which the McCoy Hall was completed and opened. It is so substantial that it is likely to last for a century to come, and so spacious and convenient that long as it lasts it will be adapted to academic service.

We owe this hall to one who was a devoted friend of the Johns Hopkins University from its inception. The late John W. McCoy, while living, indicated in many ways his interest in this work, and at his death it was found that the University had been made his residuary legatee. The edifice which now bears his name, will be described by the architects in a paper to be elsewhere printed, and, in less technical terms, the chief characteristics of the building may here be stated.

Its position is in the middle of the group of buildings now occupied by different departments of the University,—one of its doors facing the physical laboratory on Monument street, the other facing the chemical and biological laboratories on Little Ross street. The length of the building is 175 feet; its breadth, 100 feet; it is four stories in height, above a light and airy basement. It is so connected with Levering Hall that there is easy access from one structure to the other both upon the ground floor and on the second story. Two staircases and two elevators connect the four floors.

Upon the first floor is an assembly room where a thousand persons may be seated. This was not designed as an auditorium or theatre (a want still felt), but it was intended to be used as a place for the written examinations of large classes of students, for social gatherings, for occasional lectures and public meetings, and for the exhibition of such objects as may belong to the University or be loaned to it from time to time. Adjacent to this assembly room on the south are appropriate

rooms for the use of the trustees and the president. On the north are rooms adapted to the meetings of the faculty and also to occasional lectures. The ample corridor upon this floor makes an attractive cloister, where familiar and informal conversation may be carried on by the members of the University in the intervals of leisure.

The second floor is devoted to lecture-rooms and class-rooms, including especially those designed for instruction in the modern languages and in philosophy.

Upon the third floor several rooms are assigned to the use of seminaries and classes in the ancient languages, and in various departments of historical and political science.

Upon the fourth or upper floor the principal library of the University is placed, in a large, light, and well-arranged hall, where books of general interest are kept, and where the principal periodicals are accessible. One of the accessory rooms is devoted to catalogues and bibliographies; another is a stack room, where books not in constant demand may be placed; a third is to be devoted to maps, charts, and diagrams; a fourth to costly illustrated books, many of which come from the McCoy collection; a fifth is set apart for the ordinary studies of such students as are admitted to its privileges.

From this description it may appear to those at a distance that under one roof the principal part of our library is placed, and also the subordinate libraries, studies, and class-rooms of those professors whose studies are chiefly devoted to languages and literature, ancient and modern, to historical and political science, and to philosophy. The building is severely simple, but the ample spaces set apart for the corridors and stairways give the impression of dignity, and there is abundant wall space for such ornaments and decorations appropriate to a

university as may here be placed. We have already received some noteworthy gifts. Such portraits and busts as belong to the university have already been brought hither. The United States Geological Survey has consented to place upon the walls some illustrations of the studies which have been made in the region of the Chesapeake. A number of interesting autographs of literary men, many of which were received from Mr. Richard Harding Davis, are seen near the class-rooms devoted to English literature. The Bluntschli library is now, as heretofore, easily accessible in a separate room to the students of history. The Cohen collection of Egyptian Antiquities is arranged in one of the historical rooms. The remarkable collection of documents pertaining to the Alabama Claims, given by Mrs. Creswell, will soon be appropriately arranged. A room is devoted to the illustrations of Southern literature and history which have been given by Colonel Scharf, General Birney, and others.

The usefulness of this building has been already demonstrated. Here were held the graduating exercises of the summer of 1894, when one thousand persons were seated in the principal room. At the beginning of the new year all the students of the University and their friends, with the officers of instruction and government, were invited to a social assembly, and it was estimated that a thousand persons were present. The bankers of Baltimore, on the 11th of October, here received and entertained the bankers of other cities, who were in attendance at the annual convention of the American Bankers' Association. But the daily uses of the building are far more important than the exceptional. For the first time in the history of this foundation, the classes in languages and literature have appropriate rooms. The new year consequently

begins with buoyancy and satisfaction. There is a note of vivacity and enthusiasm apparent in all the classes assembled in their new abode.

The transfer of the library was brought about during the summer by the librarian, Mr. Nicholas Murray (with the patient and willing co-operation of a large staff of employees), to whose knowledge of books and skill in arranging them the University is permanently indebted.

Such a building as has now been described will always be serviceable in an institution like this, though it does not meet all our requirements. From present indications it appears that the next important hall should be placed on Howard street (where the dwelling-houses used for administrative purposes are now standing), and it should contain ample rooms for the exhibition of the important collections, now owned by the University and likely to be increased, in biology, mineralogy, geology, botany, ethnology, archæology, and bibliography. It would be chiefly a Museum, but it might include an auditorium, well designed and well arranged, for the accommodation of public assemblies, and adapted to academic celebrations as well as to lectures and concerts.

The opening of the Johns Hopkins Medical School occurred October 1, 1893. The number of students who entered at the beginning of the year, as candidates for the degree of Doctor of Medicine, was eighteen, three of whom were ladies. At the beginning of the second year thirty-four additional students began the course, of whom eight were ladies. In addition, sixty-five Doctors of Medicine attended advanced courses. The opening of this department is an event of so much importance, not only to the University, but to

the interests of medical education throughout the country, that it may be worth while to recapitulate the principles which have governed its organization, although these have already been stated by different persons and at different times.

First. This department of instruction is under the control and direction of the trustees of the Johns Hopkins University as completely as every other department of instruction. The professors and instructors have in no sense a proprietary interest in the work here undertaken. Their salaries are paid from the treasury of the University. They have no personal interest in the amount of funds that may be collected from the fees of the students. They are consequently able to devote their time to the best interests of the students and the advancement of knowledge, without regard to the maintenance of large classes or the admission of scholars who are not qualified to pursue the work here provided for them.

Second. Those only are admitted to this medical school, as candidates for the degree of Doctor of Medicine, who have pursued a course of liberal education in some college of repute, or who give evidence by examination that they have made corresponding advancement in knowledge. No other institution in the land has placed so high a standard for the reception of students in medicine as this. But for admission to our medical school, it is not enough to have had what is commonly called a liberal education; every student entering himself as a candidate for the degree of Doctor of Medicine must give evidence in advance that he has acquired a reading knowledge of French and German, and that he has pursued the study of physics, chemistry, and biology, each through a course of one year's instruction which included laboratory work.

Third. After entering the medical school the instruction is to a great extent by laboratory methods, though not to the exclusion of lectures, recitations, conferences, and demonstrations. Ample facilities are afforded for practical and experimental work in physiology, physiological chemistry, pharmacology, pathology, bacteriology, and anatomy, and, as the classes advance, for clinical observations in the surgical and medical wards of the hospital and in the dispensary.

Fourth. The Johns Hopkins Medical School is in close affiliation with the Johns Hopkins Hospital. The physicians and surgeons of the one institution are officers and associates of the other,—the renown of the hospital depending not only upon the excellence of the buildings and their complete adaptation to their specific offices, but even more on the efficiency of the scientific staff and the skill of the well-trained nurses. The hospital contributes in a high degree to the value of the school of medicine, and illustrates the wisdom of the founder in placing the two institutions which bear his name into such close relationship. It is never to be forgotten that he declared his wish to be that the Johns Hopkins Hospital should "ultimately form a part of the medical school of that University, for which he had made ample provision by his will."

Fifth. The course of instruction extends through four years, and is well graded, so that in the early years the student acquires a knowledge of the fundamental medical sciences which embrace those underlying facts and principles upon which the practical treatment of disease largely depends. After the habits of correct observation and of careful reasoning are matured, and the fundamental knowledge of the sciences which contribute to medical science and art have been

acquired, the student proceeds to the practical observation of medical and surgical cases under the guidance of the clinical teachers. These plans were adopted early in the history of this foundation, and have often been the subject of private and public discussions, but they could not be carried out for the lack of the requisite funds. The generosity of Miss Garrett and other ladies who are greatly interested in the admission of women to the best opportunities for medical education, has now enabled the trustees to open their medical school upon this elevated plan. The professorships thus far instituted are these: anatomy, physiology, pharmacology and physiological chemistry, pathology, obstetrics and gynecology, medicine, and surgery. The superintendent of the hospital is professor of psychiatry. With the permanent staff are associated a large number of younger physicians and surgeons.

Sixth. To promote the instruction in medicine many parts of the hospital were available, especially its amphitheatre and its library. The pathological laboratory on the northeast corner of the hospital grounds was, by the addition of two stories, enlarged to meet the new requirements and, together with the biological laboratory of the University, has afforded facilities for the instruction of the first-year students. A second building, of three stories, devoted chiefly to students in anatomy and pharmacology has been built during the past year,—a simple and unostentatious building, embodying the ideas of the professors who are to be chiefly concerned in it; and it promises to be a most convenient and attractive place of work. Other buildings will soon be needed, and the large space at the command of the university, near the hospital, will undoubtedly, at no distant day, be needed for several other structures adapted to medical instruction.

Seventh. In addition to the regular medical course for candidates for the degree of Doctor of Medicine, practical courses and courses of lectures are annually offered to graduates in medicine. The number of persons who followed these special courses, during the last year, was sixty-five. The courses of instruction offered to students already graduated in medicine were as follows. Among the lecturers will be found, besides the names of the Faculty, the names of other medical men, of great ability and promise, well trained in the best schools of medicine, at home and abroad.

Pathological Anatomy and Histology, Experimental Pathology, and Bacteriology,—Professor Welch, assisted by Dr. Simon Flexner and Dr. B. Meade Bolton.

Normal Histology (preparatory to the courses in Pathology),—Dr. L. F. Barker.

General Medicine (including Laryngology, Diseases of Children, and Diseases of the Nervous System,—lectures, clinics, bedside and dispensary teaching),—Professor Osler, assisted by Dr. W. S. Thayer, Dr. J. N. Mackenzie, Dr. W. D. Booker, and Dr. H. M. Thomas.

Surgery (lectures, clinics, dispensary, &c.),—Professor Halsted, assisted by Dr. J. M. T. Finney, Dr. J. C. Bloodgood, and Dr. James Brown.

Ophthalmology,—Dr. Samuel Theobald, assisted by Dr. R. L. Randolph; Laryngology,—Dr. J. N. Mackenzie; Dermatology,—Dr. J. W. Lord and Dr. T. C. Gilchrist.

Gynecology (lectures, clinics, practical work, &c.),—Professor Kelly, assisted by Dr. Hunter Robb and Dr. A. L. Stavely.

Psychiatry (lectures and clinics),—Professor Hurd, assisted by Dr. H. J. Berkley.

History and Literature of Medicine (lectures),—Dr. John S. Billings, U. S. A.

One of the most acceptable gifts which the University has received within the year was a fund of ten thousand dollars, yielding an income of five hundred dollars annually, which is to be devoted to the assistance of meritorious scholars who may be in pecuniary need. This gift was made by Mrs. William E. Woodyear, of Baltimore, and is set apart as a perpetual memorial of her husband, who was long and honorably known in the mercantile circles of this community. The five scholarships thus instituted are called "the Woodyear Scholarships," and they are to be given annually to five young men who are known to the authorities as young men of ability and promise, but are not to be won by competitive examinations. Such gifts are most welcome contributions to the funds of this University. By this gift, the donor is assured that, for years to come, five scholars of promise will be aided to secure an education at a time when a moderate amount of generous aid is a very great help, and that the name of her husband will be held in grateful and honorable remembrance by successive generations of young men.

By the kindness of friends of the University, several prizes have been offered for the encouragement of excellence in literary composition. One of these, a prize of one hundred dollars, was offered for the best essay written during the current year by a matriculated member of the collegiate department. This prize was won by Wilbur Withrow Ballagh, whose essay on the Olympian Games was pronounced the best among four by the committee who kindly read and examined the essays, viz., His Honor, Judge Phelps, Col. Richard Malcolm John-

ston, and Mr. Tunstall Smith. Two prizes, one of thirty and the other of twenty dollars, have been offered for the best essays written by members of the class that entered in 1893. To encourage continued studies on the part of those who have already been graduated here, a prize of one hundred dollars was offered by one of the Trustees for the best essay written by a bachelor of arts of the Johns Hopkins University of not more than five years' standing. The essay is to be submitted on or before the first of May, 1895.

A fifth prize, for the encouragement of public speaking by the undergraduates, was offered at the beginning of the current year.

Mr. Richard Harding Davis, the well-known writer, once a student among us, has given an interesting collection of the autographs of recent writers,—the collection which had been exhibited by Messrs. Harper & Brothers at the Columbian Exposition in Chicago. They are of especial value as being pages of actual "copy" sent to the printers by writers of distinguished reputation. Other friends, who have seen these autographs (which are now framed and displayed near the classroom for English Literature), have presented other interesting manuscripts and photographs, so that the University is gradually forming a valuable collection of mementoes of American and British writers to which further contributions will be welcome.

Mrs. John A. J. Creswell, whose husband was a prominent lawyer of the State of Maryland and, from 1869 to 1874, Postmaster-General of the United States, has presented to the University an important collection of books and papers pertaining to the settlement of the "Alabama Claims." Mr. Creswell was counsel for the United States in both the courts established by Congress for the distribution of the sum received

from the government of Great Britain, and he preserved with care copies of the documents (a large part of them in manuscript) which came into his hands during the progress of this transaction. The collection, in accordance with a vote of the Trustees, is to be suitably encased and inscribed and made accessible to all who are interested in that important international transaction.

Messrs. William Knabe & Sons, of Baltimore, who have acquired a world-wide distinction as manufacturers of pianofortes, having heard at the time of the completion of McCoy Hall that it was desired to give in it, from time to time, musical entertainments, presented to the University one of their concert grand pianos, and offered to keep it, perpetually, in good order.

In the course of the last winter, Captain John Donnell Smith, of Baltimore, a botanist well known at home and abroad for his enthusiasm and skill as a collector of plants growing in Central America, as well as for his varied attainments in botanical science, opened his private herbarium and his remarkable botanical library to the students of this University. At the same time he indicated his intention to present both the herbarium and the library to the University, whenever a suitable building should be provided for their reception and adequate funds for the maintenance of a department of botany. Unfortunately, at the present time the University has no funds which it can devote to this purpose. In the meantime, it is very grateful to Captain Smith for the privilege of consulting, from time to time, the herbarinm and books belonging to him, and it looks forward to a day when his generous proposal will be accepted. A careful account of this herbarium and library was prepared by Dr. John P. Lotsy, Associate in Botany, and published in the University Circular, No. 109. The announcement has attracted attention in botanical circles at a distance and at home.

The attention of our instructors in geology was called during last winter to an important collection of fossils that had been brought together by Professor Robert T. Hill, of Washington, as a result of his investigations in the Southwest. Dr. Williams wrote concerning this collection: "Aside from the number and variety of the specimens, the facts that many of them are the types of new genera and species described by Professor Hill, from the rich Cretaceous fauna of Texas, and that many others are forms new to science and not yet described, make this collection unique." When this matter was brought to the attention of the University, several friends united in making the purchase, and the collection is now a part of our important geological museum. The donors of this gift are Messrs. Jesse Tyson, Francis White, Mendes Cohen, William T. Dixon, and Daniel C. Gilman.

The fourth series of lectures from the Percy Graeme Turnbull memorial lectureship was delivered by Professor Charles E. Norton, of Harvard University, the subject being *Dante.* The hall was filled with an appreciative audience, and the dignity of the foundation was well sustained by the theme selected and by the ability with which it was treated by the leading Dante scholar of this country. For convenience of reference, the names of all the lecturers upon this foundation are here repeated:

1. Edmund C. Stedman, LL. D., "The Nature and Elements of Poetry."
2. Professor Richard C. Jebb, LL. D., D. C. L., "The Growth and Influence of Classical Greek Poetry."
3. Professor R. Y. Tyrrell, LL. D., Litt. D., "The Growth and Influence of Latin Poetry."
4. Professor Charles Eliot Norton, LL. D., D. C. L., "Dante."

The Donovan fund has enabled us to invite Doctor Horace Howard Furness, the well-known Shakespearean critic, to give a series of readings on Shakespeare, and Doctor Weir Mitchell, of Philadelphia, to supplement this course with a single lecture on the Elizabethan age in relation to its drama.

The Levering lectures, for the year 1893–4, were given by President Hill, of the University of Rochester, the subject being the relations of Science and Religion.

The presence in this country of the distinguished archæologist, Professor W. M. Ramsay, of Aberdeen, led to an anticipation of the usual time for the delivery of the Levering lectures, in the session of 1894–5. He gave, in the month of October, a course of lectures on the Travels of St. Paul, which he had studied by personal investigations in Asia Minor during repeated journeys in that country.

The Levering lectures, although primarily designed for the Young Men's Christian Association, have proved attractive to all the students of the University, and to many persons not connected with us who have obtained admission to the hall.

The lecturers upon this foundation have been as follows:

1. Rev. JOHN A. BROADUS, D. D., "Jesus of Nazareth."
2. President W. R. HARPER, LL. D., "The Old Testament Scriptures."
3. Rev. RICHARD S. STORRS, D. D., "St. Bernard."
4. Rev. WILLIAM R. HUNTINGTON, D. D., "The Four Monosyllables of Religion,—Light, Life, Law, Love."
5. President DAVID J. HILL, LL. D., "Religion in the Light of Science."
6. Professor WILLIAM M. RAMSAY, D. C. L., "St. Paul, the Traveller."

The Honorable William T. Harris, United States Commissioner of Education, has again favored us with a course of lectures on successive Saturday mornings. His theme was the Philosophy of History, and the hall was opened to per-

sons engaged in educational work not connected with the University, as well as to our own advanced students. This course was followed by a course on educational topics, the subjects and the speakers being as follows:

1. The Place of English in College Education. Professor GREENE.
2. The Chemical Laboratory. Professor REMSEN.
3. The Necessity for Liberal Education. President GILMAN.
4. The Study of Mathematics. Professor NEWCOMB.
5. The Study of Modern Languages in Schools and Colleges. Professor RAMBEAU.
6. Recent Advances in Medical Instruction. Professors WELCH, ABEL, and HOWELL.
7. Some Recent Books of Interest to Students of Education. Professor GRIFFIN.

Commemoration Day was observed February 22 by a public assembly of the officers and students, in the Peabody Institute. The principal addresses on this occasion were given by Professor Bloomfield, on "A Century of Comparative Philology," and by Professor Mendenhall, of the U. S. Coast and Geodetic Survey, on "Measurements of Precision considered in their Relation to the Condition of Man." These addresses were preceded by a prayer by the Rev. Dr. Currie, Rector of Christ Church. The degree of Doctor of Philosophy was conferred upon four candidates. The music, which included the singing of a hymn by Dr. Oliver Wendell Holmes and the Hopkins ode entitled "Veritas Vos Liberabit," was directed by Professor John Itzel, of the Peabody Conservatory, the vocal music being led by Mr. T. S. Baker.

Commencement exercises were held June 14, in McCoy Hall, where an audience of one thousand persons was comfortably seated. The principal address was delivered by a former student of this University, Walter S. Page, Esq., of New York, now

Editor of "The Forum," one of the original company of Fellows appointed in 1876. He was followed by Mr. Richard Burton, of Hartford, Conn., a Doctor of Philosophy of this University in 1888, who read an original poem. An address commemorative of the late John W. McCoy, in grateful recognition of his bounty, was given by Professor William Hand Browne. The chaplain of the day was President Goucher, of the Woman's College of Baltimore. Degrees were conferred by the President upon seventy young men.

As the number of graduates of this University increases, and they are more and more widely distributed through the country, it is natural that they should form alumni associations for the maintenance of personal friendship and for keeping informed with respect to the welfare of their alma mater. The oldest of these associations is that in Baltimore, of which the president, during the past year, was Doctor E. R. L. Gould. Its eighth annual meeting was held the twenty-second of February. On the same day, thirteen Hopkinsians on the Pacific slope sent their greeting to the University from San Francisco, and the Northwestern Alumni Association, assembled in Chicago, also sent their salutations. Six Japanese, meeting in Tokio, addressed a telegram to the University, which was received and read on Commemoration Day. On the fourth of May the first annual meeting of the Johns Hopkins Club of New England was held at the Parker House, Boston. Forty members were present. Professor Royce, of Harvard, presided, and addresses were made by the presidents of Harvard University, Massachusetts Institute of Technology, and Clark University, and by a guest from Yale University. A poem was read by Mr. Richard Burton, Ph. D., of Hartford, Connecticut. The Johns Hopkins

University was represented by its President, who was received as a guest of honor.

The report of the Marine Laboratory for the session of 1894, which is printed on a subsequent page, records the work which was carried on at Beaufort, N. C., between the 7th of April and the 7th of July. The Director of the laboratory, two fellows in zoology, an assistant in morphology, four graduate students, and one undergraduate, constituted the party. From the statement of Dr. Brooks, it will be seen that, after many experiments, a way to feed the young oysters during their swimming larval life was discovered, thus doing away with one of the most serious obstacles to the successful propagation of the American oyster from the egg. Provision was made by the Commissioner of Fisheries, too late to be utilized this season, for the continuance of this work in the aquaria of the Commission at Wood's Holl. By suspending glass plates from the end of the wharf at Beaufort, and examining them at short intervals, young oysters were obtained in less than an hour after attachment, and in all subsequent stages of development up to maturity. These collections, which are now being studied in the biological laboratory, will supply valuable data regarding the conditions most favorable for a "set of spat," and the rate of growth of young oysters. They also furnish a basis for an anatomical study of the oyster from the beginning of its sedentary life. This investigation was carried on under the direction of Mr. C. P. Sigerfoos, as a special assistant of the U. S. Fish Commission. He also made a careful study of three of the most destructive American species of the *Teredo*. The director acknowledges the aid which he received from the U. S. Fish

Commission, and also his obligations to the Secretary of War for permission to use the government wharf at Beaufort.

The various journals that are published by the Johns Hopkins University have been continued as usual during the year. There are now completed five volumes of the "Biological Studies," sixteen volumes of the "American Journal of Mathematics," fourteen volumes of the "American Journal of Philology," sixteen volumes of the "American Chemical Journal," twelve volumes of the "Studies in History and Politics," besides fourteen extra volumes of the same series. Of the "Johns Hopkins University Circulars," the thirteenth volume is now completed. The University has lent its aid to other important publications. The Contributions to Assyriology, edited by Professors Delitzsch, of Leipzic, and Haupt, of Baltimore, receive an annual subsidy and have now completed a second volume.

A memoir on the Genus "Salpa," by Professor W. K. Brooks, making a quarto volume of four hundred pages, with fifty-seven colored plates (nearly all of them from the pencil of the author), was published in December. It embodies the result of many years' work on the part of the author and is based upon material collected partly by the United States Fish Commission, and partly by the workers in the Marine Laboratory of this University.

The University Press acts also as the publisher of a new and critical edition of the Old Testament in Hebrew, which is edited by Professor Haupt. The contributors to this work are chosen from among the leading Hebrew scholars of the world. Several parts of this work are now printed, or in press, including Job, Samuel, and Leviticus.

In continuation of the Hopkins bibliographies, lists have been published of books, memoirs, and articles written by those who are now, or who have been, members of this University. Six such lists have now appeared,—in chemistry, mathematics, physics, astronomy, geology, and philology,—three having been issued during the past year.

The series of Hospital Reports and Hospital Bulletins have been continued through the year. The credit of these publications belongs to the Johns Hopkins Hospital, but, as many of the contributors are members of the University staff, and as the supervision of the publication has fallen upon the University press, it is proper to mention them here.

Since the publication of the last Report, the following appointments and promotions in the Faculty have been made by the Trustees:

To be Professor of Organic Geology: *
WILLIAM B. CLARK, Ph. D.

To be Associate Professor of Romance Languages:
ADOLF RAMBEAU, Ph. D.

To be Associates:
LEWELLYS F. BARKER, M. B., *Anatomy.*
B. MEADE BOLTON, M. D., *Bacteriology.*
LORRAIN S. HULBURT, Ph. D., *Mathematics.*
CHRISTOPHER JOHNSTON, Ph. D., *Semitic Languages.*
L. EMIL MENGER, Ph. D., *Romance Languages.*
BERNARD C. STEINER, Ph. D., *History.*

To be a Lecturer in Mathematics and Astronomy:
A. S. CHESSIN, Ph. D.

* November 5, 1894.

To be Instructors and Assistants:

J. Bascom Crenshaw, Ph. D., *Physical Training.*
Jacob H. Hollander, Ph. D., *Economics.*
Westel W. Willoughby, Ph. D., *Political Science.*
Edward B. Mathews, Ph. D., *Mineralogy.*
C. Carroll Marden, Ph. D., *Romance Languages.*
Edwin S. Faust, Ph. D., *Physiological Chemistry.*
Fonger De Haan, *Romance Languages.*
William J. A. Bliss, *Experimental Physics.*

The University was invited to send a delegate to the celebration of the second centenary of the University of Halle. Professor Haupt represented us upon that occasion and gave to that ancient seat of learning, in our name, a number of our principal publications, and he also attended, as a representative of this University, the international congress of orientalists which was held in Geneva. Doctor Nuttall, an Associate in the medical department, represented the university at the congress of hygiene held in Buda Pesth, and at the international medical congress in Rome. The centennial celebration of Bowdoin College, in June, 1894, was attended by the President of the University. He was also present at the commencement of Harvard University, in order to testify to the respect entertained by the Johns Hopkins University for President Eliot, whose twenty-five years of service at the head of Harvard University were then commemorated. At the beginning of the academic year several delegates from our faculty were present at the celebration of the centennial of Williams College.

From its earliest days, the Johns Hopkins University has engaged, to a greater or less extent, in the study of the natural characteristics of the region in which it is placed. Politically

this is the State of Maryland; geographically it is the natural basin of the Chesapeake Bay, that region which begins at the sources of the Susquehanna, and extends to the capes of Virginia, being bounded on the west by the ridges and slopes of the Alleghany system, and on the east by the Atlantic Ocean. Several stages may be indicated in the study and interpretation of this vast area by the members of this University. Before any students were assembled, the co-operation of Mr. Uhler, who was and is now president of the Maryland Academy of Sciences, was secured, and a small sum of money appropriated for bringing together specimens of the local natural history. Afterwards, under the auspices of Professor Martin, a field club was organized, with sections in it devoted to geology, zoology, and botany, and, by its continuous efforts, many important contributions, illustrating the local fauna and flora, have been made to the museums of the University. Mr. Basil Sollers, of Baltimore, and Dr. Barton, of our own staff, have been particularly interested in the botany of this vicinity. Subsequently, similar and important collections were received from the Maryland Academy of Sciences and were fully described at the time when they were passed over to our museum. For the study of the marine fauna of the Chesapeake region, including the oyster, the Chespeake Zoological Laboratory, or Marine Station, was instituted in 1878, and a considerable sum of money annually appropriated for its maintenance. Gradually the researches of Professor Brooks and his associates in this laboratory have been extended beyond the waters of the Chesapeake. Very important publications have resulted from the investigations made at the different stations which have been occupied successively by this organization.

LIST OF STATIONS. (Dr. W. K. BROOKS, *Director.*)

1878. Old Point Comfort, Va. (Fort Wool.)
1879. Crisfield, Md., and Fort Wool.
1880. Beaufort, N. C.
1881. Beaufort, N. C.
1882. Beaufort, N. C.
1883. Hampton, Va.
1884. Beaufort, N. C.
1885. Beaufort, N. C.
1886. Green Turtle Key, Bahama Islands.
1887. Nassau, Bahama Islands.
1891. Port Henderson, Jamaica.
1892. Bimini, Bahama Islands.
1893. Port Henderson, Jamaica.
1894. Beaufort, N. C.

When the late Professor Williams was called to give instruction in geology, and subsequently when his services were reinforced by those of Professor Clark, much attention was bestowed upon the geology of the Chesapeake region. Beginning in the neighborhood of Baltimore, where the gabbro area is of great geological significance, these studies were extended to important regions between the coast and the mountain summits, and from New Jersey to North Carolina. Under the guidance of Professors Williams and Clark, eight successive geological expeditions have been made, directed partly to the study of rocks and minerals, and partly to the study of the remains of animal and vegetable life. In all these researches, the aid of the United States Geological Survey, under the direction of the chief, Major Powell (now succeeded by Professor Walcott), has been of the utmost value. The thanks of all intelligent people dwelling in this region are due to that department of the government for the efficient aid it has given to the study of our local geography.

EXPEDITIONS MADE BY THE GEOLOGICAL DEPARTMENT.

| | | |
|---|---|---|
| 1. Coastal Plain. | Dr. CLARK. | 1888. |
| 2. Coastal Plain. | Dr. CLARK. | 1889. |
| 3. Coastal Plain. | Dr. CLARK. | 1890. |
| 4. Coastal Plain. | Dr. CLARK. | 1891. |
| 5. Western Maryland. | Dr. WILLIAMS. | 1891. |
| 6. Coastal Plain. | Dr. CLARK. | 1892. |
| 7. Appalachian Region. | Dr. WILLIAMS. | 1893. |
| 8. Coastal Plain. | Dr. CLARK. | 1894. |

In addition to these longer expeditions, which generally occupied a week or ten days, there have been numerous day excursions during the spring and autumn into the Piedmont Region, to the west of the city, under the guidance of Dr. Williams, and into the Coastal Plain under the guidance of Dr. Clark.

The following list, based on one prepared by the late Professor Williams, is intended to show at a glance in what a number of ways the neighborhood of Baltimore has been graphically represented. He confidently asserted that no city in the United States has a more varied series of maps and models of its surroundings than Baltimore.

*Topographical Maps.*

1. U. S. Geological Survey Sheet "Baltimore." Scale 1:62,500, with Baltimore at its centre.

2. U. S. Geological Survey Atlas Sheet "Baltimore." Scale 1:62,500, with Baltimore near its southern edge.

3. Johns Hopkins University Topographic Map of Baltimore and Vicinity. Scale 1:62,500, embracing over 400 square miles and comprising all the U. S. Geological Survey Sheet Baltimore and parts of the three contiguous sheets, "Relay," "Laurel," and "Ellicott City." 1892.

4. Maryland Weather Service Map of the State, drawn in Washington on a scale 1:500,000, and variously reproduced. This gives the boundaries drainage and principal towns accurately, but has no topography. 1891.

*Geological Maps.*

5. The earliest geological map of Maryland is that issued by P. T. Tyson, in his report of 1860, and republished, with slight revision, in Martinet's New Atlas of Maryland, in 1873.

6. In August, 1891, the U. S. Geological Survey issued a preliminary geological map of Washington and Vicinity, with adjacent portions of Maryland, for the use of the International Congress of Geologists.

7. In February, 1892, a preliminary edition of the Baltimore Sheet, geologically colored, was issued by the Survey for the use of the American Institute of Mining Engineers. The coloring of this map was, however, unsatisfactory, and the sheet was reissued, greatly improved in appearance, in August, 1892.

8. In November, 1892, the Johns Hopkins University issued its topographic map, geologically colored. The scheme of colors adopted for this map is quite independent of that in use by the Geological Survey.

9. A new geological map of the entire State, on a scale of eight miles to the inch, or about 1 : 500,000, was prepared for the World's Fair Book on Maryland. This is based upon the geological work of Darton, Williams, Keith, Geiger, Tyson, and White.

*Models.*

10. In addition to the maps, several relief models have been prepared with the use of the new topographic data. A model of the area of the first Baltimore Sheet, with Baltimore at its centre, was made in 1890 by Mr. Cosmos Mindeleff of Washington, on a scale of four inches to the mile, and with no vertical exaggeration. This model was constructed for the Baltimore Real Estate Exchange, and its cost was met mainly by Mr. H. C. Turnbull, by whom it was copyrighted. It is 5½ feet high by 4½ feet broad and is mounted in a heavy oak frame. As the natural vertical scale of this large model rendered it too flat for the purpose intended by the Real Estate Exchange, it has been deposited at the University, and a second one constructed for the Exchange on the same scale, but with a four-fold vertical exaggeration. This model is a very graphic representation of the region about Baltimore.

11. A large photograph of the second model is now in course of preparation by Cummins.

12. A geologically colored replica of this model was exhibited by the Geological Survey in the Government Building at the Chicago Fair.

13. The Cumberland Valley Railroad had constructed in Philadelphia a relief model of the North and South Mountains between the Susquehanna and Potomac rivers, to show the valley and the course of its road. The original is deposited at Wilson College, Chambersburg, while photographic reproductions adorn the time-tables of the road. A considerable part of Maryland is represented on this model.

14. The Maryland Board of Managers for the World's Fair prepared a large relief model of the entire State, measuring seven by twelve feet, the work of Mr. Cosmos Mindeleff of Washington.

More recently the study of the climate of Maryland has been undertaken, chiefly at the suggestion of Professor Clark. The co-operation of the State of Maryland, of the United States Weather Bureau, of the Maryland Agricultural College, and of the Johns Hopkins University resulted in the institution, by the Legislature, of the Maryland Weather Bureau, to which the State has given an annual stipend. In return for this, frequent bulletins respecting the weather have been issued, and annual reports have been made to the Legislature. At length the materials were collected for an admirable series of weather charts of Maryland, published by the State and widely distributed.

It will be seen from the facts now recapitulated that the scientific gentlemen connected with this University have done everything in their power to bring before the public accurate, complete, and varied information respecting the physical peculiarities of this State and the surrounding territory, upon which the development of mines, quarries, forests, fisheries, and agriculture intimately depend, and consequently the general welfare of the people of Maryland.

In recognition of the knowledge thus accumulated, the Maryland Commissioners for the World's Fair requested the

University to prepare a volume which should exhibit the natural history of the State, its civil history, and the condition of its public institutions. A quarto volume, to which many pens contributed, was therefore prepared and distributed, and may be regarded as an epitome of what is known respecting the structure and physical characteristics of Maryland and the historical development of the institutions of the State.

The University continues to be one of the institutions supporting the American School of Classical Studies in Athens. In view of a contribution made some years ago, it has the privilege of nominating a biologist, to the U. S. Fish Commission, as an occupant of one of the tables of the marine laboratory at Wood's Holl. The annual report in respect to the Maryland State Weather Service is printed in the appendix.

The library now numbers 66,584 bound volumes, an increase of 4,398 volumes within the year.

The serials received by the University exceed one thousand in number.

Among the separate libraries of the University the medical begins to assume great importance,—the aggregate number of volumes of this collection being about 4,500.

Among the donations of the year especial mention should be made of these gifts: 515 volumes, in geology and other sciences, which belonged to the late Isaac Tyson, and are presented by his son, Mr. Jesse Tyson, of Baltimore; more than 150 volumes of miscellaneous books from the library of the late provost of the Peabody Institute, Doctor N. H.

Morison, presented by his daughter; 43 volumes from the library of her brother, the late Porter Poinier, one of the earliest persons to be appointed to a fellowship in this University, presented by Mrs. Burr Porter; a number of valuable astronomical books by Mr. S. V. Hoffman, a Fellow of this University in astronomy; and a very interesting collection of documents published by the Royal Italian Columbian Commission, presented by the Italian Government. The University has also received a copy of the medal struck in honor of the Jubilee of Professor Drisler, of Columbia College, together with a printed copy of the minutes adopted by the Trustees of Columbia in honor of Professor Drisler. From the Committee on the celebration of the adoption of the United States Constitution, copies have been received of the medal struck upon that occasion; and from William E. Dodge, Esq., of New York, a copy of the illustrated volume which describes the celebration.

A cast, representing the head of Aristotle, modelled by Professor Carl L. Brandt, Director of the Telfair Institute, in Savannah, Georgia, has been presented by the artist, and now adorns the wall of our new library.

A collection of several hundred mounted microscopic forms has been received from Mr. Lewis Woolman, of Philadelphia.

As these pages are passing through the press, the University has received from William W. Spence, Esq., of Baltimore, a Babylonian brick measuring twelve inches by seven and a half inches, and stamped with an inscription, in cuneiform characters, referring to Nebuchadnezzar II, who flourished B. C. 605–561. This is a valued contribution to our small but noteworthy collection of antiquities.

The relations of this University to the Johns Hopkins Hospital and to the Peabody Institute have been as close as in former years, and much of the efficiency of our distinctive work is due, on the one hand, to the establishment and maintenance, upon a most liberal plan, of the great library endowed by George Peabody; and, on the other hand, to the maintenance of the hospital endowed by Johns Hopkins which has become, as already stated, the basis of the Johns Hopkins School of Medicine.

The attention of the trustees and of the public is called to the careful statements (printed as usual in the appendix), regarding the courses of instruction which were given in this University during the last academic year. These statements have been prepared under the direction of the principal instructors, whose names are appended thereunto. They show the real work of the University. The methods that are here followed and the results that are reached should be examined, in spite of their technical character, not only by the Trustees, but by all our friends who are interested in the progress of higher education. To attempt to condense these reports would be to deprive them of their value; to recapitulate them is needless. It may only be said that there has never been a greater activity among us in all intellectual pursuits than was manifested during the year just closed.

The only important changes that have been made in our plans are those which relate to the undergraduate work. Those who are familiar with this, are aware that from the beginning a difference has here been made between "admission" to college and "matriculation" in it. The standard of matriculation continues to be, as it has been, in general

terms, the standard of admission to the sophomore class in other colleges. Baltimore City College and the excellent private schools of this city have trained their pupils so well that their students, at admission, could pass our matriculation examination. But this was not true of schools in other places; consequently, we have had from the beginning a company of young men who might be called students conditionally admitted, and who have been usually designated upon our catalogue as "candidates for matriculation." Some instruction has been provided for them, but not in a systematic way. Henceforward such young men will be taught as members of a class; while, at the same time, those who choose to pass our matriculation examination at the time of their admission to college, will be allowed to do so.

There is another noteworthy change in our plans. The group system, with its many advantages, has developed an undesigned tendency,—a tendency to be so rigid that the freedom of choice adapted to individual peculiarities has been too restricted. Modifications have therefore been introduced, after prolonged discussions, which can easily be understood by reference to a paper on "The College Work of the Johns Hopkins University," published last summer. In introducing these changes, it was found desirable and possible to give much more time to the undergraduate study of English than has hitherto been allowed,—a change which has been greatly promoted by the appointment of a college professor of English. Among the new electives opened to undergraduates, astronomy, geology, and Hebrew may be named.

A table showing the present occupations and professions of the alumni of the University, compiled by Charles Weathers

Bump (A. B., 1892), appeared in the *Baltimore Sun* for June 8, 1894, and it has since been revised by the author. The graduates of June, 1894, are not included. The list is arranged in the order of percentages, and they are based on the total 582, which excludes those who have died and those whose occupation is unknown.

| | Ph. D.'s and A. B.'s. | Ph. D.'s. | A. B.'s. | Totals. | Per cent. |
|---|---|---|---|---|---|
| College professors, | 30 | 175 | 15 | 220 | 37.8 |
| Lawyers and students of Law, | 2 | 2 | 86 | 90 | 15.5 |
| Physicians, | 1 | 3 | 57 | 61 | 10.5 |
| Continuing their studies, | 4 | 4 | 49 | 57 | 9.8 |
| School teachers, | 1 | 6 | 31 | 38 | 6.5 |
| Clergymen, | 1 | 2 | 19 | 22 | 3.8 |
| In mercantile pursuits, | 0 | 0 | 22 | 22 | 3.8 |
| Editors and journalists, | 0 | 5 | 14 | 19 | 3.3 |
| Analytical chemists, | 4 | 6 | 3 | 13 | 2.2 |
| Electricians, | 0 | 4 | 6 | *10 | 1.7 |
| Government scientists, | 1 | 3 | 5 | 9 | 1.5 |
| Geologists, State and national, | 1 | 3 | 1 | 5 | .9 |
| In Charity Organization work, | 0 | 3 | 1 | 4 | .7 |
| Directors of Physical Culture, | 0 | 3 | 0 | 3 | .5 |
| Librarians, | 1 | 1 | 0 | 2 | .3 |
| School superintendents, | 0 | 0 | 2 | 2 | .3 |
| Engineers, | 0 | 0 | 2 | 2 | .3 |
| College President, | 1 | 0 | 0 | †1 | .2 |
| Lieutenant, U. S. A., | 0 | 1 | 0 | 1 | .2 |
| Architect, | 0 | 0 | 1 | 1 | .2 |
| Dead, | 1 | 5 | 11 | 17 | |
| Occupation unknown, | 2 | 4 | 7 | 13 | |
| Totals, | 50 | 231 | 331 | 612 | |

* This does not include the students who have received Certificates of Proficiency in Electrical Engineering and have not gone forward to a degree.

† Dr. A. W. Small, now head professor of social science in the University of Chicago, was formerly President of Colby University, Me., and Mr. John H. Finley, at one time a graduate student at this University, is now President of Knox College, Ill.

The question is so often raised in respect to the funds of this institution that a few words on this subject may not be inappropriate. Important changes were made a few years ago in one of the principal securities given to the University by its founder, and from the new investment, a fixed income is now received. The fees derived from tuition have become a very important part of our resources. Many generous gifts have been made by the citizens of Baltimore, and others. Yet it should not be forgotten that the income from one part of the original endowment is less by $75,000 annually than it was when the University was instituted, and that, as a consequence, many plans of advancement have been checked or suspended. It has not been necessary to contract our work, or to diminish salaries, or to deviate in any way from the engagements which have been made, but there is great need of a larger endowment, if this University is to maintain the place that it has won among the institutions of this land. Since the well-known reduction in our resources, here referred to, more than a million dollars have been given, for one purpose or another, to the Johns Hopkins University. Nearly nine-tenths of this sum has been directed to such objects as the medical school, lectureships, and buildings, so that, from this source, there is hardly any income available for general purposes.

From the first, the work of the Johns Hopkins University has not been restricted to the city or state in which it is placed. Its honors, its fellowships, its degrees, its courses of instruction,—all its advantages,—have been freely opened to young men from every part of this land, and to many from other countries. It has been an unsectarian but not an irreligious institution. Its influence has been national. Its publications and its contributions to science have gone to the universities

and libraries of the world. While Baltimoreans may therefore take pride in this state of things, and will doubtless continue to help it by large gifts and by small gifts, it does not seem unreasonable to hope that enlightened persons, not dwelling in Maryland, will see what a foundation has here been laid and will also be willing to aid in its further development.

In conclusion, I beg leave again to express my grateful recognition of the unvarying support of the Board of Trustees, without whose watchful care nothing could have been accomplished. They are unpaid, and their devoted efforts for the promotion of higher education deserve the thanks of the entire community. The members of the Faculty have, each in his way, been most cöoperative and efficient. Not a jar has occurred in the harmonious workings of our educational system.

The government of the students continues to be personal; friendly counsel, occasional remonstrance, and hearty sympathy with the characteristics of youth distinguish the discipline of this University. Law, government, and discipline—just, sure, and prompt—there must be. The key note is this, that upright conduct, courtesy, and devotion to study are required of all students; while neglect in any of these particulars, if voluntary and prolonged, will deprive a student of the privileges of membership.

Respectfully submitted,

DANIEL C. GILMAN,
*President.*

*November* 5, 1894.

# REPORTS ON THE INSTRUCTION IN THE CHIEF BRANCHES OF STUDY.

Prepared by the Principal Instructors in the several departments.

## Mathematics and Astronomy.

### I.—Astronomy.

Professor Newcomb gave the following courses:

I. The Method of Least Squares. *Twice weekly, first half-year.* This course was an elementary introduction to the subject, and designed especially to develop the first principles of the theory of probabilities as applied to scientific investigation.

II. Astronomical Optics. *Twice weekly, first half-year.* The object of this course was the complete development of the theory of radiant energy as founded on the laws of thermodynamics and applied to the interpretation of spectroscopic observations. The laws of reflection and absorption and the conclusions to be drawn from spectra of various classes were set forth. The general principles of cosmical physics as connected with radiant energy were also developed.

Dr. Poor gave the following courses:

1. General Course in Theoretical and Practical Astronomy. *Three times weekly, through the year.*

This course was intended for those beginning the subject and for those who wished to take Astronomy as a subsidiary subject for the doctorate. It included a general outline of the principal problems of Spherical Astronomy, the first principles of the method of Least Squares, and a careful discussion of the fundamental laws and equations of Gravitational Astronomy. A short historical sketch of the science was also given.

Among the books consulted and referred to in this connection were: *Spherical and Practical Astronomy*, Chauvenet; *General Astronomy*, Young; *Histoire de l'Astronomie*, Delambre.

2. Computation of Orbits and Ephemerides. *Three times weekly, first half-year.*

The methods of computing and correcting orbits were fully developed, special attention being given to the practical application of the various formulae derived.

3. Methods of Computing Special Perturbations. *Three times weekly, second half-year.*

The methods of computing the perturbations of rectangular coördinates and of the elements were carefully developed and the students trained in their numerical applications. Other methods, notably Hansen's, were briefly outlined.

Among the books consulted and referred to in connection with courses 2 and 3 were: *Bahnbestimmung*, Oppolzer; *Theoretical Astronomy*, Watson.

4. Advanced Theoretical Astronomy. *Weekly, second half-year.*

In this course were discussed the Lagrangian method of obtaining the variations of the elements of a planet's orbit, the secular perturbations of the elements, and questions as to the stability of the solar system. In the main the course followed Tisserand's *Mécanique Céleste*, Vol. 1, with many references to Cheyne's Planetary Theory.

The work in the observatory was carried on whenever the weather permitted. Up to May 1st observations were made on seventy-two nights. All the students were trained in the use of the transit instrument and the equatorial. The meridian circle was used for practice by Messrs. Clutz, Harrison, Ebaugh, and Hoffman. During the autumn the equatorial was assigned to Mr. Hoffman for special spectrum work; during the rest of the year it was mainly used for double-star measurements by Messrs. Clutz, Harrison, Lewis, and Stoner. A series of twelve or more such stars were each measured on two or more nights.

Seminary work was carried on during the year, eighteen papers in all having been read by the students. These were mostly of an historical character.

During the past year the department has received a number of presents, among them a chronograph and a number of astronomical books from Mr. Samuel V. Hoffman.

## II.—Graduate Courses in Mathematics.

Professor Craig gave the following courses:

Theory of Functions (Elementary Course). *Three times weekly, for six months.* This course included a rather full account of the Theory of Series, and the elementary theory of uniform functions and of algebraic functions. In the elementary Seminary, which was conducted in connection with this course, there were given a large number of applications of the theory of functions, together with some work on topics of particular interest to physical students, such as Dirichlet's theorem, Green's theorem, line and surface integrals, etc.

Fuchsian Functions. *Twice weekly, first half-year.* This course was devoted to the study of Poincaré's two memoirs, *Théorie des Groupes Fuchsiens* and *Mémoire sur les Fonctions Fuchsiennes.* The advanced Seminary worked

for the first part of the year almost wholly on the subjects treated in this course.

Algebraic Integrals. *Four times weekly, first half-year.* This course followed mainly the theory of Abelian Integrals and Riemann's Surfaces as given by Picard. The treatises of Harkness and Morley and of Forsyth, as also Clebsch and Gordan's *Abelsche Functionen*, were used for reference.

Elliptic Functions. *Four times weekly, second half-year.* This course contained first a fairly complete account of the old theory of the elliptic functions, and then an account of the Weierstrass Theory as given by Tannery and Molk and by Halphen.

Differential Equations. *Twice weekly, second half-year.* Linear differential equations as they have been studied by Fuchs, and certain algebraic differential equations studied by Appell and Painlevé. The advanced Seminary worked on differential equations during the second half-year, and also on some points in the more advanced Theory of Functions.

Professor Franklin gave the following courses:

Exercises in Analytic Geometry of two and three Dimensions. *Twice weekly, first half-year.* These exercises were for the most part in the nature of applications of the theory of Invariants to Geometry.

Theory of Numbers. *Three times weekly, second half-year.* Dirichlet's *Zahlentheorie* was used as a text-book.

Theory of Probability. *Twice weekly, second half-year.* Bertrand's *Calcul des Probabilités* was used as a book of reference.

Professor Eduard Study, of the University of Marburg, was a mathematical lecturer for the year, and gave the following courses:

Theory of Algebraic Forms. *Three times weekly, first half-year.* The subject was treated throughout from the point of view of the symbolic method.

Projective Geometry. *Twice weekly, second half-year.*

Mr. Hulburt gave the following course:

Theory of Plane Algebraic Curves. *Three times weekly, second half-year.* In this course were presented the chief portions of the non-metrical theory of curves and the theory of the cubic. The authors chiefly referred to were Clebsch-Lindemann and Salmon.

### III.—Undergraduate Courses in Mathematics.

These courses are the same from year to year. During the year 1893–4 they were given as follows:

*First Year Course:*

Analytic Geometry. *Daily, till Christmas.* Mr. Hulburt and Mr. Landis.

Differential and Integral Calculus. *Daily, from January 1 to end of year.* Mr. Hulburt and Mr. Landis.

*Second Year Course:*

Differential and Integral Calculus (Special Topics). *Twice weekly, till December 1.* Professor Franklin.

Differential Equations. *Twice weekly, December* 1 *to end of year.* Mr. Hulburt and Mr. Landis.

Determinants and Theory of Equations. *Three times weekly, till December* 1. Professor Franklin.

Modern Plane Analytic Geometry. *Three times weekly, December* 1 *to end of first half-year.* Professor Franklin.

Solid Analytic Geometry. *Three times weekly, second half-year.* Professor Franklin.

Classes were conducted by Mr. Manning in

Trigonometry and Analytic Geometry for matriculation. *Three times weekly, through the year.*

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The Mathematical Seminary, under the direction of Professor Craig, met weekly. A large number of papers were presented dealing with historical, biographical, and current mathematical literature, and a number of brief courses of lectures were given by the students on assigned mathematical topics.

Vol. XV of the American Journal of Mathematics was completed during the year, and Vol. XVI commenced. A portrait of Sophus Lie forms a frontispiece to Volume XV.

S. Newcomb,
*Professor of Mathematics and Astronomy.*

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## Physics.

During the year regular courses of lectures and instruction have been given as follows:

By Professor Rowland:

1. Mathematical Physics, treating the subjects of Thermodynamics, Heat Conduction, and Physical Optics. *Four times weekly, through the year.*
2. Meetings for the discussion of the current physical journals. *Weekly, through the year.*

By Dr. Ames:

1. Physical Optics and the Theory of Attraction. *Twice weekly, through the year.*
2. General Physics. *Daily, through the year.*
3. A more advanced course in General Physics, consisting of lectures on Mechanics, Thermodynamics, Electricity, Sound, and the Wave Theory of Light. *Daily, through the year.*
4. Meetings of the Physical Seminary. *One evening weekly, through the year.*

The laboratory has been constantly open for the work of advanced and undergraduate students.

The following researches have been made:

Measurements of all the lines in the solar spectrum from w.-l. 3000 to w.-l. 7400 have been nearly completed, and the reductions have been made of the observation of some 7000 lines. When the work is finished there will be about 20000 lines whose wave-lengths will be accurately known.

The daily observations of the rain band, which have been taken in the past two years for the U. S. Weather Bureau, have been reduced, and a report on the entire investigation is now ready.

A careful study has been made of the absorption bands in the solar spectrum, which are due to oxygen in the earth's atmosphere, and the wave-lengths of the lines have been measured. This research has resulted in the discovery of a new band.

A report on the work done in the laboratory during recent years on the separation and spectra of the "rare-earths" is now ready.

A bolometer with several new features has been constructed, and with it a study of the infra-red spectra of the alkaline metals has been begun.

Newton's law of gravitation has been verified for a range of smaller distances than have ever before been attempted.

The new dividing-engine for the ruling of diffraction-gratings has been completed, and has given unparalleled results.

A theoretical and practical study of galvanometers has been made, resulting in the perfection of several new types of instruments.

A redetermination of the variation of the specific heat of water with changes in temperature has been completed.

A new method has been perfected for the measurement of the specific inductive capacities of solid and liquid dielectrics with steady or varying field, and the apparatus has been successfully tested with several substances.

The investigation of the cause of the apparent attraction and repulsion of submerged particles has been carried on successfully, and the results so far obtained are now ready for publication.

Special apparatus has been made for the investigation of the changes in the spectrum of hydrogen with alterations in temperature and pressure, and the research is now in progress.

Several interesting questions as to the nature of the cathode-rays in a vacuum-tube have been studied, but the results are not as yet satisfactory.

An attempt has been made to discover any possible variation of Young's modulus for iron when it is magnetized, but the results so far are negative.

The mathematical theory of the Tesla motor has been developed and is now ready for publication.

In the Physical Seminary, which has been attended by only the most advanced students, J. J. Thomson's "Application of Dynamics to Physics and Chemistry" has been read, and several problems suggested by it have been considered by various members of the Seminary. At meetings held at irregular intervals, and open to all students, papers have been read on the following subjects:

Recent theories of electric conduction, with special reference to discharge through gases; the propagation of electric waves through a dielectric; the mechanical principles of chemical equilibrium; the distribution of lines in the spectra of the elements; Kirchhoff's law of absorption and radiation.

During the year there have been one hundred and twenty-three students in the department. Of these, twenty-five were candidates for the degree of Doctor of Philosophy, taking Physics as their principal subject; sixty-five were graduate students in other departments, or undergraduates, following physical courses; and thirty-three were special students in electrical engineering.

### Electrical Engineering.

During the year the following courses have been given:

By Dr. Duncan:

First year's course in Electricity and Magnetism, consisting of lectures on the general theory of the subject. *Three times weekly, through the year.*

Second year's course in Applied Electricity, consisting of lectures on the theory of dynamos and motors, the electrical transmission of energy, alternate-current apparatus, batteries, telegraph, telephone, etc., etc. *Twice weekly, through the year.*

Laboratory work. *Daily, through the year.*

Electrical Seminary. *Weekly, through the year.*

By Mr. Hering:

A course in Steam and Hydraulic Engineering, including lectures and problems on Steam Boilers, Turbines, etc., and the Design and Equipment of Central Stations and Power Houses, and the testing of the same. *Twice weekly, through the year.*

A course of lectures on Laboratory Methods for first-year students. *Weekly, through the year.*

Electrical Seminary. *Weekly, through the year.*

Laboratory Work. *Daily, through the year.*

By Mr. Geer:

A course in Mechanics of Engineering, Machine Design, and Kinematics of Machinery,—for first-year students. *Twice weekly, through the year.*

A course on the Steam Engine,—for second-year students. *Twice weekly, first half-year.*

Instruction in Mechanical Drawing. *Four afternoons weekly, through the year.*

Laboratory Work in Steam Engineering. *One day weekly, first half-year.*

Electrical Seminary. *Weekly, through the year.*

The papers read before the Electrical Seminary were as follows:—

By First Year students:

Dynamo Tests; Motor Tests; Cable Tests; Standard Cells; Measurement of Self and Mutual Induction; Mechanical Measurement of Power;

Comparison of Commercial Ammeters, Voltmeters, and Wattmeters; Measurement of Absolute Capacity; Permeability and Magnetization; Determination of H; Battery Tests; Incandescent Lamp Tests; Sensibility of Galvanometers; Comparison of Modern Types of Dynamos and Motors.

By Second Year Students:

The Relative Distribution of Light in Alternating and Direct-Current Arcs; Electric Railway Track Construction; Alternating Current Measuring Instruments; Relation of Self Induction and Capacity in Currents Carrying Alternating Currents; Two-Phase Motors; Mechanism of Arc Lamps.

Cost of Boilers and Prime Movers per H. P.; Relation of Steam Space and Horsepower of Boilers; Floor Space of Boilers and Engines per H. P.; Rate of Conduction in Boilers; Comparison of Commercial Injectors; Rotary Engines and Steam Turbines; Automatic Lubrication; Economizers and Feed Heaters; Positive and Friction Clutch Couplings; High and Slow Speed Engines; Comparison of Modern Types of Steam Boilers, Steam Engines, Gas Engines, and Turbines.

The following investigations have been carried on:—

The complete investigation of a two-phase alternating current motor was carried out. Methods of changing the period of alternating currents and of obtaining currents of any period from a single dynamo, were developed. The effect of neutralizing self-induction with capacity in practical apparatus was experimented on. Experiments were made on a method of obtaining a constant potential with a variable speed dynamo. The curves of current in an alternating current arc were obtained under various conditions. Experiments were made on the electrolysis of salt. Also on the effect of the variation of temperature upon the insulation resistance of rubber insulated wires; and the effect of the variation of temperature of commercial condensers upon their electrostatic capacity. The disruptive strength of some rubber insulated wires were investigated. The loss in the trolley and wheel contacts in electric railway cars were measured.

Extensive electric car tests were made on the roads of the Baltimore Traction Company, the Lake Roland Elevated Railway Company, and the City and Suburban Railway Company.

The opportunities extended by these railway companies for experimental work on their roads and in their power houses, and their kindly interest in the Electrical Department, has been greatly appreciated.

HENRY A. ROWLAND,
*Professor of Physics.*

## Chemistry.

During the past academic year the chemical laboratory has been open as usual for advanced and collegiate students. Lectures and class-room instruction have been given as follows:

By Professor Remsen:

1. Theoretical Chemistry, for graduate students. *Twice weekly, until Christmas.*
2. Chemistry of the Compounds of Carbon, for graduate students. *Five times weekly, from Christmas to the end of the year.*
3. Meetings for reports on the current journals of Chemistry. *Once or twice weekly, through the year.*
4. General Chemistry (Minor Course). *Three times weekly, until Christmas.*

By Professor Morse:

1. Analytical Methods, for graduate students. *Once weekly, through the year.*
2. Crystallography (Major Course). *Twice weekly, until Christmas.*
3. Compounds of Carbon (Major Course). *Three to five times weekly, second half-year.*

By Professor Renouf:

1. Advanced Inorganic Chemistry (Major Course). *Three times weekly, first half-year, and twice weekly, during part of the second half-year.*
2. General Chemistry (Minor Course). *Three to five times weekly, from Christmas to the end of the year.*

By Dr. Randall:

1. Reviews in General Chemistry (Minor Course). *Twice weekly, through the year.*
2. Elements of Mineralogy (Major Course). *Twice weekly, during part of the second half-year.*

Besides the lectures included in the above list, twenty historical lectures were given by the advanced students, on topics selected and assigned by the Director. The lecturers and their subjects were as follows:

W. E. Chamberlin, Beckmann's Studies on the Oximes.
F. K. Cameron, Constitution of the Dihydroxy-benzenes.
A. D. Chambers, Acetoacetic Ether.
L. C. Newell, Lactones.
A. P. Saunders, The Work of Berzelius.
D. Base, Organo-metallic Compounds.
G. F. Weida, Mydriatic Alkaloids.
J. J. Griffin, Constitution of Rosaniline.
M. S. Walker, Constitution of Alizarin.
R. L. Slagle, Constitution of Hydrocyanic Acid and the Cyanides.
J. E. Bucher, Constitution of Diazo-compounds.

P. R. Moale, History of Salicylic Acid.
E. C. Franklin, Constitution of Quinoline and Pyridine.
J. F. Norris, Constitution of the Acids of Phosphorus.
R. N. Hartman, Hydroxylamine.
J. R. Hunter, Ozone.
G. W. Gray, Constitution of Phthalyl Chloride.
F. S. Hollis, Constitution of Sulphurous Acid.
H. Fay, Action of Phosphorus Pentachloride on Organic Compounds.
H. H. Higbee, Constitution of Naphthalene.

Ten candidates presented themselves for the degree of Doctor of Philosophy. They were Messrs. J. E. Bucher, F. K. Cameron, W. E. Chamberlin, E. C. Franklin, R. N. Hartman, P. R. Moale, A. P. Saunders, R. L. Slagle, M. S. Walker, G. F. Weida. Their theses are entitled: "An Examination of some Methods employed in determining the Atomic Weight of Cadmium"; "A Study of the Reaction of Certain Diazo-Compounds with the Alcohols"; "A Study of the Action of the Nitrate and Sulphate of Para-diazo-toluene on Methyl Alcohol under various conditions"; "A Study of the Action of Ortho- and Meta-diazo-benzenesulphonic Acids on Methyl and Ethyl Alcohols, with some observations on the Action of Nitric Acid on certain Alkoxy-benzenesulphon-amides"; "A Study of the Reaction between Phosphorus Pentachloride and Parasulphaminebenzoic Acid"; "Para-methoxy-ortho-sulphobenzoic Acid and its Sulphonfluoresceins"; "On the Chlorides of Orthosulphobenzoic Acid"; "The Double Halides of Tin with Aniline and the Toluidines"; "The Oxides of Manganese formed by spontaneous Decomposition of the Manganese Dioxide, prepared by treating Manganous Sulphate with Potassium Permanganate"; and "The Reactions of Salts of the Nitro-diazobenzenes and of the Diazobenzoic Acids with Methyl Alcohol." These will be printed in separate form as theses, and the more important parts will be published in the American Chemical Journal. The supply of material sent in for publication has become so great as to be embarrassing, and it is probable that it will be necessary to increase the size of the Journal.

IRA REMSEN,
*Professor of Chemistry.*

## Geology.

During the past academic year the work in Geology has been carried on in the two buildings Nos. 602 and 712 N. Howard Street. The first-named building has served as the laboratory of Mineralogy and Petrography under the direction of Professor Williams, while the other has accommodated the work in Palæontology and Stratigraphical Geology under Dr. Clark. The undergraduate lectures in Physical Geography were given in the large lecture room of Hopkins Hall by Dr. Clark.

During the year the following courses of instruction have been given:

(*a*) General Geology, by Professor Williams and Dr. Clark. *Three lectures and one afternoon of practical work each week throughout the year.*

(*b*) Mineralogy, embracing crystallography, physical and descriptive mineralogy, by Professor Williams. *Four lectures and one afternoon of practical work each week throughout the year.*

(*c*) Metamorphism and Classification of the Crystalline Schists, by Professor Williams. *Three lectures each week from November 1st to April 15th.*

(*d*) Palæontology, by Dr. Clark. *Three lectures and two afternoons of practical work each week throughout the year.*

(*e*) Physical Geography, by Dr. Clark. *Three times weekly until Christmas.*

(*f*) Evening talks on selected geological topics by Messrs. Becker and Hill, of the U. S. Geological Survey, Washington, D. C.

(*g*) Journal Club. *Once weekly, throughout the year.*

The laboratories have been open daily to students from 9 a. m. till 5 p. m.

*Original Work and Publications.* Petrographical studies were carried on by Professor Williams upon the crystalline rocks from various regions in the eastern portion of the continent. The ancient volcanic rocks which were first observed in South Mountain, Pennsylvania, were found to be present also in Canada, portions of New England and the Carolinas. A great amount of material from these areas was investigated by Professor Williams in the laboratory and a general paper upon the subject was read before the Geological Society of America. A more special paper dealing with the rocks of South Mountain was published by Dr. Florence Bascom as the result of investigations conducted in the laboratory the previous year. Mr. G. P. Grimsley has made a study of the granites of Cecil County, which was offered as a thesis for the degree of Doctor of Philosophy. Much attention was devoted by Professor Williams to the preparation of his lectures upon Metamorphism and the Classification of the Crystalline Schists, as they were intended to serve as a basis for a book upon that subject. His sudden death left the work unfinished.

Palæontological studies have been continued during the year by Dr. Clark upon the Mesozoic and Cenozoic Echinodermata of the United States and the Eocene Fauna of Maryland and Virginia. Geological investigations upon the Cretaceous and Tertiary formations of New Jersey have been directed by Dr. Clark with the assistance of several of the geological students. A report of progress for the year 1893 has been prepared for the Annual Report of the State Geologist. Essays on the physical features, geology, and mineral resources of the State were published by Professor Williams and Dr. Clark in the World's Fair Book of Maryland. In this connection new geological and climate maps of the entire State were prepared, embodying much information never before published. The first biennial report to the State Legislature of the operations of the Maryland

State Weather Service was prepared under the direction of Dr. Clark. Extended articles upon the Geology, Agriculture, and Climate of the State were published together with a series of climate charts. The latter upon a larger scale were also brought out in folio form.

*Excursions.* Aside from numerous short excursions which have been made by both students and instructors to various points of geological interest in the neighborhood of Baltimore and Washington and along the shores of the Chesapeake Bay, two longer expeditions were made in the latter part of May into southern Virginia and eastern New Jersey. Upon the first of these longer excursions the extensive Miocene deposits of the York and James Rivers were visited and large collections of fossils were made. Upon the second excursion the Cretaceous and Tertiary strata of Eastern New Jersey were examined, particular attention being given to the green sand deposits of the Upper Cretaceous.

*Coöperation.* The United States Geological Survey has continued to assist the geological work carried on at the University by furnishing topographic maps and facilitating field work in Maryland and in New Jersey. Material assistance has likewise been received from the State Geological Surveys of New Jersey and North Carolina. The U. S. Coast and Geodetic Survey has also greatly aided the compilation of information relative to the maps of Maryland.

The Maryland State Weather Service, organized in 1891, has further extended its work during the past year. New stations have been added from time to time until now nearly every portion of the State is represented. Weekly Crop Bulletins and Monthly Meteorological Reports have been published. During the period of the World's Fair a large edition of especially prepared Monthly Reports was sent to Chicago for distribution. A series of ten large Climatic Charts illustrating the seasonal and annual temperature and precipitation of the State has also been published. The First Biennial Report was presented to the Legislature on January 1st.

The officers of the State Weather Service are Dr. Wm. B. Clark, Director, Professor Milton Whitney, Secretary and Treasurer, and Dr. C. P. Cronk, Meteorologist in charge.

*Apparatus and Collections.* The apparatus and collections of the geological department have within the past year been greatly augmented and improved. Important additions especially have been made in palæontology. Through the kindness of several friends of the University, a very important collection of Cretaceous fossils made by Professor Robert T. Hill of the U. S. Geological Survey in the Southwest was obtained. Many types are included among the forms. Several smaller collections have been purchased, while much valuable material has been acquired by exchange.

WILLIAM B. CLARK,
*Associate Professor of Organic Geology.*

## The Biological Sciences.

During the past academic year the biological laboratory has been open for advanced and collegiate students, and certain courses have been attended by students in the medical school. Lectures and class-room instruction have been given as follows:

By Professor Brooks:

1. History of Zoology, for graduate students. *Three times a week, from November 6th to March 31st.*
2. Comparative Osteology. *Daily, from October 5th to November 3d,* for medical students and undergraduate students in minor biology.
3. Meetings of graduate students for reports on the current literature of Zoology. *Weekly, until April 1st.*
4. Marine Zoology. *Daily, from April 7th to July 7th.*

By Professor Howell:

1. Physiology. *Three times a week, through the year,* for medical students and undergraduate students in major biology.
2. Meetings of graduate students for reports on the current literature of Physiology. *Weekly, through the year.*
3. Physiological Seminary. *Weekly, through the year.*

By Dr. Andrews:

1. General Biology. *Daily, from November 6th to April 1st.*
2. Elements of Embryology. *Three times a week, from April 1st to end of session.*
3. General Zoology. *Twice weekly, from January 1st to end of session.*
4. Meetings of graduate students for reports on the current literature of Zoology. *Weekly, from April 1st to June 1st.*

By Dr. Dreyer:

Normal Histology. For undergraduates and medical students. *Twice weekly, from October 9th to Christmas recess.*

By Dr. Lotsy:

Advanced Botany for graduate students. *Three times weekly, from November 1st to March 1st.*

By Dr. Barton:

Analysis of Plants. *Twice weekly, from April 1st to end of session.*

### Advanced Work in Zoology.

The following publications, based upon researches in Zoology in the Biological Laboratory and in the Marine Laboratory, have appeared during the year:

The Vertebration of the Tail of Appendicularia.

The Origin of the "Nasutus" (Soldier) of Eutermes.

The Development of the Fins of Teleosts.

Pteropods with two separate Sexual Openings.

The Metamerism of the Dorsal and the Ventral Longitudinal Muscles of the Teleosts.

Ueber die Entwicklung der nicht knospelig vorgebildeten Skelettheile in den Flossen der Teliostier.

A Zoological View of the Origin of the Oldest Fossils.

A quarto volume of Morphological Monographs, containing a Memoir on the Genus Salpa by W. K. Brooks, with 400 pages and fifty-seven colored plates, and including a Memoir on the Eye and Sub-Neural Gland of Salpa by M. M. Metcalf.

The following papers are now in press and will appear shortly:

The Cordyli or Marginal Clubs of Laodice.

Some Abnormal Annelids.

The following lectures on topics assigned by the Professor of Zoology were given by the more advanced students in Zoology:

Four lectures on the Limbs of Vertebrates. R. G. Harrison.

Five lectures on Lamellibranchs. C. P. Sigerfoos.

Four lectures on Pteropods. H. McE. Knower.

The Marine Laboratory was open for research in marine zoology at Beaufort, N. C., from April 7 to July 7, under the direction of the Professor of Zoology. It was attended by eight advanced students.

The Bruce Fellowship was awarded to M. M. Metcalf, who resigned it upon accepting the position of Associate Professor of Biology at the Woman's College of Baltimore.

A Fellowship in Zoology was awarded to Ross G. Harrison, who took charge of the biological library during the year.

The University table at the laboratory of the U. S. Fish Commission, at Wood's Holl, was occupied by Mr. Metcalf during the summer of 1893, and by George Lefevre during the summer of 1894, and H. McE. Knower and F. S. Conant occupied tables in the laboratory through special invitation from the Commissioner of Fisheries.

### Advanced Work in Physiology.

The courses of instruction in Physiology have been carried out substantially as announced in the programmes at the beginning of the year. The elementary lectures and demonstrations in animal physiology were given to a class composed chiefly of first-year students in the medical department, and undergraduates taking the major course in Biology. The lectures were accompanied by a laboratory course of twelve weeks in experimental physiology, given in two sections. An advanced class of twelve students participated in the work of the physiological seminary, which met weekly from October to May. The topic for reading and discussion in the seminary

was the work of Liebig, especially his contributions to the physiology of digestion and nutrition. During the latter part of the year a series of advanced lectures was given as follows: Digestion and nutritive history of Proteids, four lectures, Professor Howell. Digestion and nutritive history of Carbohydrates, four lectures, Dr. Dreyer. Digestion, absorption and formation of fats, three lectures, Mr. Hunt. Physiological oxidations, three lectures, Dr. Kemp. Hunger and thirst, two lectures, Mr. Shields. Assimilation and excretion of nitrogen in Plants, two lectures, Dr. Lotsy.

Journal Club meetings were held weekly in which the members of the staff and the advanced students took part. A number of investigations have been carried on during the year. Some of these have been completed and will soon appear in published form. The subjects of investigation were as follows: The effect of stimulation and of changes in temperature upon the irritability and conductivity of nerve fibres; the effect of oxalate solutions upon nerve and muscle irritability and rigor mortis; the effect of cooling and of anæsthetics upon the pressor and depressor action of afferent fibres; the effect of diminishing atmospheric pressure upon pulse rate and blood pressure; the physiological effects of cerebral compression, and its value as a means of producing anæsthesia; a plethysmographic study of the circulation in the brain during sleep.

### Advanced Work in Botany.

Dr. Lotsy has published during the year an account of his researches on the Assimilation of Free Nitrogen, and a paper on the Preservation of the Cells of the Floridiae.

The Euphorbiaceae collected by Captain J. Donnell Smith in Guatemala have been classified and compared with the material in the University of Leiden by Dr. Lotsy. They prove to contain a number of novelties, which will be described in a report by Mr. Smith.

A report by Dr. Lotsy on the Food of the Oyster is now in press.

W. K. Brooks,
*Professor of Zoology.*

## Greek.

Under the direction of Professor Gildersleeve the advanced students of Greek have been organized into a Greek Seminary. According to the plan of the Seminary, the work of each year is concentrated on some leading author or some special department of literature. During the past year the centre of work has been Plato.

In the Seminary proper, which met twice a week during the academic year, the Platonic dialogues selected for closer study were Theaitetos, Phaidros, and Gorgias, especial attention being paid to language and style.

The members were required to present in turn critical and exegetical commentaries on the Platonic texts, to make analyses of the several dialogues, and to write introductory lectures. Besides the three dialogues above mentioned, the Phaidon, the Euthydemos, the Symposion, and the Menexenos received special attention; and an opportunity was afforded to read the entire Republic under competent guidance. (*See below.*)

Of the investigations carried on in this field, in the Syntactical Society and elsewhere, may be mentioned: Antique criticisms of the style of Plato; Genuineness of the Nicomachean Ethics; Greek proverbs and proverbial locutions; Studies in Greek Music; Metaphor in Andokides and Aischines; Greek sources of Ovid's Heroides; History of μή with participle; The participle in Hesiod; The independent optative in Hesiod; Relative frequency of perfect and aorist in certain spheres of Greek; Use of the nominative of abstracts in the Greek orators; Historical tenses employed of definite periods of time; Adverbial use of τρόπον and τρόπῳ.

The work of the Seminary was further supplemented by the Director's lectures on Plato (twenty-seven meetings) and his comments on the text of Ritter and Preller's *Historia philosophiae Graecae* (twenty meetings). Besides the Seminary course proper, Professor Gildersleeve gave some twenty readings in the Iliad and Odyssey, with special reference to artistic and ethical considerations, and conducted twenty exercises in extemporaneous translation from Greek into English and English into Greek.

Dr. C. W. E. Miller conducted the following graduate courses: Plato, *Republic* (entire); Aristotle, *Rhetoric* (entire); Aristotle, *Nicomachean Ethics* (entire); Syntactical Society (lectures and special researches).

A course in Modern Greek, for graduate students, was conducted twice weekly during the second half-year by Mr. A. M. Soho.

Associate Professor Spieker conducted undergraduate courses as follows:

Plato, *Phaedo. Three times weekly, first half-year.*

Aeschylus, *Septem contra Thebas;* Sophocles, *Electra. Three times weekly, second half-year.*

Xenophon, *Oeconomicus. Four times weekly, first half-year.*

Homer, *Odyssey*, books i, ix, x, xii; Euripides, *Alcestis. Four times weekly, second half-year.*

Greek Literature. *Weekly, through the year.*

Sight Reading. *Weekly, through the year.*

Prose Composition (two classes). *Weekly, through the year.*

Students have read privately for examination the following books:

Aeschines, *In Ctesiphontem.* (9.)

Aristophanes, *Clouds.* (8.)

Herodotus (selections). (5.)

Isocrates, *Panegyricus.* (5.)

Lysias, *Epitaphius.* (5.)

B. L. GILDERSLEEVE,
*Professor of Greek.*

## Latin.

The Latin Seminary, under the direction of Professor Warren, held two meetings a week throughout the year, the centre of work being the Orations of Cicero in the first half, and in the second half the Letters of Cicero and his correspondents.

Portions of Cicero's oration pro Sex. Roscio Amerino were interpreted by the members in turn, and analyses were read of the following orations: pro Sex. Roscio Amerino, Divinatio in Caecilium, de Imperio Pompeii, pro Cluentio, pro Murena, pro Archia, pro Caelio, in Pisonem, pro Plancio, pro Marcello with a discussion of the genuineness, and the second Philippic. Select letters from the ad Atticum and ad Familiares collections were interpreted in chronological order, and papers were read discussing in detail the style of the following correspondents: Matius, Vatinius, Lentulus, Galba, Marcellus, Caelius, Dolabella, Pollio, Sulpicius, Decimus Brutus, Balbus, Cicero's son Marcus, Cassius, and Plancus. Papers were also read on the genuineness of the correspondence with M. Brutus and on the use in the letters of non-modo—sed etiam, non solum, and similar connecting particles.

In connection with the work of the Seminary, Professor Warren gave during the first half-year a course of weekly lectures on Roman Oratory and Rhetoric. The treatise ad Herennium was read by a class of advanced students meeting once weekly through the first half-year. In the second half-year, Professor Warren gave a course of weekly lectures on Latin Palæography, accompanied by practical exercises. Throughout the year he lectured weekly on Historical Latin Grammar. The Journal Club met fortnightly throughout the year to report on recent periodical literature in the field of Latin.

In the second half-year Associate Professor Smith conducted a course of weekly practical exercises for graduates in translating at dictation from English into Latin and Latin into English.

Undergraduate courses have been conducted as follows:

Professor Warren:

Plautus, *Captivi*, and Terence, *Andria*. *Three times weekly, second half-year.*

Associate Professor Smith:

Livy, books xxi and xxii. *Four times weekly, first half-year.*

Horace, *Odes, Satires*, and *Epistles*. *Four times weekly, second half-year.*

Selections from Juvenal's *Satires* and the *Letters* of Pliny. *Three times weekly, first half-year.*

Latin Prose Composition (two classes). *Weekly, through the year.*

Sight Reading. *Weekly, through the year.*

Students have read privately for examination the following books:

Caesar, *Bellum Civile*, book i. (11.)

Cicero, *de Senectute, de Amicitia*. (11.)

Cicero, *Select Letters.* (5.)
Horace, *Epodes.* (11.)
Ovid, *Fasti*, books i and ii. (11.)
Plautus, *Pseudolus.* (5.)
Terence, *Heautontimorumenos.* (5.)

MINTON WARREN,
*Professor of Latin.*

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## Sanskrit and Comparative Philology.

The work of the Vedic Seminary during the session of 1893–4 was on the Atharva-Veda, which is at present engaging the attention of Indologists to an extraordinary degree. Simultaneously no less than three enterprises, calculated to make this singular product of Hindu literary activity accessible to the general public, are going on: a complete English translation left ready for the press by the late lamented Professor Whitney, of Yale University; a French translation (in instalments) by Professor Henry, of the University of Paris; and a volume of selections, with commentary, by the director of the Seminary, destined to form one of the volumes of the Sacred Books of the East, published under the editorship of Professor Max Müller by the Clarendon press at Oxford, England. At no period, too, in the history of Vedic study have the materials for the investigation of this most important codex of the customs and folk-lore of the Hindus been as accessible as they are now. In addition to the published text and its complete Index Verborum, the recent edition of the ritual book, the Kauçika-sūtra (published by the director in 1890), is now accessible. The Seminary has also had access to the advance sheets of Shankar Pandurang's forthcoming edition of the text, with Sāyaṇa's commentary, and unpublished manuscripts of other texts bearing upon the same subject.

The work on the Concordance of the lyrical and liturgical passages of the entire Vedic literature, begun in 1892 (see *Univ. Circ.*, No. 99), has advanced so far that the rough materials are almost entirely collected. Both present and former members of the Seminary have lent their assistance, and the work has been recognized as an integral part of the activity of the Seminary.

The natural supplement to the study of the Vedas of India is the Avesta of ancient Persia. The Avesta is to Persia what the Veda is to India. The study of ancient Persian literature through any other channel than that of the Veda is a well-nigh futile undertaking. Professor Geldner's superb edition of the Avesta, now almost complete, offers a sound textual basis for this study. After a brief course in grammar, selected portions of the text were read and analyzed, with constant reference to the kindred languages. The work will be continued during 1894–5.

Mr. Alfred W. Stratton, Fellow in Sanskrit and Comparative Philology, had charge of a second and more elementary course of Vedic study. This

course is designed to be an introduction to the Vedic dialect and to mark out its relation to the dialect of classical Sanskrit. A short preliminary course in Vedic grammar was followed by the study of selected specimens of the Rig-Veda. The metres, the accent, the special phonetic, morphological, and lexical peculiarities claimed the chief interest.

In classical Sanskrit there were courses in the law-book of Manu, the Hitopadeça, the Nala, and an elementary course in grammar with practical exercises in prose-writing, followed by the interpretation of an easy text. Here again Mr. Stratton lent his assistance.

The work in Comparative Philology was two-fold. First, a course of weekly lectures during the entire session on General Comparative Philology. It began with a sketch of the linguistic ethnology of the Indo-European peoples, dealing with their ethnical interrelations, their original home and common characteristics. Then came in brief survey sketches of India, the Vedas, Brahmanism, Buddhism; Iran, the Achemenidan inscriptions, the Zoroastrian religion and literature; the Indo-European peoples on the boundary between Asia and Europe; and, finally, a still briefer treatment of the European peoples. This was followed by a brief account of the history of linguistic science, and finally the rest of the year was devoted to the principles of the science of language, and the exposition and criticism of modern methods in scientific grammar.

The second course was in the Comparative Grammar of the Indo-European languages, with special reference to Greek, Latin, Sanskrit, and German. The special subject under treatment during the past year was the history of the consonants. The corresponding work during the preceding session was on the history of the vowels and the vowel relations (*ablaut*). The coming session (1894–5) will be devoted to the history of noun-formation. These courses aim to cover the most important chapters in the formal development of the Indo-European languages; they offer an opportunity to the students of the classical languages to acquaint themselves with the comparative treatment of sounds and inflections, and students of the comparative grammar of other Indo-European languages, notably the Teutonic, are in this way enabled to acquaint themselves with the chief characteristics of the entire family of speech.

MAURICE BLOOMFIELD,
*Professor of Sanskrit and Comparative Philology.*

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## Oriental Seminary.

Fifteen courses were given in the various departments of Oriental research during the past year, special attention being paid to the study of the Old Testament and the Cuneiform Inscriptions bearing upon it. Dr. Cyrus Adler, Associate in Semitic, resigned after the Christmas recess to devote

his entire time to his duties as Librarian of the Smithsonian Institution, his lectures on the history of Assyria and Babylonia being continued by Dr. C. Johnston.

To the study of the *Old Testament* seven hours weekly were devoted through the year. Professor Haupt gave a critical interpretation of the Book of *Leviticus*, special stress being laid on an accurate rendering of the legal style of the book into modern English. A translation of some specimen chapters of the book, prepared by Mr. D. G. Stevens, Fellow in Semitic, is given in number 114 of the *University Circulars*. Professor Haupt also conducted two courses in *Elementary Hebrew*, interpreting the opening chapters of the Pentateuch. A class met weekly throughout the year to read at sight selected portions of the historical and poetical Books of the Old Testament, under the guidance of Dr. Johnston. The advanced students handed to Professor Haupt bi-weekly written exercises containing idiomatic Hebrew expressions translated from English. Instruction in post-Biblical Hebrew was given during the first half-year by Dr. Adler, the Talmudic tract *Bâbâ Bathrâ* being studied with special reference to its bearing on the Canon of the Old Testament. Professor Haupt gave a course of lectures weekly during the first half-year, discussing the principal problems of the *Textual Criticism* of the Old Testament. During the second half-year he gave a course of lectures on *Hexateuchal Analysis*, besides delivering a general lecture on the *Genesis of the Bible* in Levering Hall, February 27.

Under the direction of Professor Haupt the *Assyrian Seminary* met two hours weekly through the year, studying selected bilingual texts in the fourth volume of Sir Henry Rawlinson's *Cuneiform Inscriptions*, as well as the vocabularies in the second volume of that work and in Haupt's *Keilschrifttexte*. This work was supplemented by occasional exercises in *Cuneiform Prose Composition*, the members of the class rendering dictated Hebrew sentences into Cuneiform. Dr. Johnston met the third year students of Assyrian two hours weekly, interpreting bilingual Hymns and Psalms during the first half-year, and selected Babylonian historical texts during the second half-year. Dr. Adler gave a series of lectures on the *History of Assyria and Babylonia*, with special reference to its bearing on the history of Israel and the Old Testament; after Dr. Adler's resignation this course was continued by Dr. Johnston.

In *Arabic*, an elementary course was given by Dr. Johnston, Socin's Arabic Grammar and the Beyrout Chrestomathy serving as text-books. Dr. Johnston also met the more advanced students in Arabic weekly during the first half-year, interpreting selected portions of the *Majâni-el-adab*. Professor Haupt conducted bi-weekly exercises in *Arabic Prose Composition* through the year.

Three parts of the new polychromatic edition of the Old Testament, published under the editorial direction of Professor Haupt, were issued by the Johns Hopkins Press at the end of the session. They contain critical editions of the Book of *Leviticus*, with notes by S. R. Driver and H. A. White, of Oxford; *Joshua* by Prof. W. H. Bennett, of London; and *Samuel* by Prof. K. Budde,

of the University of Strassburg, the Critical Notes on Samuel being translated by Rev. B. W. Bacon, D. D., of Oswego, New York. *Jeremiah* by Prof. Cornill, of Königsburg (English Translation of the Notes by Dr. C. Johnston), and *Ezekiel* by Prof. Toy, of Cambridge, Mass., are in press. The second volume of the *Contributions to Assyriology and Comparative Semitic Philology*, published with the coöperation of the Johns Hopkins University and edited by Professor Haupt in conjunction with Professor Delitzsch, of Breslau (a volume of 645 pages royal octavo), was completed, Part 5 (containing papers by Friedrich Delitzsch, C. F. Lehmann, Bruno Meissner, and S. Arthur Strong) appearing at the beginning of the session.

A lecture by Professor Haupt on *The Book of Ecclesiastes*, delivered before the Oriental Club of Philadelphia, appeared in the Philadelphia *Oriental Studies* (Phila., 1894).

Professor Haupt read four papers on *Transitive and Intransitive Verbs in Semitic*, the *Origin of the Pentateuch*, the *Rivers of Paradise*, and on *Two Passages of the Chaldean Flood Tablet*, before the American Oriental Society at its meeting in New York, April 6–8. He also presented two communications to the University Philological Association on April 20 on *The Possessive Suffix of the First Person Singular in Assyrian* and on *The Cuneiform Name of Lapis-lazuli*. Dr. Johnston read three papers before the University Philological Association on *The Suffix-Pronoun of the Second Person Feminine Plural* (Nov. 17, 1893); *Assyrian Medicine* (Feb. 16, 1894); and *The Epistolary Literature of the Assyrians* (April 20). Mr. D. G. Stevens read a paper on *The Songs of the Return* before the University Philological Association (March 16). Abstracts of all these communications may be found in the American Oriental Society's *Proceedings*, April, 1894, and in number 114 of the *University Circulars*.

The Assistant and the Fellow in the Department received the degree of Ph. D. at the end of the session. The title of Dr. Johnston's thesis was *The Epistolary Literature of the Assyrians*, his principal subject being Assyrian and his subordinates Hebrew and Greek. Dr. Stevens's thesis is entitled *The Songs of the Return* (Psalms 120–134), his principal subject being Hebrew and his subsidiary subjects Assyrian and Greek. The thesis on *Paronomasia in the Old Testament* by Dr. I. M. Casanowicz, who received the degree of Ph. D. at the end of the session 1891–92, appeared in the *Journal of Biblical Literature*, Vol. XIII (Boston, 1894).

PAUL HAUPT,
*Professor of Semitic Languages.*

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## German.

Owing to the prolonged illness of Professor Wood, his graduate courses were given by Associate Professor Learned and Dr. Vos, up to the Christmas recess. The Seminary also began the study of Wolfram's *Parzival* under

the guidance of Dr. Learned, meeting once weekly during the same period. Professor Wood, resuming charge on January 1, continued the study of *Parzival* through the Third and Fifth Books with special reference to Wolfram's attitude, as epic poet, towards his lyrical contemporaries.

The Seminary met also three times weekly from January 1 to the end of the year, under the guidance of Professor Wood, for the study of Goethe's *Faust*. In this study, an attempt was made to approximate the First Part closer to the fundamental literary ideas of Goethe's *Puppenspiele* than has been the case hitherto, and the Third Act of the Second Part was also studied, as enforcing that approximation by contrast.

In Gothic, Dr. Vos met the class twice weekly, for three months, and Professor Wood continued the course through the year. The scope of the work was the same as during the session 1892–93.

In German Literature, Dr. Learned guided a course of weekly readings in the Beginnings of the Romantic School. Professor Wood then continued the History of Romanticism to the death of Goethe, twice weekly. The Romantic Movement in German Literature was considered as the continuation of 'Sturm und Drang' in a more learned age, and as representing neither rise nor decadence in literature, but rather inner expansion.

During the second half-year, Professor Wood read with a class, weekly, selected poems of Weckherlin and Opitz. The literary reform in Germany was studied, some attention being paid to contemporary poetics in Holland and England.

The Germanic Society, which is composed of the Director of the Seminary, the Instructors, and Graduate Students in German, met fortnightly through the year in an evening session. Besides reviews and reports, the following papers were presented, which gave from time to time preliminary results of studies still in progress: the physiological basis of certain phonological changes in Old High German; vowel weakening in Old High German; a new explanation of "vowel breaking;" verbs of motion and rest in Gothic; notes on the u-declension in Gothic; a study of *a*, *e* and *i* in the dialect of the Ries; studies of *Franz Sternbald's Wanderungen*, of Fouqué's *Undine*, and of Eichendorff's *Aus dem Leben eines Taugennichts;* German influences upon Sir Walter Scott as poet; the legend of Eginhard and Emma in German literature; the life and works of Charles Sealsfield; Lenau's journey to America; the political and literary importance of Ferdinand Kürnberger's novel *Der Amerikamüde;* the beginnings of Germanic studies in America; German-American hymnology; Friedrich Nietzsche and Neoromanticism.

In the undergraduate major course, Professor Wood conducted a class, twice weekly from January 1 to the end of the year, in Goethe's *Faust*, the First Part of which was read.

In the minor course, Schiller and Goethe's *Briefwechsel* was read, first with Dr. A. B. Faust and later with Professor Wood, weekly, through the year. Among the parts taken up were the letters relating to *Tell*, *Hermann*

*und Dorothea*, and particularly the correspondence during the "Balladenjahr" (1797). In this connection, selected ballads of Goethe and Schiller were read in Buchheim's *Balladen und Romanzen*.

Associate Professor Learned gave the following courses:

1. Otfried's *Evangelienbuch*. Twice weekly, first half-year. The dedications and books I and II were read, and lectures were given on the sources of the poem and on the metre.

2. Luther and the German Language. Twice weekly, second half-year. The language of the Imperial Chancery was considered in its relation to that of Kursachsen, and v. Bahder's *Grundlagen des neuhochdeutschen Lautsystems* was read in course.

3. Hartman's *Gregorius*. Weekly, through the year. The grammar was studied in Paul's *Mittelhochdeutsche Grammatik*.

4. Undergraduate courses.

In the major course, Freytag, *Karl der Grosse* was read. The History of German Literature was studied synoptically in Kluge's *Nationallitteratur*, and Buchheim's *Prose Composition* (with Wilmann's *Deutsche Schulgrammatik*, Second Part) furnished the material for exercises in translation.

In the minor course, Goethe, *Egmont* (acts 1 and 2), Schiller, *Tell* (acts 1 and 2), Heine, *Harzreise* (60 pp.), and Freytag, *Aus dem Staat Friedrichs des Grossen*, were read in class. There was a weekly meeting for Prose Composition (Whitney, *Exercises*, second series), and the class read the remaining acts of *Tell* and *Egmont*, and Schiller's *Skizzen des Grafen Lamoral Egmont Leben und Tod* as private reading.

Dr. B. J. Vos gave the following courses:

Graduate Courses.

1. Elements of Germanic Philology. Reading and discussion of Wilmanns' *Deutsche Grammatik*, Part I.

2. Historical German Grammar. Lectures on the Morphology of Noun, Pronoun, and Adjective.

Undergraduate Courses.

*Major Course.*

Freytag, *Aus dem Mittelalter* (*Karl der Grosse; Aus dem Klosterleben; Aus den Kreuzzügen*).

*Minor Course B.*

Otis, *Elementary German*, Lessons I–XXIV; Buchheim, *Modern German Reader*, Part I, pp. 3–59; Riehl, *Burg Neideck;* Schiller, *Wilhelm Tell;* Goethe, *Egmont* (ed. Buchheim); Prose Composition, Whitney's *Grammar*, I. Series, Ex. I–XX.

*Special Courses.*

Historical and Scientific German. Helmholtz, *Über Goethe's naturwissenschaftliche Arbeiten;* Freytag, *Aus neuer Zeit* (*Der erste Luftballon zu Nürnberg; Aus den Lehrjahren des deutschen Bürgers*).

Dr. A. B. Faust conducted a class in Goethe's *Tasso* (Major), Lessing's *Minna von Barnhelm* (Minor A), class exercises in Minor B, and a class in German conversation, each twice weekly, up to January 1.

HENRY WOOD,
*Professor of German.*

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## English.

1. Advanced Courses.

The meetings of the English Seminary, under the direction of Professor James W. Bright, occupied four hours a week throughout the year. The subject studied was English Literature from the close of the thirteenth to the beginning of the fifteenth century. In the first half-year special attention was given to Robert of Gloucester's *Chronicle;* the *Cursor Mundi;* the *Ayenbite of Inwyt;* the Works of Richard Rolle of Hampole; the Works of Robert Mannyng of Brunne; John Barbour's *Bruce; Guy of Warwick; Richard Coeur de Lion; William of Palerne* and *Sir Gowther.* In the second half-year the complete Works of Chaucer were studied; the *Canterbury Tales* received the more minute attention.

A course of lectures (once a week) was given on English Philology. The central theme was Dialectal Variations in Anglo-Saxon and in Middle English.

A class met once a week for the critical reading of the following texts: the Middle English poem *Pearl,* Wyclif's New Testament, and the Anglo-Saxon poem *Elene.*

Once a week throughout the year a class met for lectures and conferences on Middle English and Modern English Grammar, based on the treatises of ten Brink, Morsbach, Baehrens, and Sweet.

The members of the English Seminary were met in fortnightly sessions (two hours) for reports on the current journals, reviews of new books, and the presentation and discussion of original papers on literary and philological subjects.

Professor W. Hand Browne delivered a course of lectures (weekly, throughout the year) on the Caroline poets. Several authors of this period were assigned to members of the class as subjects for critical essays, which were read and discussed.

2. College Courses.

The English major class in Anglo-Saxon was conducted by Dr. Bright (twice weekly). The text-books employed were Sievers' *Old English Grammar* (translated by Cook) and Bright's *Anglo-Saxon Reader.*

The class met Professor Browne weekly for the study of the Early Scottish poets from Barbour to Lyndsay. The literature of the Elizabethan period was studied twice weekly, during the first half-year, and that of the fourteenth century twice weekly, during the second half-year.

The English minor class was conducted entirely by Professor Browne. The course consisted of select Early and Middle English texts (two hours a week), supplemented by a weekly lecture on the literature and language of the twelfth, thirteenth, and fourteenth centuries; and two hours a week on English Literature from its beginnings down to recent times. The text-books used were Morris and Skeat's *Specimens*, and the Morley-Tyler *Manual of English Literature*.

The class in Rhetoric and English Composition met Professor H. E. Greene twice weekly, throughout the year. Theory was imparted by means of text-books (A. S. Hill's *Principles of Rhetoric* and Genung's *Practical Rhetoric*), lectures, and discussions: practice was obtained by the writing of about forty brief papers and of four formal essays. Of the short papers a few were read and criticised in the presence of the class from week to week; the greater part of them were corrected and returned to the writers. Of the formal essays about two-thirds were read and criticised privately with the writers, and returned to them for correction. Each member of the class made a careful study of the style of one prose author (usually of a nineteenth century author), and presented the results of his study in the form of a series of brief papers and one formal essay.

A class in English Literature met Professor Greene five times weekly, throughout the year. This class made a general survey of English Literature from the middle of the fourteenth century to the latter part of the seventeenth century. A detailed study was made of the writings of Chaucer, Spenser, Milton, and Shakspere. Of the writings of these poets a considerable amount was critically studied in the class-room; and much more was read by the members of the class in their private reading. Each member of the class prepared and read two essays.

During the year several friends of the University have offered four prizes for the purpose of encouraging proficiency in English Composition.

Two prizes,—a first prize of thirty dollars, and a second prize of twenty dollars,—have been offered for the best essays written by members of the entering class.

A prize of one hundred dollars has been offered for the best essay written by a matriculated member of the undergraduate department.

A prize of one hundred dollars has been offered, to be awarded annually for three years, for the best essay written by a Bachelor of Arts of this University, of not more than five years' standing at the time when the prize is awarded.

It is to be hoped that the students of the University will be stimulated to a study of the art of writing that shall be so well advised as to convince the donors of these prizes that their generosity has been wisely directed.

3. Lectures on Literature.

The fourth course of the Percy Turnbull Memorial Lectures on Poetry were given (March 29–April 9) by Professor Charles Eliot Norton, LL. D., of Harvard University. The subject was "Dante," which was treated in

six lectures as follows: 1. The Function of Poetry. The Beginnings of Italian Poetry. The Thirteenth Century in Italy. Dante.—2. The New Life.—3. The Prose Works of Dante and their Relation to the Divine Comedy.—4. The Divine Comedy. Hell.—5. The Divine Comedy. Purgatory.—6. The Divine Comedy. Paradise.

On the Caroline Donovan Foundation, Horace Howard Furness, LL. D., of Philadelphia, gave four readings of Shakespeare: 1. The Merchant of Venice (December 6); 2. As You Like It (December 13); 3. Romeo and Juliet (December 20); 4. Hamlet (January 3). S. Weir Mitchell, M. D., of Philadelphia, delivered a lecture (January 17) on "The Spirit of the Elizabethan Age in Relation to its Drama."

JAMES W. BRIGHT,
*Professor of English Philology.*
WILLIAM HAND BROWNE,
*Professor of English Literature.*
HERBERT EVELETH GREENE,
*Collegiate Professor of English.*

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## Romance Languages.

Professor Elliott conducted advanced courses as follows:

Romance Seminary. *Two hours a week, through the year.*

The work centered here on the *Fables of Marie de France*, of which it is proposed eventually to issue a critical edition based on the original manuscripts. The object of the course has been to acquire a working knowledge of the fable literature of antiquity and the middle ages; to become acquainted with the characteristics of the Norman and Anglo-Norman dialects in which some of the more important manuscripts are written; to present the fundamental principles of text-criticism and text-constitution, for which about a dozen fables were examined. These were based on five English and eight French manuscripts. A clear view of the morphology and phonetics of the language was obtained as contrasted with those of the Isle-de-France.

A single fable was assigned to each student, who spent the term in investigating its provenance, reporting from time to time to the seminary his progress in the examination of its special sources and historic growth.

Spanish Philology. *Weekly, first-half year; twice weekly, second half-year.*

After a few introductory lectures on the position of the *Poema del Cid* in literature, a hundred lines of the poem were critically examined with reference to phonology and morphology. The object here was to prepare the special student in Spanish (by general work on Spanish philology) to enter upon seminary work during the following year. Frequent contribu-

tions were read upon points of historic development in linguistic phenomena, for which the *Cid*, for the most part, furnished the material. It was intended that these investigations should serve as the basis for a careful and extended examination of the language of this poem.

Popular Latin. *Weekly.*

The object here was to give the student an introduction to the phonetics and morphology of Folk- and Low-Latin as the common basis for a scientific study of the modern Romance idioms. Meyer-Lübke's treatment of the subject in Gröber's *Grundriss der Romanischen Philologie* was taken as the starting point for this work, in connection with which lectures were given, contrasting the popular forms with the historic development of the classical forms. The material in the *Probi Appendix* was classified and the popular forms worked out on the basis of Schuchardt's *Vocalismus des Vulgärlateins.* Budinsky's *Ausbreitung der Lateinischen Sprache,* D'Arbois de Jubainville's *Déclinaison latine en Gaule,* Bonnet's *Le Latin de Grégoire de Tours,* Wölfflin's *Archiv für lateinische Lexicographie,* and Seelmann's *Die Aussprache des Latein* were constantly used in connection with this course.

Camoens. *Os Lusiadas. Weekly, first half-year.*

This course was intended to supplement that on Spanish philology as given above. In order to become acquainted with this epic in the original, a dozen of the principal episodes were read, after which lectures were given on the poem under the following headings: 1. Preliminary sketch of Portuguese history to the death of Camoens; 2. Life of Camoens; 3. Minor works of Camoens; 4. The Lusiads; 5. Camoens at home and abroad in the nineteenth century.

Romance Club. *Weekly.*

The object of this organization, to which all members of the Romance Language department belong, is to foster a common interest in everything that concerns the study of the Romance idioms. Reviews of important journal articles, papers on original investigations, discussions of literary and scientific subjects, reports of correspondence of a professional nature, represent the chief exercises that claim the attention of the club.

Dr. Menger conducted the following courses:

Old French Philology. *Three hours weekly.*

This course consisted of lectures on the Phonology and Morphology of Old French. An attempt was made to present the laws which govern the transition of words from Popular Latin into Old French; incidentally their later development into Modern French was described. An hour on Friday was devoted to a review of the preceding lectures of the week, and to a discussion, by members of the class, of any difficulties involved in the work.

Old French Texts. *Two hours weekly.*

The aim of those attending this course was to read as much Old French as possible in order to become acquainted with forms and idioms of different

dialects and of different stages of the language. The following texts were read: 216 columns of Bartsch and Horning's *Chrestomathie;* Koschurtz, *Karlsreise* (entire); Paris' *Extraits de la Chanson de Roland* (entire); Suchier, *Aucassin et Nicolette* (entire); Warnke, *Die Lais der Marie de France* (entire); Foerster, *Cligès* (3620 lines).

French Physiological Phonetics. *Weekly.*

In the preliminary lectures of this course a view of phonetics in general, of acoustics as applied to the study, and of the physiology of the organs of speech was given. Then the works of scholars who have dealt with French sounds were described briefly, and characterized according as their authors dealt with the acoustic or organic side of phonetics, or with a combination of the two. French vowel and consonantal sounds were then studied and practised; for purposes of comparison English and German sounds were often discussed incidentally. Pages 25 to 73 of Passy's *Chargements Phonétiques* were read in class in order to give an idea of the pronunciation of the French sentence as a whole.

Modern Italian Literature. *Weekly.*

This was a course of ten lectures which aimed at giving a view of the chief literary tendencies of this century in Italy. The chief subjects of the lectures were as follows: The Romantic School in Italy, Leopardi, Patriotic Poetry, Popular Poetry, Zanella, Guerrini ("Stecchetti"), Carducci, De Amicis, Verga, Farina, Fogazzaro, Capuana, D'Annunzio, Castelnuovo.

Italian. *Three hours weekly.*

The object was to gain a reading knowledge of modern Italian. The essentials of the structure of the language were studied in Grandgent's *Italian Grammar.* Then the following texts were read: De Amicis, *Un gran giorno, Alberto, Gli Amici di Collegio;* Castelnuovo: *Il Teorema di Pitagora;* Serao: *Nostalgia;* Verga: *La Leggenda del Castello di Trezza;* Barrili: *Il Merlo Bianco.* Toward the end of the term Maffei's *Merope* and 15 cantos of Dante's *Inferno* were read.

Mr. De Haan conducted the following course:

Spanish. *Two hours weekly.*

Knapp's Grammar and Reader were completed; early in the second term Alarcon's *El Sombrero de Tres Picos* was begun; and a weekly exercise in Prose Composition was given.

Dr. Rambeau conducted the following undergraduate courses in French:

Minor Course A. *Four hours weekly.*

1. *Contes; Novels; Drama.*

Ludovic Halévy, *L'Abbé Constantin;* Paul Passy, *Le Français parlé,* Prose and Poetry (cf. No. 5); Alphonse Daudet, *Contes,* ed. Cameron (pp. 15–21, 48–59, 117-199); Corneille, *Polyeucte;* Victor Hugo, *Hernani,* A. I, II (A. III–V, contents and plot explained).—Alexandre Dumas père, *Le Comte de Monte-Cristo,* Episodes; Victor Hugo, *Les Misérables,* Episodes; Honoré de

Balzac, *La Curé de Tours;* George Sand, *La Mare au Diable* (private reading and examinations).

Short lectures on Daudet's *Lettres de mon moulin;* the principal features of Classicism and Romanticism, and those of the Classical and Romantic drama; the three unities; Victor Hugo's *Hernani* (the Spanish character, conception of honor, *couleur locale*, historical events, etc.).

2. *Modern French Comedy.*

Labiche, *Le Voyage de M. Perrichon;* Jules Sandeau, *Mademoiselle de la Seiglière;* Augier and Sandeau, *Le Gendre de M. Poirier* (recommended for private reading, contents and plot explained); Pailleron, *Le Monde où l'on s'ennuie*, A. I, II, Sc. 1–2 (A. II, Sc. 3–8, A. III, contents and plot explained).

Short lectures on French society after the Restoration, and in the reign of Louis-Philippe; French aristocracy and *bourgeoisie;* the society ridiculed by Pailleron.

3. *History of French Literature* (*XVII-XIX Centuries*).

Duval, *Petite histoire de la littérature française depuis les origines jusqu'à nos jours* (with some necessary corrections): Ch. V, pp. 97–180, the XVIIth Century (with few omissions); Ch. VI, pp. 181–245, the XVIIIth Century (with numerous omissions), the principal literary tendencies and movements, the most important writers; Ch. VII, pp. 246–332, the XIXth Century, only some representative men, and all the authors of works read by the students (cf. Nos. 1 and 2).

Short lectures on *le Siècle de Voltaire;* Scepticism in literature; Theism, Deism, and Atheism; Voltaire and Rousseau; Classicism and Pseudo-Classicism; return to nature, and beginnings of Romanticism; Victor Hugo and Romanticism; the Idealistic and Realistic school; the Realistic novel and drama; Realism and Naturalism; Idealism and Optimism; Naturalism and Pessimism.

4. Exercises in *French conversation* and *oral and written reports* upon authors and subjects connected with the class-work (Nos. 1–3).

5. *Phonetics.*

Sound-Tablets. Paul Passy, *Le Français parlé:* Poetry, No. 1–6; Prose, Nos. 1–3, and 12. Franke, *Phrases de tous les jours*, §§ 1–4.

6. The Alexandrine verse: *principal laws of French versification* in connection with No. 5 (Phonetics) and No. 1 (Corneille and Victor Hugo).

This class was divided into two sections.

Major Course. *Four hours weekly.*

1. *Classical Tragedy and Comedy.*

Corneille, *Le Cid; Polyeucte; Horace*, and *Cinna* (private reading and examinations). Jean Racine, *Britannicus; Athalie; Phèdre* (private reading and examination). Molière, *Les Précieuses ridicules; Le Tartuffe; L'Avare; Les Femmes savantes*, together with *La Société française au XVII^e siècle*, ed. Crane (private reading and examination). Regnard, *Le Joueur.* Voltaire, *Zaïre;* Piron, *La Métromanie.*

Lectures on the classical drama; the three unities; French and English conception of dramatic art; typical conception of characters in the classical drama; strict separation of tragedy and comedy; Classicism and Pseudo-Classicism; *Hôtel de Rambouillet; Les Précieuses ridicules* and *Les Femmes savantes;* Molière's art; *comédie de caractère* and *comédie de mœurs; drame bourgeois;* Molière and Augier (classical and modern comedy); Voltaire, the dramatist, and Shakespeare; lives and works of Corneille, Racine, Molière, Regnard, Piron and Voltaire.

2. *The Study of the Romantic Movement.*

Victor Hugo, *Notre-Dame de Paris,* Tome I, Livres I, II, IV–VI (contents of L. III); Tome II, Livres VII, VIII (contents of L. IX–XI); *Ruy Blas; Hernani* (private reading and examination). Paul Passy, *Le Français parlé,* Prose and Poetry (cf. No. 5). *Modern French Lyrics,* ed. Bowen.

Lectures on Romanticism and Classicism; Scepticism and Pseudo-Classicism in literature; the Romantic movement in France and in other countries; the origin and essential features of Romanticism in France; particularities of the Romantic drama; Victor Hugo, the dramatist, and Shakespeare; language, style and art of Victor Hugo; lives and works of Victor Hugo, Lamartine, Alfred de Vigny, Alfred de Musset, Théophile Gautier and Béranger; Béranger's *Chansons* and the national character; the lyric poets of the Romantic school, the *Parnassiens* and the *Décadents;* Idealism and Realism; Realism and Naturalism; Realism of dramatists and novelists in England and in France.

3. *History of French Literature from the Beginnings to the XVIIth Century.*

Duval, *Petite histoire de la littérature française depuis les origines jusqu' à nos jours* (with many necessary corrections): Ch. I–III, pp. 1–64, the Middle Ages; Ch. IV, pp. 65–96, the XVIth Century; then, part of Ch. V, the XVIIth Century. Darmesteter-Hatzfeld, *Morceaux choisis des principaux écrivains en prose et en vers du XVIe siècle: Rabelais; Montaigne; Satire Ménippée; Joachim du Bellay; Ronsard.*

Lectures on the origin of the French language and the French nation; *langue d'or* and *langue d'oïl;* Romance languages; Renaissance in France and in other countries; Rabelais; Ronsard and the *Pléiade;* Teutonic art and Classicism; Shakespeare compared with Corneille, Racine and Molière; Renaissance and the classical period of French literature; *le Siècle de Louis XIV.*

4. Exercises in *French conversation* and *oral* and *written reports* upon authors and subjects connected with the class-work (Nos. 1–3).

5. *Phonetics.*

Sound-Tablets. Paul Passy, *Le Français parlé:* Poetry, Nos. 1–8; Prose, Nos. 1, 2, 4 and 10. Franke, *Phrases de tous les jours,* §§ 42–44.

6. The Alexandrine verse, Classical and Romantic; *laws of French versification* explained in connection with Phonetics (No. 5) and the regular class-work (Nos. 1, 2).

French Minor Course B.

*Section I. Four hours weekly.*

This class was conducted by Mr. De Haan. The grammar was begun in connection with Lewis's *Michel Strogoff*, and the first half of Whitney's *Practical French Grammar* was studied during the first half-year.

In the second half-year About's *Le Roi des Montagnes*, Theuriet's *Le Mariage de Gérard*, and About's *La Mère de la Marquise* were read.

*Section II. Three hours weekly.*

This class was conducted by Mr. Symington. Particular stress was laid on reading. During the year the class read *Michel Strogoff*, *Le Tour du Monde en quatre-vingts jours*, and *Le Mariage de Gérard* (Theuriet). Grammatical points were discussed as they came up in the reading, the first part of Whitney's Grammar (with the exercises) being used as basis.

The classes in French Prose Composition were conducted by Mr. Bonnotte, each meeting one hour weekly:

*Major Course.*

Chardenal's exercises on idioms were studied, and in the second half-year students wrote original compositions based on subjects taken from French literature. This course was conducted in French; lectures were delivered in French on current events in French literature, and on French syntax.

*Minor Course A.* (Two sections).

Whitney's *French Grammar*, Part II, and Grandgent's Exercises in composition based on *L'Abbé Constantin* were used. A few essays in French were written in the latter part of the second half-year.

*Minor Course B.* (Two sections.)

Whitney's *Grammar*, Part I, was used during the first half-year, and in the second half-year Paul Bercy's *French Reader* was studied.

A. M. ELLIOTT,
*Professor of Romance Languages.*

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## History and Politics.

Professor Herbert B. Adams has continued to direct graduate and undergraduate work in the Department of History and Politics. The total enrolment of students during the year 1893–94 was one hundred and fifty-four. Of this number forty-six were graduate students. Dr. Adams has conducted the following courses:

(1) The Historical Seminary. This met fortnightly the past year, on Thursday evenings, in two-hour sessions. The total membership was forty-one. Among the original papers presented and discussed were the following: The Congo Free State, by Jesse S. Reeves; the Relation between the Roman and Early English Churches, by J. S. Bassett (published in *To-day*, April,

1894); Political Institutions of Maryland, by J. H. Hollander (printed in "Maryland: Its Resources, Industries and Institutions, prepared for the Board of World's Fair Managers of Maryland by members of Johns Hopkins University"); Origin of the Idea of Proprietary Government in the Carolinas, by J. S. Bassett (published with Constitutional Beginnings of North Carolina in University Studies March–April, 1894); the Cincinnati Southern Railway: a Study in Municipal Activity, by J. H. Hollander (published in the University Studies, January and February, 1894); College Settlements, by H. B. Adams; History and Status of Negro Suffrage in the South, by S. B. Weeks; a Cure for the Gerrymander, by John Haynes; Haym Salomon, by H. B. Adams and J. H. Hollander (published in the Proceedings of the American Jewish Historical Society, 1893); Impressions of Alaska, by H. B. Adams; the Popularity of Boethius in the Middle Ages, by J. S. Reeves; Edmund Burke, by Woodrow Wilson; Origin of the Bicameral System in America, by T. F. Moran; the Civil Status of the Jews in Maryland, 1634 to 1776, by J. H. Hollander (published in the Proceedings of the American Jewish Historical Society, 1893); the Bounty System of the American Revolution, by Herbert Friedenwald; Academies and the University, by H. B. Adams; Samuel Houston and Texan Independence, by B. J. Ramage (published in *The Sewanee Review*, May, 1894); Puritanism in Virginia in the 17th Century, by J. H. Latané; Christianity in Japan (1859–1883), by M. Ishizaka; the British Public Record Office, by Charles M. Andrews; an Account of the French Archives, by J. M. Vincent; Quakers in the South, by S. B. Weeks; Report on a Translation of Bourgeaud's "Etablissement et Revision des Constitutions en Amérique et en Europe"; the Hawaiian Constitution, by H. E. Chambers; a Study of Thomas Jefferson, by C. Meriwether; Materials for a Social Science Laboratory, by A. Cleveland Hall; the Colonial Pirates and Colonial Commerce (1670–1740), by Shirley Carter Hughson (published in the University Studies, May–July, 1894); the English Uprising of 1381, by Dr. George Kriehn (an elaborate monograph soon to be published in book-form).

(2) A course of class lectures on Early Institutional History, two hours weekly during the first half-year, to forty-two graduate students. In connection with the lectures each student pursued an extended course of private reading, the results of which were systematized in the form of digests arranged by topics, or theses, well suited for practical use in courses of instruction, when our graduates become teachers. Some of the best specimens of these digests or lecture-briefs were exhibited for student examination.

(3) During the second half-year, a class course of lectures on Prussian History, two hours weekly, to forty-one graduate students. A written examination was required at the end of the course. Members of the class read the following works in connection with the lectures: Tuttle's History of Prussia, including the two volumes on Frederick the Great; Carlyle's Life of Frederick the Great; and Seeley's Life and Times of Stein.

(4) A course of class lectures on Church History to twenty undergraduate and eleven graduate students, two hours weekly through the year. In connection with this course a series of digests, or topical briefs, combining the results of private reading with notes on the lectures, were prepared by all the members of the class. This experiment, first tried in course 4, was afterward extended to course 2 in the graduate department. The preparation of such digests, giving authorities for every statement, proved stimulating to the class and helpful in promoting scholarly habits in private reading.

Professor George H. Emmott lectured on (1) Historical and Comparative Jurisprudence to twenty-three graduate and advanced students, twice weekly. The lectures opened with an examination of the condition of the Roman Law at the beginning of the fifth century, and showed how its practical utility was promoted by the Lex de Responsis Prudentum and by the Codes of Gregorianus, Hermogenianus, and Theodosius II. The following topics were then discussed from the comparative standpoint,—the public law schools of Constantinople and of Rome, the Fragmenta Vaticana, the Mosaicarum et Romanarum legum Collatio. The codification of the law by Justinian. The Roman Law, a universal system. German Law. Description of early German Law; the German family; the reforms of Charles the Great. The conquest of the Western Roman Empire by the Germans; the "Barbarian" Codes; the Visigoth Breviarium of Alaric II; the "Papian," or the Roman Law of the Burgundians; the edict of the Ostrogoth Theodoric; the Lex Salica; the Capitularies. The principle of the personality of the law. The subsequent development of the Roman Law in the Byzantine Empire. Revival of the study and teaching of the texts of Justinian in Italy; the School of Bologna and the Glossators. The Canon Law. The Roman Law in modern states previous to the French Revolution. Statement of the most important principles of modern Roman Law. Codification. In the latter part of the course Viollet's Histoire du droit civil Français (Droit Privé et Sources) was read with the class as containing an outline sketch of the ground to be covered.

(2) On English Constitutional Law and History, to fourteen graduate and fourteen undergraduate students, twice weekly. The origin and development of the English Constitution and of the fundamental principles of English Constitutional Law were carefully and systematically traced in chronological order from the earliest period down to the present time. Taswell-Langmead's English Constitutional History was taken as containing an outline sketch of the ground covered, with references to the works of Freeman, Stubbs, Hallam, Erskine, May, Dicey, Anson, Hearn, Bagehot, Traill, Spencer, Walpole, and other writers. The instruction was given by means of lectures delivered by the instructor, by frequent recitations, and by lectures given and reports carefully prepared by the students themselves on assigned topics.

(3) On Sources of English History and the Early History and Literature of Historical Writing in England, to ten graduate and advanced students,

once weekly, throughout the year. The lectures contained a careful presentation of the lives and works of the early English historical bibliographers, of the materials from which our knowledge of English history is drawn down to the time of Edward I., and of the general nature and contents of the Year Books, Court Rolls, and other early records, and of the work accomplished by the Record Commission.

Dr. J. M. Vincent conducted the following courses:

1. Social and Economic History of the Middle Ages with twenty-four graduate students, two hours a week, first half-year. The progress of European Society, particularly in Germany, France, and England, was traced from the rise of feudalism to the period of the Reformation. The economic basis of mediæval institutions; the reciprocal influence of physical conditions, social ideas, and constitutional forms; the regulation of industry and kindred topics were treated with the view of showing how far the foundations of modern civilization were laid during this period.

2. The Economic History of Early Modern Europe, two hours a week, second half-year. This was a continuation of the history of social progress on the Continent from the fifteenth century to the French Revolution, showing particularly the intimate connection of political practice and economic theory.

3. Historical Conference, two hours fortnightly, throughout the year. To this conference nine advanced graduates were admitted and were given exercises and historical problems for the purpose of developing critical powers. The topics included a careful study of the theory and forms of the Feudal System from original sources; the Danish settlement of England in the ninth century; More's Utopia as a source of contemporary civilization.

4. Continental History (part of History Major), with one graduate and nineteen undergraduate students, three hours weekly, through the year. The work embraced mediæval and modern history, and was done by means of lectures and text-books. Emerton's Beginnings of the Middle Ages, Duruy's France, Bryce's Holy Roman Empire, Seebohm's Protestant Revolution, and Gardiner's Student's History of England were read by the class.

5. Mediæval and Modern History (P. H. E.), with forty-three undergraduates, three hours weekly, January to June, 1894. Duruy's History of the Middle Ages and Lodge's Modern Europe were supplemented by lectures.

Dr. Bernard C. Steiner conducted a course, three hours weekly throughout the year, on American Political and Constitutional History. Thirteen undergraduate and eleven graduate students pursued the course, which was designed to cover the history of the United States from the earliest times down to the present age. In connection with the lectures and recitations of the course, reports were made from time to time by the students on topics

assigned them for special treatment. The period of discovery of the new world was first treated, and then the various early schemes for colonization were considered. The colonial history of the original thirteen States received considerable attention. Careful study was given to the causes of the American Revolution and the Confederation and its failures. The second half-year was begun with a detailed study of the provisions of the Constitution of the United States, with Cooley's "Constitutional Law" as a text-book. After this, the important constitutional questions which have arisen in the history of the country were discussed, and the course closed with a rapid review of United States political history since 1789. Longman's "Epochs of American History" were used as text-books, and the first volume of Bryce's "American Commonwealth" was required as outside reading.

Dr. George Kriehn conducted

(1) A class course in Greek and Roman History, four hours weekly from February to June, with eleven undergraduate students. Oman's History of Greece and Pelham's Outlines of Roman History formed the basis of instruction. These text-books were supplemented by class lectures and daily talks on subjects not fully treated in the manuals. Visits were occasionally made by the class to the McCoy Library and to the museum of the Peabody Institute, for the examination of art collections illustrating Greek and Roman life. Topics were assigned to students for private reading and for oral or written report in the class.

(2) A class course in Herodotus and Thucydides, one hour weekly through the year, with seventeen undergraduate students. These authors were studied in English translations for the sake of the historical substance, the illustration of Greek methods of treating history, and for exercises in historical criticism. Class lectures were given on the lives and historical value of these authors.

### Economics.

Dr. Sidney Sherwood conducted the following courses:

(1) The Theory of Consumption. This was presented to a class of twenty-eight graduate students, after the close of Professor H. C. Adams' course, two hours weekly from March until the end of the academic year. The Theory of Consumption was historically and critically considered. Dr. Sherwood outlined the treatment of Consumption by economic writers from the mercantilists to the present time. He pointed out the fact that many topics, which should properly fall under Consumption, had been treated under other heads, such, for instance, as the Malthusian law of population and much of the theories of value and capital. He pointed out the significance of the "historical school" and of the subjective value theories of later writers as leading necessarily to the study of Consumption and asserted a manifest tendency in the latest economic theories, particularly of the American writers, to unite the concepts and methods of former "schools" in a new system, of which the laws of Consumption, as seen in the laws of value, should form the basis.

(2) The Economic Conference, comprising eighteen members, met in fortnightly sessions throughout the year. This is an organization of graduate students especially interested in economics. Each member of the Conference was required to prepare a paper upon some topic in which he was interested. These papers were read and criticised in the Conference. The following is a partial list of the papers presented: Plain Cost and Opportunity Cost, by Dr. David I. Green (published in The Quarterly Journal of Economics, January, 1894); the Nature and Mechanism of Credit, by Dr. Sidney Sherwood (published in the same number of the above journal); the Place of Economics among the Sciences, by Dr. Sherwood (to be published in The Annals of the American Academy of Political and Social Science); Risk as an Economic Factor, by John Haynes; a Study in Practical Politics, by Dr. C. Meriwether; Examination of the Doctrine that Rent does not enter into Cost of Production, by J. H. Hollander (to be published in the Annals of the American Academy of Political and Social Science); Re-examination of Certain Fundamental Concepts in Economics, by H. E. Chambers (also to appear in The Annals); a Study in Certain Economic Conditions in Bedford County, Virginia, by B. W. Arnold; Benjamin Franklin as an Economist, by W. A. Wetzel; and a Study in the Theory of Railway Rates, by F. D. Thomson. In connection with the Economic Conference, at each session, current economic literature was reviewed.

(3) Current Economic Events. Five special meetings of graduate students were devoted to discussions of current economic events. Dr. Sherwood presented topics of the present currency question in the United States, the tariff issues raised by the Wilson bill, and the proposed income tax.

(4) Recent Economic Theories. A class of six members met two hours weekly, throughout the year, with Dr. Sherwood for the close study of economic theories. "The Theory of Dynamic Economics," by S. N. Patten, and "Natural Value," by Friedrich v. Wieser, were carefully studied and critically discussed. It is probable that one or two papers of value will grow out of the work of this class or club. A general critical estimate of Patten's theory was attempted and a careful study was made of the use of the term "Rent" in Economics.

(5) Elements and History of Political Economy. This course was attended by eighteen undergraduates and nine graduates, five hours weekly, throughout the year. Walker's "Political Economy" (advanced course) and John Stuart Mill's "Principles" were used as text-books. The character of the work was mainly a thorough drill in the principles of economics. Discussion and criticism of the positions taken in the text-books were encouraged. Lectures and recitations on assigned reading on the history of economic theory, on public finance, railroads, socialism and other topics were also given. Short papers and more elaborate essays on various subjects were prepared by all the members of the class and many of these were read and discussed in the class-room.

A general review of the work in economics for the past year shows a good record of attendance on lectures and of well sustained interest both in class instruction and in original inquiry along special lines.

### Lectures on Economics, History, and Politics.

Experience has shown that special lectureships are of great advantage to the department of Historical and Political Science. It is obviously impossible, under present circumstances, to represent all branches of history and politics by distinct professorships. On the other hand, it is both possible and expedient to secure, from year to year, or for terms of years, acknowledged experts from Washington and from various parts of the country, who will give extended courses of class lectures, that serve not only to introduce to our graduate students fresh themes of inquiry, but also to present, in a concise and systematic way, the best results of original study. The opportunity of hearing and meeting eminent teachers and specialists from other institutions of learning is keenly appreciated by our young men. The stimulus received from lecturers like Professors Freeman and Bryce was early apparent in the work of the department, and such quickening power is still derived from outside sources. Among the foreign visitors who addressed our students during the past year were Professor Emile Levasseur, of Paris; Professor Louis Waurin, of Geneva; and Professor Isidor Singer, of Vienna.

Among the special lecturers who have rendered important educational and scientific services to the department during the past year are the following:

(1) Professor John B. Clark, of Amherst College, who gave a course of twenty-five lectures in the fall of 1893 to thirty-two graduate students, and carried toward completion his study of the Theory of Distribution. The topics especially considered were the effects of invention and of combinations of labor and of capital. It was found that pure theory furnishes a standard of wages and of interest, and a mode of measuring profits, and that the actual rates tend to conform to the theoretical standards, and, at any one time, differ from them by amounts that can be estimated. A study was made of the influence of trusts and trades-unions on the actual distribution of wealth. Professor Clark also took an active part in the sessions of the Economic Conference during his stay. His lecture course was followed by a written examination, which showed eminently satisfactory results.

(2) Professor Simon Newcomb, of Washington, followed Professor Clark with a course of ten lectures upon Economics as an Exact Science. He showed the need of greater definiteness in economic concepts and terms. He pointed out the possibility of reaching this end in some departments of the science by the use of mathematical symbols and expressions. Various concrete and graphical illustrations of his method were given and interesting discussions were raised.

(3) Professor Henry Carter Adams, one of the original Fellows in Political Science, and now Statistician of the Interstate Commerce Commission and professor of economics in the University of Michigan, gave in January and February, 1894, a course of twenty lectures, to twenty-eight graduate students, on the subject of Transportation. He confined himself mainly to the Railway Problem in the United States. He reviewed the history of methods of transportation from primitive times to the present; pointed out the wide economic significance and importance of the railway, and showed how every industry and the very form and life of society are touched and, in a sense, controlled by it. He examined at some length the various methods of railway control and regulation, from state ownership to untrammeled private action. He maintained the necessity for some sort of public regulation, and argued that the true method must be sought in the judicial rather than in the administrative side of government. A railway commission should act as a court rather than as a means of executive control by a government bureau.

(4) Dr. Elgin R. L. Gould, a former Fellow in this University and now an Expert in the U. S. Department of Labor, gave a course of twelve lectures, from February to May, 1894, to twenty-three graduate students, on Concrete Problems of Labor. He considered among other topics: the Liquor Question; Public Recreation; the Care of the Unemployed; Comparative Social Standards of Existence; Industrial Training; the Housing of the Poor; the Church and the Masses. Dr. Gould was prominently identified with the work of the Central Relief Committee during the past winter as chairman of its sub-committee on stone yards.

(5) Dr. David I. Green during the first half year gave a course of weekly lectures in Social Science to a class of twenty-six graduate students.

The general principles and problems of charity and correction were brought out through a special study of the institutions of Baltimore. On the day following each lecture, several hours were spent in field work in and about the city. Among the topics treated in the lectures may be mentioned: The Foundling Asylum, the Day Nursery, the Kindergarten, the Care of Dependent Children, Industrial Education, the Juvenile Delinquent, the Object and Methods of Legal Punishment, the City Police, the Tramp Problem, Public vs. Private Relief, the Organization of Charity, Sanitation, and the Relief of the Sick. Methods to be observed in Baltimore were critically compared with those obtaining elsewhere. A course of reading connected with the lectures served to introduce the student to the best modern thought concerning the problems and methods of social reform. Among the institutions visited by the class were several orphanages, Samuel Ready School, McDonogh School, Baltimore Polytechnic Institute, Maryland School for the Colored Blind and Deaf, St. Mary's Industrial School, House of Refuge, Baltimore City Jail, Central Police Station, Workingmen's Residential Club, Friendly Inn, Electric Sewing

Machine Rooms, Charity Organization Society (Central Office and District Board Meeting), Johns Hopkins Hospital, Mount Hope Retreat, and the City Almshouse.

During the winter Dr. Green also organized and conducted a Social Science Conference which met fortnightly for the presentation of papers and the discussion of special phases of social reform work. Sixteen members were enrolled. Brief reviews of current literature were given at each meeting, and such subjects as Sanitation, Social Settlements, the Suppression of Vice, and the Regulation of the Liquor Traffic were discussed somewhat at length. Among the papers presented were the following: T. F. Moran on the Göthenburg Method of regulating the Liquor Traffic (afterwards published in The Charities Review, April, 1894); L. N. Whealton on the Treatment of Cripples; F. R. Jones on Outdoor Relief; and W. A. Wetzel on Court and Jail Methods. J. C. Rose, Attorney for the Baltimore Society for the Suppression of Vice, favored the Conference with an address upon the work of the above Society.

In the spring of 1894, Dr. Green left Baltimore for Hartford, Connecticut, where he is now Superintendent of the Charity Organization Society and lecturer on Social Economics.

(6) A. Cleveland Hall, a graduate student, who was for some time in charge of the exhibits in Social Science at the Columbian Exposition, gave a course of seven class lectures on "Prison Systems," with the following themes: (1) The development of criminal classes in the ancient world and mediæval England; (2) Beginnings of the modern prison systems; (3) Evolution of the reformatory ideal in the American prison system; (4) The New York State Reformatory at Elmira; (5) Juvenile delinquents in the United States; (6) and (7) Prison systems of Great Britain and the United States compared. Mr. Hall also gave a special lecture to our graduate students regarding his personal observations among the "Coxeyites" in Washington. The substance of this talk was published in *The Independent*, May 17, 1894, under the title: "An Observer in Coxey's Camp."

Mr. Hall assisted in obtaining for permanent exhibition in Baltimore many interesting charts, diagrams, pictures, models, monographs, special reports, and other materials that were used in the social science exhibition at Chicago.

(7) Dr. William T. Harris, U. S. Commissioner of Education, gave an academic course of ten weekly lectures, from October, 1893, to January, 1894, on the Philosophy of History. This course was generally attended not only by graduates in History and Politics, but by University students from other departments. The special subjects treated by Dr. Harris were the following: (1) Asiatic Peoples and the Lessons their Civilizations teach us; (2) the Contrast between Asia and Europe in respect to Fundamental Ideas of Civilization; (3) Greek History; (4) Greek Art; (5) Relation of Greek Art to Greek Science; (6) Roman History; (7) the Arrival

of Christianity; (8) Mohammedanism and its Significance in the History of Europe; (9) the Era of Revolutions against Authority in Philosophy, Theology, and Civil Government; (10) the Historical Tendency of the Present Age. A syllabus of topics was prepared for student use in connection with each lecture.

(8) Dr. James Schouler, author of the "History of the United States under the Constitution," gave, in February and March, 1894, a course of twenty-five class lectures, to twenty-six graduate students, on American Political History. He discussed the origin and development of political parties in the United States; the history of the successive administrations; the various party measures and their practical results; minority views under each administration; the slavery question; the civil war; reconstruction; recent political history to the end of the Hayes administration.

(9) Professor Woodrow Wilson, of Princeton College, a former Fellow of History in the Johns Hopkins University, has been one of its most valued lecturers during the past four years. In 1894, in the months of February and March, he gave a course of twenty-five lectures to twenty-seven graduate students, on Comparative Politics and Administration. He discussed the nature, scope and method of comparative politics; the idea of the State and its functions; the theory of the division of powers; the character, forms and sources of administrative law; the relation of administrative acts to the laws, and the relations of administrative action to individual rights.

H. B. ADAMS,
*Professor of American and Institutional History.*

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## Philosophy.

The following report of the work in Philosophy, during the academic year 1893–4, is respectfully submitted:

The undergraduate instruction in Logic, Psychology, and Ethics has been under the care of Professor Griffin. Five hours a week, for a year, are assigned to these subjects, and all candidates for the degree of Bachelor of Arts are required to follow this course during their last year of residence. Logic was studied by the class until December 22d; the time was then given to Psychology until April 1st; the remainder of the year was devoted to the study of Ethics. Forty-three students attended the course. The effort has been to keep particularly in view the needs of those to whom these subjects are new, and to make the treatment as simple and untechnical as possible, and at the same time to call attention to fundamental problems, so that the work may serve as an introduction to general philosophical study. Text books have been used in each subject, as affording definite material of acquisition; but informal lectures, discussions in the class, and

passages from various authors specially assigned for reading have been largely relied upon in the presentation. Each member of the class has been required to prepare two essays in the course of the year.

Jevons's *Elementary Lessons in Logic* and Fowler's *Elements of Inductive Logic* were made the basis of instruction in deductive and inductive logic, respectively, with frequent references to the works of Mill, Bain, Keynes, and other writers. The general theory of deduction and of induction was discussed, with the view of determining the nature and value of each of these processes, and their relations to each other in scientific investigation and proof. Facility in the use of logical forms and methods was sought through numerous exercises in definition and division, in the opposition and conversion of propositions, in the application of the rules of the syllogism, and in the detection of fallacies.

The instruction in Psychology attempted to give a general view of the results of experimental methods of study, and also to emphasize the facts of conscious experience as known through introspection. The most important end to be secured being, it is believed, such an understanding of the facts and laws of mental life as shall fit one for wise self-government and effective influence, such powers and states of mind as attention, memory, association, habit, imagination, the feelings, the will, were treated in as concrete and practical a way as possible. Baldwin's *Elements of Psychology* and Ladd's *Outlines of Physiological Psychology* were used as text books, supplemented by many references to the works of other authors. A series of lectures and demonstrations on the anatomy and physiology of the muscular and nervous systems was given by Dr. Dreyer, as a part of the course, in the biological laboratory.

The work in Ethics was mainly confined to the theoretical and historical aspects of the subject; questions of applied ethics were, for lack of time, but slightly considered. The various forms of feeling native to our constitution and constituting the possible motives of conduct; the condition and nature of the sense of obligation; the authority of conscience; the diversities of moral sentiment; the historic theories of morals—hedonism, utilitarianism, intuitionism, and the application to ethical theory of the doctrine of evolution; these are some of the topics treated. While a more detailed application of the principles reached to personal and social conduct would have been desirable, the consideration of the speculative side of ethics is well adapted to produce a habit of moral thoughtfulness. Fowler's *Principles of Morals*, Part II, was employed as a text book, but the instruction was largely given through lectures.

A brief outline of the History of Philosophy was given, during the last weeks of the year, for the benefit of those who were able, at so disadvantageous a time, to attend the lectures.

Professor Griffin conducted during the year a course in the History of Philosophy, for graduate students, consisting of the reading and discussion of representative works in modern philosophy from Descartes to Kant.

The works read were as follows: Bacon's *Novum Organum*, book I and a part of book II; Descartes' *Method* and *Meditations;* Spinoza's *Ethics;* Leibnitz's *Monadology;* Locke's *Essay on Human Understanding*, books I, II, IV; Berkeley's *Principles of Human Knowledge;* Hume's *Treatise on Human Nature*, book I; a portion of Kant's *Critique of Pure Reason.* The class met once a week for discussion and criticism.

EDWARD H. GRIFFIN,
*Professor of the History of Philosophy.*

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## Drawing.

The Undergraduate Course in Drawing has included: (*a*) representative or free-hand drawing from natural forms and geometric models, in outline and in light and shade, with pencil, charcoal and crayon; studies of landscape contours; and large charts finished with crayon or ink brush, such as the student may be called upon to make later on, when teaching or in illustrating lectures; (*b*) constructive or mechanical drawing, with exercises in the use of instruments, and elements of descriptive geometry,—simple projections, sections and developments, isometric projections, and the elements of linear perspective.

The Special Instruction in Drawing has been adapted to the wants and abilities of those seeking it, and has been chiefly in the line of advanced free-hand drawing, in light and shade, from casts, and personal directions for individual improvement in some line of drawing helpful to the student in his scientific work.

The Technical Instruction in Drawing has already been referred to under the head of Electrical Engineering.

S. EDWIN WHITEMAN,
*Instructor in Drawing.*

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# TABULAR STATEMENT OF COURSES OF INSTRUCTION, 1893-94.

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | **Mathematics and Astronomy.** | | | |
| Newcomb. | Method of Least Squares. (First half-year.) | 2 | 3 | |
| Newcomb. | Cosmical Physics and Astronomical Optics. (First half-year.) | 2 | 6 | |
| Poor. | Advanced Theoretical Astronomy. (Second half-year.) | 1 | | 4 |
| Poor. | Theoretical and Practical Astronomy. (First half-year.) | 3 | 8 | |
| Poor. | Computation of Orbits and Special Perturbations. | 3 | 3 | 3 |
| Poor. | Gravitational Astronomy, etc. (Second half-year.) | 3 | | 10 |
| Poor. | Astronomical Seminary and Journal Meeting. | 1 | 8 | 13 |
| Poor. | Laboratory Work. | | 15 | 16 |
| Craig. | Fuchsian Functions. (First half-year.) | 2 | 11 | |
| Craig. | Algebraic Integrals. (First half-year.) | 4 | 10 | |
| Craig. | Theory of Functions. (Elementary Course.) | 2 | 18 | 18 |
| Craig. | Mathematical Seminary. | 2 | 26 | 26 |
| Craig. | Differential Equations. (Second half-year.) | 2 | | 11 |
| Craig. | Elliptic Functions. (Second half-year.) | 4 | | 11 |
| Franklin. | Calculus: Special Topics (First half-year.) | 2 | 26 | |
| Franklin. | Determinants and Theory of Equations. (First half-year.) | 3 | 15 | |
| Franklin. | Solid Analytic Geometry. (Second half-year.) | 3 | | 17 |
| Franklin. | Theory of Numbers. (Second half-year.) | 3 | | 11 |
| Franklin. | Analytic Geometry of Two and Three Dimensions. (First half-year.) | 2 | 7 | |
| Franklin. | Theory of Probability. (Second half-year). | 2 | | 6 |
| Study. | Theory of Algebraic Forms. (First half-year.) | 3 | 14 | |
| Study. | Projective Geometry. (Second half-year.) | 2 | | 12 |
| Hulburt. | Plane Algebraic Curves. (Second half-year.) | 2 | | 3 |
| Hulburt, Landis. | Differential Equations: Major Course. (Second half-year.) | 2 | | 26 |
| Hulburt, Landis. | Differential and Integral Calculus. (Second half-year.) | 5 | | 40 |
| Hulburt, Landis. | Analytic Geometry: Minor Course. (First half-year.) | 5 | 42 | |
| Manning. | Trigonometry. (First half-year.) | 3 | 7 | |
| Manning. | Analytic Geometry: Elementary. (Second half-year.) | 3 | | 9 |
| | **Physics.** | | | |
| Rowland. | Thermodynamics; Heat Conduction; Physical Optics. | 4 | 17 | 15 |
| Rowland, Ames. | Journal Meeting. | 1 | 24 | 22 |
| Ames. | Physical Seminary. | 1 | 7 | 7 |
| Ames. | General Physics: Major Course. | 5 | 38 | 40 |
| Ames. | General Physics: Minor Course. | 5 | 36 | 37 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Ames. | Physical Optics. (First half-year.) | 2 | 20 | |
| Ames. | Theory of Attractions. (Second half-year.) | 2 | | 18 |
| Duncan. | Applied Electricity. (First Year's Course.) | 3 | 33 | 33 |
| Duncan. | Applied Electricity. (Second Year's Course.) | 2 | 29 | 28 |
| Hering, Geer. | Steam and Hydraulic Engineering. | 3 | 20 | 17 |
| Hering. | Laboratory Methods. | 1 | 17 | 16 |
| Geer. | Applied Kinematics. (Second half-year.) | 2 | | 15 |
| Geer. | Mechanics of Engineering. (First half-year.) | 2 | 19 | |
| Rowland, Duncan, Ames, Hering, Geer. | Laboratory Work. | | 118 | 108 |
| Duncan, Hering, Geer. | Electrical Seminary. (Second half-year.) | 2 | | 29 |
| | **Chemistry.** | | | |
| Remsen. | Theoretical Chemistry. (First half-year.) | 2 | 39 | |
| Remsen. | Compounds of Carbon: Advanced Course. (Second half-year.) | 5 | | 37 |
| Remsen. | Journal Meeting. | 1½ | 31 | 29 |
| Remsen. | General Chemistry: Minor Course. (First half-year.) | 3 | 62 | |
| Morse. | Quantitative Methods. | 1 | 32 | 30 |
| Morse. | Compounds of Carbon: Major Course. (Second half-year.) | 3 | | 20 |
| Morse. | Crystallography. (First half-year.) | 2 | 15 | |
| Renouf. | Inorganic Chemistry: Major Course. (First half-year.) | 3 | 21 | |
| Renouf, Randall. | General Chemistry: Minor Course. (Second half-year.) | 5 | | 48 |
| Renouf, Randall. | Reviews in General Chemistry: Minor Course. (First half-year.) | 2 | 50 | |
| Randall. | Mineralogy. (Second half-year.) | 2 | | 17 |
| Remsen, Morse, Renouf, Randall, Gilpin. | Laboratory Work. | | 110 | 109 |
| | Historical Lectures. (Twenty lectures by advanced students, second half-year.) | | | |
| | **Geology, Mineralogy, Etc.** | | | |
| Williams. | General Mineralogy. | 4 | 24 | 22 |
| Williams. | Dynamical Geology. (First half-year.) | 3 | 17 | |
| Williams. | Metamorphism. (Second half-year.) | 3 | | 10 |
| Williams. | Petrography: Laboratory Work. | | 8 | 8 |
| Clark, W. B. | General Geology. (Second half-year.) | 3 | | 15 |
| Clark, W. B. | Palæontology. | 3 | 9 | 11 |
| Clark, W. B. | Palæontology: Laboratory Work. (Advanced.) | | 3 | 4 |
| Clark, W. B. | Physical Geography: P. H. E. (First half-year.) | 3 | 43 | |
| Williams, Clark, W. B. | Journal Meeting. | 1 | 11 | 12 |
| | **Biology.** | | | |
| Brooks. | Zoölogy: Advanced Course. | 3 | 8 | 12 |
| Brooks. | Morphological Seminary. | 1 | 7 | 9 |
| Brooks. | Comparative Osteology. (During October.) | 5 | 31 | |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students 2d half-year. |
|---|---|---|---|---|
| Howell. | Physiological Seminary. | 1½ | 11 | 12 |
| Howell. | Animal Physiology. | 3 | 31 | 30 |
| Andrews. | General Zoölogy. (Second half-year.) | 2 | | 17 |
| Andrews. | General Biology. (November to April.) | 5 | 19 | 18 |
| Andrews. | Embryology. (During April and May.) | 3 | | 19 |
| Dreyer. | Histology. (First half-year.) | 2 | 26 | |
| Barton. | Systematic Botany. (During April and May.) | 2 | | 18 |
| Lotsy. | Morphology of Plants. (Second half-year.) | 3 | | 4 |
| Brooks, Howell, Andrews, Dreyer, Barton, Lotsy. | Laboratory Work. | | 56 | 52 |
| Brooks, Howell. | Journal Club. | 1 | 10 | 11 |
| | **Greek.** | | | |
| Gildersleeve. | Greek Seminary: Plato. | 2 | 24 | 21 |
| Gildersleeve. | Plato: Lectures. | 1 | 26 | 24 |
| Gildersleeve. | Greek Philosophy. (Second half-year.) | 1 | | 23 |
| Gildersleeve. | Greek Epic Poetry. (Second half-year.) | 1 | | 26 |
| Gildersleeve. | Practical Exercises. (First half-year.) | 2 | 25 | |
| Spieker. | Plato. (First half-year.) | 3 | 8 | |
| Spieker. | Xenophon. (First half-year.) | 4 | 5 | |
| Spieker. | Homer; Euripides. (Second half-year.) | 4 | | 5 |
| Spieker. | Aischylos; Sophokles. (Second half-year.) | 3 | | 9 |
| Spieker. | Greek Literature. | 1 | 8 | 9 |
| Spieker. | Sight Reading. | 1 | 3 | 4 |
| Spieker. | Prose Composition. (Two classes.) | 2 | 13 | 18 |
| Miller. | Plato's Republic. (First half-year.) | 2 | 18 | |
| Miller. | Aristotle. (Second half-year.) | 2 | | 4 |
| Miller. | Syntactical Society. (Second half-year.) | 1 | | 7 |
| Soho. | Modern Greek. (Second half-year.) | 2 | | 5 |
| | **Latin.** | | | |
| Warren. | Latin Seminary: Cicero. | 2 | 27 | 25 |
| Warren. | Roman Oratory and Rhetoric. (First half-year.) | 1 | 27 | |
| Warren. | Historical Latin Grammar. | 1 | 30 | 24 |
| Warren. | Journal Club. (Alternate weeks) | 1 | 17 | 16 |
| Warren. | Cornificius. (First half-year.) | 1 | 26 | |
| Warren. | Latin Palæography. (Second half-year.) | 1 | | 23 |
| Warren. | Terence; Plautus. (Second half-year.) | 3 | | 5 |
| Smith. | Practical Exercises. (Second half-year.) | 1 | | 19 |
| Smith. | Juvenal. (First half-year.) | 3 | 7 | |
| Smith. | Reading at Sight. | 1 | 7 | 5 |
| Smith. | Livy. (First half-year.) | 4 | 27 | |
| Smith. | Horace. (Second half-year.) | 4 | | 15 |
| Smith. | Prose Composition. (Two classes.) | 2 | 20 | 17 |
| | **Sanskrit, Etc.** | | | |
| Bloomfield. | Vedic Seminary: Atharva-Veda. | 1 | 5 | 5 |
| Bloomfield. | Advanced Sanskrit: Hitopadeça, Kathāsaritsāgara, Manu. | 1 | 7 | 6 |
| Bloomfield. | Zend and the Zend-Avesta. | 1 | 3 | 3 |
| Bloomfield. | Comparative Philology. | 1 | 30 | 28 |
| Bloomfield. | Comparative Grammar of Latin, Greek, German, etc. | 1 | 21 | 22 |
| Bloomfield. | Elementary Sanskrit. | 2 | 9 | 7 |
| Stratton. | Advanced Sanskrit: Nala. (First half-year.) | 1 | 8 | |
| Stratton. | Introduction to the Vedas. (Second half-year.) | 1 | | 7 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | **Semitic Languages.** | | | |
| Haupt. | Assyrian Seminary. | 2 | 3 | 3 |
| Haupt. | Hebrew Prose Composition. (Alternate weeks.) | 1 | 7 | 3 |
| Haupt. | Assyrian Prose Composition. (First half-year,—alternate weeks.) | 1 | 4 | |
| Haupt. | Arabic Prose Composition. (Alternate weeks). | 1 | 6 | 4 |
| Haupt. | Old Testament Literature. (First half-year.) | 1 | 13 | |
| Haupt. | Leviticus. | 1 | 7 | 6 |
| Haupt. | Hexateuch. (Second half-year.) | 1 | | 25 |
| Haupt. | Hebrew: Elementary. | 2 | 12 | 10 |
| Adler. | Talmud. (First half-year.) | 1 | 1 | |
| Adler. | Assyro-Babylonian History and Literature. (First half-year.) | 1 | 7 | |
| Johnston. | Assyrian: Advanced. | 2 | 3 | 1 |
| Johnston. | Arabic: Elementary. | 1 | 6 | 3 |
| Johnston. | Arabic: Advanced. | 1 | 2 | 1 |
| Johnston. | History of the Ancient East. (Second half-year.) | 1 | | 2 |
| Johnston. | Hebrew Exercises. | 1 | 3 | 3 |
| | **German.** | | | |
| | *Advanced Work.* | | | |
| Wood, Learned. | German Seminary: Faust. (First half-year). | 2 | 8 | |
| | Faust. (Second half-year). | 3 | | 9 |
| | Parzival. (Second half-year). | 1 | | 7 |
| Wood. | Germanic Society. (Alternate weeks.) | | 15 | 13 |
| Wood, Learned. | Nineteenth Century Literature. (First half-year.) | 2 | 11 | |
| Wood. | Seventeenth Century Literature. (Second half-year.) | 1 | | 9 |
| Wood, Vos. | Gothic. | 2 | 6 | 5 |
| Learned. | Otfrid. (First half-year.) | 2 | 7 | |
| Learned. | Middle High German. | 1 | 5 | 4 |
| Learned. | Luther and New High German. (Second half-year.) | 2 | | 6 |
| Vos. | Germanic Philology and Historical Grammar. | 3 | 2 | 2 |
| | *Major Course.* | | | |
| Wood, Faust. | Goethe (Tasso; Faust). | 2 | 9 | 6 |
| Learned. | Prose Composition. | 1 | 9 | 6 |
| Learned. | History of German Literature. | 1 | 9 | 6 |
| Vos. | Selected Prose Readings: Freytag. | 1 | 9 | 6 |
| | *Minor Course: Class A.* | | | |
| Wood, Faust. | Briefwechsel zwischen Schiller und Goethe. | 1 | 7 | 23 |
| Learned. | Prose Composition. | 1 | 27 | 23 |
| Learned, Baker. | Selected Prose Readings: Freytag. | 1 | 27 | 23 |
| Learned, Faust. | Schiller; Lessing; Heine. | 2 | 27 | 23 |
| | *Minor Course: Class B.* | | | |
| Vos, Faust. | Otis (Elementary German); Goethe (Egmont); Riehl; Schiller (Wilhelm Tell). | 4 | 15 | 13 |
| Vos. | Prose Composition. | 1 | 15 | 13 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | *Supplementary Courses.* | | | |
| Vos. | Scientific and Historical Readings: Helmholtz; Freytag. | 2 | 26 | 25 |
| Faust. | German Conversation. (First half-year.) | 2 | 11 | |
| | **Romance Languages.** | | | |
| Elliott. | Old French Seminary: Marie de France. | 2 | 10 | 11 |
| Elliott. | Portuguese: Camoens. (First half-year.) | 1 | 8 | |
| Elliott. | Romance Club. | 1 | 11 | 10 |
| Elliott. | Spanish Philology. | 1½ | 10 | 8 |
| Elliott. | Popular Latin. | 1 | 8 | 9 |
| Menger. | Pèlerinage de Charlemagne. (First half-year.) | 1 | 13 | |
| Menger. | French Phonetics. (First half-year.) | 1 | 13 | |
| Menger. | Old French Exercises. (Second half-year.) | 1 | | 10 |
| Menger. | Italian Literature. (Second half-year,—alternate weeks.) | 1 | | 10 |
| Menger. | Old French Phonology and Morphology. | 3 | 7 | 8 |
| Menger. | Old French Texts. | 2 | 8 | 9 |
| Menger. | Italian. | 3 | 7 | 9 |
| De Haan. | Spanish Literature. (Second half-year.) | 1 | | 10 |
| De Haan. | Spanish. | 2 | 9 | 9 |
| Rambeau, Bonnotte. | French: Major Course. | 5 | 8 | 7 |
| Rambeau, Bonnotte. | French: Minor Course (Class A.): First Section. Second Section. | 5 5 | 19 7 | 17 7 |
| De Haan, Bonnotte. | French: Minor Course (Class B.): First Section. | 5 | 10 | 10 |
| Symington. | French: Minor Course (Class B.): Second Section. | 3 | 6 | 5 |
| | **English.** | | | |
| Bright. | English Seminary: XIV Century Literature. | 4 | 16 | 17 |
| Bright. | History of English Philology. (Lectures.) | 1 | 17 | 17 |
| Bright. | Middle English Grammar. | 1 | 17 | 16 |
| Bright. | Middle English Texts: Pearl; Wyclif. | 1 | 17 | 15 |
| Bright. | Anglo-Saxon. | 2 | 5 | 6 |
| Bright. | Journal Meeting. (Alternate weeks.) | 2 | 16 | 17 |
| Browne. | Caroline Poets. | 1 | 14 | 15 |
| Browne. | Early Scottish Poets. | 1 | 5 | 5 |
| Browne. | English Literature: Major Course. | 2 | 5 | 5 |
| Browne. | English Literature: Minor Course. | 5 | 4 | 4 |
| Greene. | English Literature. | 5 | 15 | 15 |
| Greene. | Rhetoric and Composition: P. H. E. Course. | 2 | 45 | 43 |
| | **Historical and Political Science.** | | | |
| Adams, H. B. | Seminary of History and Politics. (Alternate weeks.) | 2 | 41 | 41 |
| Adams, H. B. | Institutional History. (First half-year.) | 2 | 42 | |
| Adams, H. B. | History of Church and Empire. | 2 | 81 | 81 |
| Adams, H. B. | Prussian History. (Second half-year.) | 2 | | 41 |
| Emmott. | Historical Jurisprudence. (Roman Law.) | 2 | 23 | 18 |
| Emmott. | English Constitutional Law and History. | 2 | 28 | 27 |
| Emmott. | Sources of English History. | 1 | 6 | 10 |
| Vincent. | Historical Conference. (Alternate weeks.) | 2 | 10 | 9 |
| Vincent. | Economic and Social History of Europe. | 2 | 20 | 20 |
| Vincent. | European History. | 3 | 19 | 19 |
| Vincent. | Mediæval and Modern History. (P. H. E.) (Second half-year.) | 3 | | 44 |
| Sherwood. | Theory of Consumption. (Second half-year.) | 2 | | 28 |

| INSTRUCTOR. | COURSES. | *No. of hours per week.* | *No. of students, 1st half-year.* | *No. of students, 2d half-year.* |
|---|---|---|---|---|
| Sherwood. | Recent Economic Literature. | 2 | 5 | 6 |
| Clark, J. B., Sherwood. | Economic Conference. (Alternate weeks.) | 2 | 15 | 16 |
| Sherwood. | Elements and History of Political Economy. | 5 | 26 | 28 |
| Steiner. | American Constitutional History. | 3 | 22 | 23 |
| Kriehn. | Greek and Roman History. (Second half-year.) | 4 | | 11 |
| Kriehn. | Herodotus and Thucydides. | 1 | 16 | 15 |
| Schouler. | American Political History. (Second half-year.) | 3 | | 26 |
| Clark, J. B. | Economic Theory of Distribution. (First half-year.) | 5 | 32 | |
| Wilson. | Administration. (Second half-year—five weeks.) | 5 | | 27 |
| Adams, H. C. | Railway Problems. (Second half-year—four weeks.) | 5 | | 28 |
| Gould. | Social Economics. (Second half-year.) | 1 | | 23 |
| Green, D. I. | Social Science. (First-half-year.) | 1 | 26 | |
| Green, D. I. | Social Science Conference. (Second half-year,—alternate weeks.) | 1½ | | 16 |
| | **PHILOSOPHY.** | | | |
| Griffin. | History of Philosophy. | 1 | 18 | 18 |
| Griffin. | Logic. (Until Christmas.) | 5 | 42 | |
| Griffin. | Psychology. (January to April.) | 5 | | 43 |
| Griffin. | Ethics. (April and May.) | 5 | | 43 |
| | **DRAWING.** | | | |
| Whiteman. | Freehand, Constructive, and Perspective Drawing. | 6 | 59 | 68 |
| Whiteman. | Special Instruction. | 6 | 5 | 2 |
| Geer. | Mechanical Drawing. | 12 | 35 | 28 |

# DEGREES CONFERRED, 1894.

## Doctors of Philosophy.

James Nesbit Anderson, of Williamston, S. C., A. M., University of Virginia, 1887. *Subjects:* Greek, Latin, and Sanskrit. *Thesis:* Some Observations on the Sources of Ovid's Heroides, I, III, VII, X, XII.

*Referees on thesis:* Professors Gildersleeve and Warren.

John Spencer Bassett, of Durham, N. C., A. B., Trinity College, (N. C.), 1888. *Subjects:* History, Economics, and Social Science. *Thesis:* The Constitutional Beginnings of North Carolina (1663–1729).

*Referees on thesis:* Professors Adams and Emmott.

William Julian Albert Bliss, of Washington, D. C., A. B., Harvard University, 1888. *Subjects:* Physics, Electricity, and Mathematics. *Thesis:* On the Apparent Forces between Fine Solid Particles totally immersed in Liquids.

*Referees on thesis:* Professors Rowland and Ames.

James Douglas Bruce, of Bryn Mawr, Pa., A. M., University of Virginia, 1883. *Subjects:* English, French, and Italian. *Thesis:* The Anglo-Saxon Version of the Psalms, and its Relation to the Latin Originals.

*Referees on thesis:* Professors Bright and Browne.

James Dowden Bruner, of Champaign, Ill., A. B., Franklin College (Ind.), 1888. *Subjects:* Italian, French, and History. *Thesis:* The Phonology of the Pistojese Dialect.

*Referees on thesis:* Professor Elliott and Dr. Menger.

John Emery Bucher, of Hanover, Pa., A. C., Lehigh University, 1891. *Subjects:* Chemistry, Mineralogy, and Mathematics. *Thesis:* An Examination of some Methods Employed in Determining the Atomic Weight of Cadmium.

*Referees on thesis:* Professors Remsen and Morse.

Frank Kenneth Cameron, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* A Study of the Reaction of Certain Diazo Compounds with the Alcohols.

*Referees on thesis:* Professors Remsen and Morse.

William Embert Chamberlin, of Oberlin, O., A. B., Oberlin College, 1887. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* A Study of the Action of the Nitrate and Sulphate of Para-diazo-toluene on Methyl Alcohol under Various Conditions.

*Referees on thesis:* Professors Remsen and Morse.

Abraham Cohen, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Mathematics, Astronomy, and Physics. *Thesis:* On Functions Analogous to the *Theta*-Functions.

*Referees on thesis:* Professors Craig and Franklin.

Louis Leaming Forman, of Baltimore, A. M., University of Pennsylvania, 1890. *Subjects:* Greek, Latin, and the History of Philosophy. *Thesis:* The Difference between the Genitive and the Dative used with a Greek Preposition to Denote Supposition.

*Referees on thesis:* Professors Gildersleeve and Spieker.

Edward Curtis Franklin, of Lawrence, Kansas, S. B., University of Kansas, 1888. *Subjects:* Chemistry, Mineralogy, and Mathematics. *Thesis:* A Study of the Action of Ortho- and Meta-diazo-benzene Sulphonic Acids on Methyl and Ethyl Alcohols.

*Referees on thesis:* Professors Remsen and Morse.

Joseph Hendren Gorrell, of Lexington, Va., A. B., Washington and Lee University, 1888. *Subjects:* English, German, and History. *Thesis:* Indirect Discourse in Anglo-Saxon.

*Referees on thesis:* Professors Bright and Browne.

George Perry Grimsley, of Columbus, O., A. B., Ohio State University, 1890. *Subjects:* Inorganic Geology, Organic Geology, and Chemistry. *Thesis:* The Granites of Cecil County in Northeastern Maryland.

*Referees on thesis:* Professors Williams and Clark.

Ross Granville Harrison, of Baltimore, A. B., Johns Hopkins University, 1889. *Subjects:* Animal Morphology, Physiology, and Mathematics. *Thesis:* The Development of the Median and the Paired Fins of Teleosts: A Contribution to the Morphology of the Limbs of Vertebrates.

*Referees on thesis:* Professors Brooks and Howell.

Robert Nelson Hartman, of Baltimore, A. B., Pennsylvania College, 1891. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* A Study of the Reaction between Phosphorus Pentachloride and Parasulphaminebenzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

Jacob H. Hollander, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Economics, History, and Roman Law. *Thesis:* The Cincinnati Southern Railway: A Study in Municipal Activity.

*Referees on thesis:* Dr. Sherwood and Professor H. C. Adams, of the University of Michigan.

Lorrain Sherman Hulburt, of Baltimore, A. B., University of Wisconsin, 1883. *Subjects:* Mathematics, Astronomy, and Physics. *Thesis:* A Class of Transcendental Functions.

*Referees on thesis:* Professors Craig and Franklin.

Masanobu Ishizaka, of Tokio, Japan, Ph. B., Albion College, 1891. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* Christianity in Japan, 1859–1883.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Thomas Atkinson Jenkins, of Gwynedd, Pa., A. B., Swarthmore College, 1887, and Ph. B., University of Pennsylvania, 1888. *Subjects:* French, Italian, and History. *Thesis: L'Espurgatoire Seint Patriz* of Marie de France, published with a study of the language of the author.

*Referees on thesis:* Professor Elliott and Dr. Menger.

Christopher Johnston, of Baltimore, A. M., University of Virginia, 1879. *Subjects:* Assyriology, Hebrew, and Greek. *Thesis:* The Epistolary Literature of the Assyrians.

*Referees on thesis:* Professor Haupt and Professor D. G. Lyon, of Harvard University.

Emory Bair Lease, of Cincinnati, O., A. B., Ohio Wesleyan University, 1885. *Subjects:* Latin, Greek, and Sanskrit. *Thesis:* A Syntactic, Stylistic, and Metrical Study of Prudentius.

*Referees on thesis:* Professors Warren and Smith.

Arthur Stanley Mackenzie, of Dartmouth, N. S., A. B., Dalhousie University, 1885. *Subjects:* Physics, Mathematics, and Chemistry. *Thesis:* On the Attractions of Crystalline and Isotropic Masses at Small Distances.

*Referees on thesis:* Professors Rowland and Duncan.

Edward Payson Manning, of Taunton, Mass., A. B., Brown University, 1889. *Subjects:* Mathematics, Physics, and Astronomy. *Thesis:* On the Representation of a Function by a Trigonometric Series.

*Referees on thesis:* Professors Craig and Franklin.

Charles Carroll Marden, of Baltimore, A. B., Johns Hopkins University, 1889. *Subjects:* French, Spanish, and History. *Thesis:* The Spanish Dialect of Mexico City.

*Referees on thesis:* Professor Elliott and Professor H. R. Lang, of Yale University.

Philip Randle Moale, of Baltimore, A. B., Johns Hopkins University, 1889. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* Para-methoxy-ortho-sulpho-benzoic Acid and its Sulphon-fluoresceïns; and the Action of Absolute Methyl Alcohol on Para-diazo-ortho-toluene Sulphonic Acid in the Presence of Certain Substances.

*Referees on thesis:* Professors Remsen and Morse.

Constance Pessels, of Austin, Texas, B. L., University of Texas, 1886. *Subjects:* English, German, and French. *Thesis:* The Present and Past Periphrastic Tenses in Anglo-Saxon Prose.

*Referees on thesis:* Professors Bright and Browne.

Jesse Siddall Reeves, of Richmond, Ind., S. B., Amherst College, 1891. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* International Beginnings of the Congo Free State.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Arthur Percy Saunders, of Ottawa, Canada, A. B., University of Toronto, 1890. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* The Chlorides of Ortho-sulpho-benzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

Robert Lincoln Slagle, of Hanover, Pa., A. B., Lafayette College, 1887. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* The Double Halides of Tin with Aniline and the Toluidines.

*Referees on thesis:* Professors Remsen and Morse.

Daniel Gurden Stevens, Jr., of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Hebrew, Assyrian, and Greek. *Thesis:* A Critical Commentary on the Songs of the Return, with a Historical Introduction, Linguistic Notes, a Review of the Versions, and Three Indexes.

*Referees on thesis:* Professor Haupt and Professor G. F. Moore, of Andover Theological Seminary.

Frederick Henry Sykes, of Toronto, Ont., A. B., University of Toronto, 1885. *Subjects:* English, French, and German. *Thesis:* A Study of French Elements in Middle English.

*Referees on thesis:* Professors Bright and Browne.

Milo Scott Walker, of Murdoch, O., Ph. B., University of Wooster, 1889. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* The Oxides of Manganese formed by Spontaneous Decomposition of the Manganese Dioxide prepared by treating Manganous Sulphate with Potassium Permanganate.

*Referees on thesis:* Professors Remsen and Morse.

George Francis Weida, of Allentown, Pa., University of Kansas, 1888. *Subjects:* Chemistry, Mineralogy, and Biology. *Thesis:* The Decomposition of the Salts of the Nitro-diazo-benzenes and the Diazo-benzoic Acids with Methyl Alcohol.

*Referees on thesis:* Professors Remsen and Morse.

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## Bachelors of Arts.

John Griffith Ames, Jr., of Washington, D. C.
William Stevenson Baer, of Baltimore.
Adolph Elhart Baker, of Baltimore.
Walter Baumgarten, of Missouri.
Arthur Henry Baxter, of Italy.
Ernest Julius Becker, of Baltimore.
Thomas Pumphrey Benson, of Wellham's Cross Roads, Md.
Thomas Fitz Patrick Cameron, of Baltimore.
Moses S. Cohen, of Baltimore.
Bernard Milton Cone, of Baltimore.
Charles Angelo Conrad, of Baltimore.
Walter Cox, of Bel Alton, Md.
Percy Millard Dawson, of Canada.
Eli Frank, of Baltimore.
Nathaniel Edward Griffin, of Baltimore.
Benjamin Howell Griswold, Jr., of Baltimore.
Richard Jordan Hancock, Jr., of Virginia.
Stephen Cloud Harry, of Baltimore.
Thomas Wood Hastings, of New Jersey.
Conrad Augustine Hauser, of Baltimore.
Herman Frederick Krafft, of Baltimore.

Harry Taylor Marshall, of Baltimore.
George Stevens Maynard, of Washington, D. C.
Louis Wardlaw Miles, of Baltimore.
William Albert Nitze, of Baltimore.
James Piper, of Towson, Md.
John Eugene Howard Post, of Baltimore.
John Hurst Purnell, of Baltimore.
Milton Reizenstein, of Baltimore.
Frank Roy Rutter, of Baltimore.
Simon H. Stein, of Baltimore.
Emerson H. Strickler, of Pennsylvania.
Joseph Pembroke Thom, Jr., of Baltimore.
George Harvey Trull, of Baltimore.
Clinton Gambrill Tudor, of Baltimore.
Malcolm Van Vechten Tyson, of Upper Falls, Md.
Horace Scudder Uhler, of Baltimore.
George Talbot Whitfield, of Florida.
Pere Lethrbury Wickes, Jr., of Baltimore.
Chester Clark Wood, of Washington, D. C.
James Curtis Ballagh, of Virginia (*extra ordinem*).

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## Proficients in Electrical Engineering.

Certificates of Proficiency were given, June 14, 1894, to the following persons who had completed the two years' course in Electrical Engineering:

William Pierce Anderson, of Utah (A. B., Harvard).
John Woodside Corning, of Baltimore.
Lewis Warrington Cottman, of Baltimore.
Harvey Cavendish Darrell, of Baltimore.
Peter Conover Hains, Jr., of Maine (U. S. Naval Academy).
Stephen Quentin Hayes, of Washington, D. C. (A. B., Georgetown University).
Douglas Alexander Howard, of Illinois (U. S. Military Academy).
Andrew Ellicott Maccoun, of Baltimore.
James Warren McCrosky, of Nebraska (S. B., University of Nebraska).
Henry Hutchinson Norris, of Philadelphia.
Charles Edward Phelps, Jr., of Baltimore.
Alfred Magill Randolph, Jr., of Virginia (A. B., Johns Hopkins).
Samuel Reber, of U. S. Army (U. S. Military Academy).
Franklin Roberts, of Baltimore.
Theodore Straus, of Baltimore.
John Saunders Taylor, of Virginia.
Frank McStocker Thomas, of Philadelphia.
Wallace Durant White, of Baltimore.
James Watts Young, of Washington, D. C.

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# REPORT ON THE MARYLAND STATE WEATHER SERVICE.

I have the honor to transmit, in accordance with your request, the following report of meteorological work carried on in connection with the University during the year ending September 1st, 1894.

The Maryland State Weather Service, which was organized in May, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College, and the United States Weather Bureau, was authorized by the Legislature of the State, in the Spring of 1892. By the provisions of the bill, the management and control were vested in the three institutions named, and the headquarters of the service were permanently established at the Johns Hopkins University. Office rooms were assigned in the Physical Laboratory, while the instruments and signals were displayed upon the roof of the building.

The bill, as passed, carried an appropriation of two thousand dollars annually, the continuance of which was again authorized at the last session of the legislature for a period of two years. This amount, which is intended primarily to pay the expenses of printing, admits of the publication of a large amount of data relating to the climate and physical features of the State.

The Maryland State Weather Service is similar in its organization and methods to like services in other States. The personnel consists of voluntary observers, who have been selected at favorable points throughout the State, and of a corps of permanent observers who have been assigned from the National Bureau to take charge of the work at the central office.

The stations connected with the service are of three classes: 1st, those which report meteorological facts; 2d, those which send crop notices; 3d, those which display signals. In a few instances the same person fulfills the duties of all three offices. Connected with the first class there have been 58 observers during the past year, with the second class 111 correspondents, and with the third class 43 displaymen, making 212 persons connected with the Maryland State Weather Service besides the officers at the central office. To all of these the fullest praise is due for the important aid they have rendered in the preparation of the weekly and monthly forms and publications since the organization of the service. Nearly all parts of the State are represented, and it is hoped that the number of observers will steadily increase until every section is provided for.

The sum appropriated by the State government has enabled the printing of monthly Meteorological Reports, extending throughout the year, and of

weekly Crop Bulletins, extending throughout the growing and harvesting seasons. That these publications are appreciated by the people of the State is evidenced by the hearty support they have given in rendering information in regard to the weather and crops, and by the general and complete publication of reports by the newspapers of the State. Two thousand copies of each of the monthly Meteorological Reports have been regularly published, while the edition was increased to six thousand during the period of the World's Fair, and a series of special articles written, setting forth the advantages of the State from a climatic standpoint. During the past year, about two thousand copies of the weekly Crop Bulletin were also regularly printed.

In addition to the regular publications, one hundred sets of a series of ten large Climatic Charts with explanatory text have been prepared, which represent the seasonal and annual temperature and rainfall of the State. It would be advisable to publish a much larger edition of these maps for distribution to public schools and other educational institutions, and for such other uses as would render them available to the public generally, and plans have already been formed with that end in view. The presentation in this graphic manner of the typical features of Maryland climate will be much more readily comprehended than the tabulated statements.

The Biennial Report to the last Legislature, entitled "The Climatology and Physical Features of Maryland," is a general review of the climate of the State, so far as conclusions can be drawn from the data thus far attainable. It is illustrated by maps, diagrams, and tables, which show at a glance its leading climatic features. The data for the general chapters upon the Physical Features of Maryland were largely adapted from the articles written by Professors William Hand Browne, George H. Williams, Milton Whitney, and the writer, for the World's Fair Book of Maryland, and the Monthly Meteorological Reports. The latter portions of the Report containing the summaries of the weather and the crops and, also, the tables for the past two years, were prepared under the supervision of Dr. C. P. Cronk, the Meteorologist in charge.

These various regular and special reports have been sent widely throughout Maryland, into other States, and to foreign countries. They have been most favorably received and have added largely to the spread of information concerning the State of Maryland.

Great advance has been made during the past year in our knowledge of the Physical Features of Maryland, and with the steady growth of interest among all classes of people and the gradual increase in the number of stations, still greater progress may be looked for in the future.

WILLIAM B. CLARK,
*Director, Maryland State Weather Service.*

# REPORT OF THE MARINE LABORATORY. SESSION OF 1894.

To the President of the Johns Hopkins University:

*Sir*:—In accordance with your request, I beg leave to submit the following report of the fifteenth session of the Marine Zoölogical Laboratory.

The laboratory was opened for research, at Beaufort, North Carolina, in a dwelling house rented for the purpose, on April 7th, and the session ended on July 7th, although two members of our party remained at Beaufort three weeks longer to complete their work.

The members of the party were:

W. K. Brooks, *Director*.
George Lefevre, Fellow in Zoölogy.
H. McE. Knower, Fellow in Zoölogy.
D. S. Johnson, Assistant in the Biological Laboratory.
C. P. Sigerfoos, Graduate Student, and special assistant U. S. Fish Commission.
F. S. Conant, Graduate Student.
J. G. Needham, Graduate Student.
T. E. Shields, Graduate Student.
L. Brown, Undergraduate Student.

Mr. Sigerfoos was employed for the summer by the U. S. Fish Commission to study the life history of the oyster and other molluscs of economic value under my supervision.

After many experiments, a way to feed the young oysters during their swimming larval life was discovered, thus doing away with one of the most serious obstacles to the successful propagation of the American oyster from the egg.

Provision was made by the Commissioner of Fisheries, too late to be utilized this season, for the continuance of this work in the aquaria of the Commission at Wood's Holl.

By suspending glass plates from the end of the wharf at Beaufort, and examining them at short intervals, we obtained young oysters in less than an hour after attachment, and in all subsequent stages of development up to maturity. These collections, which are now being studied in the Biological Laboratory, will supply valuable data regarding the conditions most

favorable for a "set of spat," and the rate of growth of young oysters. They also furnish a basis for an anatomical study of the oyster from the beginning of its sedentary life.

The damage to wharves and vessels caused by the "ship-worm" and other wood-eating molluscs is so great that a knowledge of the life history of these injurious animals is most important. Our knowledge of the subject is drawn from European sources, and little is known regarding the history of the American forms, for American writers have contented themselves with abstracts and revisions from foreign works.

The Teredo navalis, which has been studied in Europe, is found at Beaufort, but it is not abundant on our coast, and most of the damage is done by other species, which we find to differ essentially from the published accounts of the life history of Teredo navalis.

Three of the most destructive American species were carefully studied at Beaufort, and Mr. Sigerfoos is now engaged in renewed examination of his material and in the preparation of a report for publication.

My notes on the hydroids and medusae of our southern coast, the accumulation of thirteen seasons at the seashore, have been perfected by this summer's work, as I found several rare species which I had never before obtained in sufficient numbers for thorough study. Two papers on the subject are now in press and two others are ready for publication.

Progress was made in the study of the embryology of Appendicularia, a subject which presents difficulties of a very exceptional character. On one occasion we reared it from the egg, but the unexampled rapidity of its development prevented us from observing it. Eggs which had not begun segmentation when we left them at 2 a. m. had become perfect Appendicularias at 10 a. m.

Researches on the life history of the Chactognathi; the development of the Polyzoa; the life history of the Ascidians; the embryology of Echinoderms and Gasteropods; the ichthyology of Beaufort; and the embryology of Lucifer,—were carried on in the laboratory.

A collection of the fishes of Beaufort was made, and brought to Baltimore for the museum of the Biological Laboratory.

The Superintendent of the U. S. Fish Commission aided us by the loan of collecting apparatus, and we are indebted to the Secretary of War for permission to make use of the Government wharf at Beaufort.

Yours respectfully,

W. K. Brooks,
*Director of the Marine Laboratory.*

October 1, 1894.

# ABSTRACT OF THE REPORT OF THE LIBRARIAN.

The number of bound volumes now belonging to the library is 66,584. The recorded increase in the number of bound volumes during the year is 4,398. Of this number, 2,605 were purchased, 1,194 were presented, 1,139 were volumes now bound for the first time. The number of pamphlets and unbound volumes added during the year was about 2,000. The serials regularly received exceed one thousand.

During the summer the collection of books and pamphlets in the main library and annexes was moved to the new rooms on the fourth floor of McCoy Hall. About thirty thousand volumes have been there arranged in the general reading room, where the principal periodicals are also exhibited. In a room adjoining are the bibliographical collection of several hundred volumes, and the card catalogue of the library. In the stack rooms have been placed the pamphlets and unbound material, and a considerable number of volumes not in immediate demand in the general library.

The historical library was removed to a room on the third floor of the new building, and the classical library and the modern language library to the third and second floors respectively, so that in this building may now be found our entire library collection in all departments save natural and physical science and medicine.

An important special work of the year was the organization of the medical library. The books on medical subjects belonging to the University were brought together with those belonging to the Hospital and were classified and catalogued. A custodian was appointed, who is present in the library through the day. The aggregate number of volumes in the medical collection is about 4,500, and 200 serials are regularly received. The list of serials includes most of the American medical journals and a considerable number of foreign periodicals.

The most important gift of the year was that of Mrs. J. A. J. Creswell, who donated to the library the complete collection of books and papers relating to the Alabama Claims Commission, which was brought together by her husband, the late Senator Creswell, of Maryland. This is stated to be as complete a collection of the written and printed material relating to this important tribunal of international arbitration as is in existence.

Special acknowledgment of gifts should be made:—

To Mr. Jesse Tyson, of Baltimore, for 515 volumes from the library of the late Isaac Tyson;

To Miss Alice S. Morison for 159 volumes of miscellaneous books from the library of the late N. H. Morison;

To the Government of Italy for the collection of documents published by the Italian Royal Columbian Commission;

To the Rev. Alexander Proudfit for 68 miscellaneous volumes from his library;

To Mrs. Burr Porter for 43 volumes from the library of the late Porter Poinier;

To Mr. S. V. Hoffman, of Baltimore, for a number of volumes of value mostly on astronomical subjects;

To Mr. Wm. E. Dodge, of New York, for the volume entitled "History of the Centennial Celebration of the Inauguration of Gen. Washington as President";

To the Committee on the Washington Arch of New York for two copies of the St. Gaudens medal in Bronze;

To Mr. E. Terquem, representing the French Government at Chicago, for the gift of a large number of volumes from the French exhibit.

Mention should also be made of gifts from Lady Harriet Bowman, Professor J. W. Bright, Hon. S. A. Green, Mr. Henry Holt, President Gilman, Professor H. N. Martin, Professor Ira Remsen, Dr. James Schouler, and Dr. S. B. Weeks.

The general library and reading room has been open daily from 9 a. m. to 10 p. m. Mr. M. Brandow and Mr. H. C. F. Miller have been in charge.

The several departmental libraries have been open daily from 9 a. m. to 5 p. m. as follows: the Historical under the charge of Dr. J. M. Vincent; the Classical under the charge of Dr. C. W. E. Miller; the Sanskrit and Semitic under the charge of Mr. D. G. Stevens; the Modern Language under the supervision of Dr. Wood and under the charge of Mr. H. F. Krafft; the Mathematical and Physical under the supervision of Professor Craig and Dr. Ames; the Chemical under the charge of Mr. G. F. Weida; the Biological under the charge of Mr. R. G. Harrison; the Geological under the supervision of Professor Williams and Dr. Clark; the Medical under the charge of Miss E. S. Thies.

Detailed statements of expenditures for the library and classified lists of accessions have been separately submitted.

During the year the New Book Department has received 5,600 volumes of the estimated value of $7,000. Since the opening of this department 76,500 volumes of the invoiced value of $120,000 have been exhibited on its shelves.

N. MURRAY.

September 1, 1894.

# ABSTRACT OF THE REPORT OF THE JOHNS HOPKINS PRESS.

The several journals published by The Johns Hopkins Press have been issued at regular intervals during the year.

1. Volume fifteen of the American Journal of Mathematics, under the editorial direction of Professors Newcomb and Craig has been completed, and three numbers of volume sixteen have appeared. The series of portraits of mathematicians was continued in this volume with the portrait of Professor Lie.

2. Of the American Chemical Journal, under the editorial direction of Professor Remsen, volume fifteen has been completed and six numbers of volume sixteen have been issued.

3. Of the American Journal of Philology, of which Professor Gildersleeve is the editor, volume fourteen has been completed and one number of volume fifteen has appeared.

4. Of the Studies in Historical and Political Science, edited by Professor Adams, seven numbers of the eleventh series and nine numbers of the twelfth series have been published.

Extra volume fourteen of these Studies, "Florentine Life during the Renaissance," by Walter B. Scaife, has also been issued.

5. Numbers 107–114 of the University Circulars have appeared during the year.

6. The second volume of the Beiträge zur Assyriologie, of which Professor Haupt is one of the editors, was completed and the third volume is in progress.

7. The Eighteenth Annual Report of the President of the University was issued in November, 1893, and the Annual Register in May, 1894.

8. The Press has continued in charge of the publications of the Johns Hopkins Hospital, viz: The Hospital Bulletin, appearing nine times yearly; The Hospital Reports, of which five numbers have been published during the year.

9. The fourth, fifth, and sixth parts of the Bibliographia Hopkinsiensis (a list of publications by members of the University, 1876–1893) were issued, containing the bibliography in physics edited by Dr. Ames, the bibliography in astronomy edited by Dr. Poor, and the bibliography in mathematics edited by Professor Franklin and Dr. Cohen.

10. The monograph on the Genus Salpa, by Professor W. K. Brooks, was issued in December. It contains 396 pages, quarto, and 57 colored plates.

11. The description of the Geology and Physical Features of Maryland, prepared by Dr. Williams and Dr. Clark for the Maryland World's Fair Book was separately issued in the autumn.

12. The exhibits sent to the Chicago Exposition by the University and Hospital received the highest awards in several departments, and were received back in good condition at the close of the Exposition.

13. There have been received, in accordance with the regulations, one hundred and fifty copies of the theses accepted for the degree of Doctor of Philosophy from the following named graduates:

Bassett, J. S.—The Constitutional Beginnings of North Carolina.

Bentley, A. F.—The Condition of the Western Farmer.

Bruce, J. D.—The Anglo-Saxon Version of the Book of Psalms commonly known as the Paris Psalter.

Cameron, F. K.—A Study of the Reaction of Certain Diazo Compounds with Alcohols.

Casanowicz, I. M.—Paronomasia in the Old Testament.

Chamberlin, W. E.—A Study of the Action of the Nitrate and Sulphate of Para-Diazo-Toluene on Methyl Alcohol under Various Conditions.

Cohen, A.—On a certain Class of Functions analogous to the Theta Functions.

Craven, A. F.—Absolutism and Individuality in Education.

Forman, L. L.—The Difference between the Genitive and the Dative used with ἐπί to denote Super-position.

Grant, U. S.—The Geology of Kekequabic Lake in Northeastern Minnesota, with special reference to an Augite Soda-Granite.

Grimsley, G. P.—The Granites of Cecil County in Northeastern Maryland.

Hartman, R. N.—A Study of the Reaction between Phosphorus Pentachloride and Parasulphamine-benzoic Acid.

Haynes, G. H.—Representation and Suffrage in Massachusetts, 1620–1691.

Hollander, J. H.—The Cincinnati Southern Railway.

Howe, F. C.—Federal Revenues and the Income Tax.

James, J. A.—English Institutions and the American Indian.

Manning, E. P.—On the Representation of a Function by a Trigonometric Series.

McIlwaine, H. R.—The Struggle of Protestant Dissenters for Religious Toleration in Virginia.

Moale, P. R.—Para-methoxy-ortho-sulpho-benzoic Acid and its Sulphonfluoresceins.

Murray, D. A.—Associate Equations of Linear Differential Equations.

Saunders, A. P.—The Chlorides of Ortho-sulpho-benzoic Acid.

Slagle, R. L.—The Double Halides of Tin with Aniline and the Toluidines.

Walker, M. S.—The Oxides of Manganese formed by the Spontaneous Decomposition of the Manganese Dioxide prepared by treating Manganous Sulphate with Potassium Permanganate, etc.

Weida, G. F.—The Reaction of Salts of the Nitro-diazo-benzenes and the Diazo-benzoic Acids with Methyl Alcohol.

14. The system of exchanges has been conducted as in previous years.

September 1, 1894. N. MURRAY.

# GIFTS TO THE LIBRARY.

The following list enumerates the gifts to the Library from September 1, 1893 to September 1, 1894. The list does not include many exchanges received from the correspondents of the University, nor a large number of official reports and catalogues.

ADAMS, PROF. H. B. General View of Commerce and Industry in the Empire of Japan. Tōkyō, 1893. D.

Society of the Sons of the Revolution: Constitution, By-Laws and Register of the New York Society, New York, 1892;—Year Book. New York, 1893. O.

ADLER, DR. CYRUS. (Author). Bibliography of the Falashas. New York, 1894. O.

ADNEY, TAPPAN. (Author). Milicete Indian Natural History. New York, 1893. O.

AIX, UNIVERSITY OF. Twelve Academic Publications.

ALABAMA GEOLOGICAL SURVEY. Report on the Geological Structure of Murphree's Valley, by A. M. Gibson. Montgomery, 1893. O.

Report on the Coal Measures of Blount Mountain with Map. Montgomery, 1893. O.

ALEXANDER, SILAS. (Secretary of New Mexico). Acts of the Legislative Assembly of the Territory of New Mexico. Santa Fé, 1893. O.

ALGIERS, UNIVERSITY OF. Two Academic Publications.

AMERICAN BANKERS ASSOCIATION. James, E. J. Education of Business Men in Europe. New York, 1893. O.

AMERICAN INSTITUTE OF MINING ENGINEERS. Transactions, Vols. XXI, XXII and XXIII. New York, 1892-94. 3 vols. O.

ANDERSON, WINSLOW. (Author). Mineral Springs and Health Resorts of California. San Francisco, 1892. O.

ARGENTINE REPUBLIC: COMMISSIONER AT COLUMBIAN EXPOSITION:—La Provincia de Entre-Rios. Parana, 1893. O.

Informe sobre la Educacion Secundaria y Normal en la Republica Argentina. La Plata, 1893.

Padilla, Dr. Tiburcio. Organisation et Institutions Sanitaires de la Republique Argentine. Buenos Aires, 1893. O.

ARNOLT, W. MUSS-. (Author). Semitic Words in Greek and Latin, 1893. O.

The Cuneiform Account of the Creation and the Deluge. Chicago, 1894. O.

ATKINSON, EDWARD. (Author). The Unit of Value in all Trade. New York, 1893. O.

BALCH, S. W. (Author). History's Misleading Chronology. 1893. O.

BALTIMORE, COMMISSIONERS OF PUBLIC SCHOOLS. Sixty-fourth and Sixty-fifth Annual Reports. 2 Vols. O.

(JOHN A. ROBB, REGISTER). Financial Reports of the Mayor and City Council, December 31, 1893. Baltimore, 1894. O.

BANTI, DR. A. Il Trasporto di Energia Elettrica da Tivoli a Roma. Roma, 1893. O.

BASLE, UNIVERSITY OF. Sixty Academic Publications.

BATTLE, PROF. KEMP. P. (Author). The Early History of Raleigh: Centennial Address. Raleigh, 1893. O.

BANDY, J. M. (Author). An Analytical Arithmetic. Trinity College, N. C., 1890. D.

BAYLEY, PROF. W. S. (Author). Summary of Progress in Mineralogy and Petrography in 1893. Waterville, 1894. O.

BEACH, CHARLES F. (Author). The Trust an Economic Evolution. New York, 1894. O.
BELLEVUE HOSPITAL: SOCIETY OF THE ALUMNI. Account of Bellevue Hospital. New York, 1893. O.
BENTON, COL. R. C. (Author). The Vermont Settlers and the New York Land Speculators. Minneapolis, 1894. O.
BERGBOHM, DR. JULIUS. Neue Integralrechnung auf Grund der Potenzial- Logarithmal- und Numeralrechnung. Leipsic, 1893. O.
BERGENS MUSEUM. (Norway). Aarsberetning for 1891. Bergen, 1892. O.
Aarbog for 1892. Bergen, 1893. O.
BERLESE, DR. ANTONIO. (Author). La Tignuola del Melo. Padova, 1893. O.
Mytilaspis fulva Targ. Tozzetti. Avellino, 1893. O.
Experienze contro la Cochylis Ambiguella Hübn. Padova, 1893. O.
BERLIN, ROYAL MUSEUM. Verzeichniss der in der Formerei der Königlichen Museen käuflichen Gipsabgüsse. Berlin, 1893. O.
BESANÇON, UNIVERSITY OF. Four Academic Publications, 1892-93.
BISHOP, C. F. (Author). History of Elections in American Colonies. New York, 1893. O.
BLACKSHEAR, PROF. CHARLES C. (Author). Experiments in Inorganic Chemistry. Baltimore, 1893. D.
BODLEIAN LIBRARY. [Anecdota Oxoniensia]. The Palestinian Version of the Holy Scriptures; Earliest Translations of the Old Testament. Oxford, 1893. 2 vols. O.
Taylor, F. The Age of Leo the Tenth in Italy. Oxford, 1894. D.
Robertson, G. S. Comic Iambic Verse. Oxford, 1894. D.
Sidebotham, H. ΑΡΙΣΤΟΦΑΝΗΣ. Oxford, 1894. D.
Rowland, P. F. A Comparison of the English Novelists, 1700–1850. Oxford, 1894. D.
Phillimore, J. S. Capua. Oxford, 1894. D.
Allen, P. De ingenio Alcibiadis. Oxford, 1894. D.
Ogle, A. The Marquis d'Argenson. London, 1893. O.
Five other publications of the University of Oxford.
BOLOGNA, UNIVERSITY OF. Six Academic Publications.
BORDEAUX, UNIVERSITY OF. Ninety-five Academic Publications.
BOSTON: COMMISSIONER OF PUBLIC RECORDS. Sixth Report on the Custody and Condition of the Public Records. Boston, 1894. O.
BOSTON PUBLIC LIBRARY. Fourteen Miscellaneous Volumes.
BOURKE, JOHN G. (Author). Popular Medicine, Customs and Superstitions of the Rio Grande. Fort Riley, 1894. O.
BOVEY, PROF. HENRY T. (Dean, McGill University). McGill University: Formal Opening of the Engineering and Physical Building. Montreal, 1893. O.
BOWMAN, LADY. (Through the Executors of the late Sir Wm. Bowman). Collected Papers of Sir W. Bowman, Bart., F. R. S. 2 vols. London, 1892. O.
BRAINERD, EZRA. (Author). Life and Work in Middlebury, Vermont, of Emma Willard. D.
BRIGHT, PROF. J. W. Acts and Monuments of John Foxe. Ed. S. R. Cattley. 8 vols. London, 1839–41. O.
Andrews, W. E. Review of Foxe's Book of Martyrs. Baltimore. O.
American Notes and Queries. Vols. 1–9. O.
BRINLEY, CHARLES A. (Author). Citizenship. Philadelphia, 1893. O.
BRODHEAD, J. M. N. (Author). Slav and Moslem. Aiken, S. C., 1894. O.
BROOKE, FRANCIS M. (Pres. Valley Forge Park Commission). Topographical Plan of the Revolutionary Camp Grounds at Valley Forge.
BRUCE, W. CABELL. (Author). Mr. Lodge and his Distribution of Ability in the United States. Charlottesville, 1893. O.
BRUSSELS, CAISSE GÉNÉRALE D'ÉPARGNE. Compte-Rendu des opérations de la Caisse générale d'Épargne et de Rétraite. Bruxelles, 1892. Q.
BRYCE, RT. HON. JAMES, M. P. Eighty-one Blue Books and Parliamentary Papers.
BRYMNER, DOUGLAS. (Archivist). Report on Canadian Archives, 1893. Ottawa, 1894. O.
BUCK, WILLIAM J. (Editor). Account of the Buck Family of Bucks Co., Pennsylvania. Philadelphia, 1893. O.

BUISSON, FERDINAND. (Author). Sébastien Castellion: sa vie et son œuvre, 1515 1563. Paris, 1892. O.

BUITZENBORG, BOTANICAL GARDEN. Catalogue of Library of the Garden. Batavia, 1894. Q.

BYRNE, JAMES (Author). Origin of the Greek, Latin and Gothic Roots. 2d edition. London, 1893. O.

CAEN, UNIVERSITY OF. Thirteen Academic Publications.

CALIFORNIA HISTORICAL SOCIETY. Hittell, F. H. George Bancroft and his Services to California. San Francisco, 1893. O.

CALIFORNIA STATE MINING BUREAU. Report of the State Mineralogist with Maps. Sacramento, 1893. 2 vols. O.

CALIFORNIA, UNIVERSITY OF. Shinn, M. W. Notes on the Development of a Child. Berkeley, 1893. O.

Lawson, A. C. Geology of Carmelo Bay. Berkeley, 1893. O.

Palache, C. The Soda-Rhyolite North of Berkeley. Berkeley, 1893. O.

CANADA, GEOLOGICAL SURVEY. Catalogue of the Museum of the Geological Survey. Ottawa, 1893. O.

Annual Report (new series) with Maps. Ottawa, 1893. 2 vols. O.

CARY, PROF. N. W. Simpson, G. B. Anatomy and Physiology of Anodonta Fluviatilis. Albany, 1884.

CAYLEY, PROF. ARTHUR. (Author). Collected Mathematical Papers. Vols. VI and VII. Cambridge, 1893, 1894. 2 vols. Q.

CHANDLER, DR. W. H. (Author). Five of his recent works. Washington, 1893. O.

CHANDLER, S. C. (Author). Second Catalogue of Variable Stars. Lynn. Q.

CHATARD, DR. THOMAS M. (Author). The Abuse of Explosives with Suggestions for Preventive Laws. Washington, 1893. O.

CHILDREN OF SHALAM, TRUSTEE FOR THE, DONA ANA. Oahspe, a new Bible. Boston, 1891. Q.

CHILI, UNIVERSITY OF. Anales de la Universidad. Santiago. 5 vols. O.

CHRISTIANIA, UNIVERSITY OF. Eight Academic Publications.

CISCATA, GIUSEPPE. (Author). Determinazione della Latitudine dell' Osservatorio Astronomica di Padova. Venezia, 1894. F.

Nuova determinazione della Latitudine dell' Osservatorio Astronomica di Padova. Venezia, 1894. F.

CLARK UNIVERSITY. Tracy, F. The Psychology of Childhood. Boston, 1893. O.

CLARKE INSTITUTION. Addresses delivered at Twenty-fifth Anniversary, October 12, 1892. Northampton, 1893. O.

CLARKE, ROBERT & CO. (Publishers). Key to the Hebrew-Egyptian Mystery in the Source of Measures. Cincinnati, 1894. O.

CLERMONT-FERRAND, UNIVERSITY OF. Two Academic Publications.

COBB, N. A. (Author). Nematodes, mostly Australian and Fijian. Sydney, 1893. F.

Host and Habitat Index of the Australian Fungi, 1893. Sydney, 1893. O.

Plant Diseases and their Remedies. Sydney, 1893. O.

COLES, DR. J. A. Coles, Abraham: New rendering of the Psalms into English verse. New York, 1888. D.

COLLINS, JOSEPH V. Text-book of Algebra. Chicago, 1893. O.

COLUMBIA COLLEGE, TRUSTEES OF. Medal struck and Minute adopted on the retirement of Professor Henry Drisler, 1894.

CONGO, INDEPENDENT STATE OF THE. Five Official Bulletins and other Publications.

CONNECTICUT, BUREAU OF LABOR STATISTICS. Eighth and Ninth Annual Reports.

COPENHAGEN, UNIVERSITY OF. Fourteen Academic Publications.

CORNELL UNIVERSITY. Catalogue of the President White Library. 2 vols. O.

Twenty-five years of the Annals of Cornell University Library, 1868–1893. D.

Catalogue of the Rhaeto-romanic Collection presented by W. Fiske. Ithaca, 1894. O.

Proceedings and Addresses at the Twenth-fifth Anniversary of Cornell University Ithaca, 1893. O.

COULTER, PRES. JOHN M. (Author). Work of a University. Inaugural Address, June 15, 1893. Madison, 1894. D.

CRAFTS, REV. W. F. (Author). The Sabbath for Man. D.

CRESWELL, MRS. J. A. J. The Alabama Claims Collection of the late Hon. J. A. J. Creswell. (See report of the librarian.)

CUST, DR. ROBERT N. (Author). Normal Addresses on Bible-Diffusion. London, 1892. O.
The Indo-Chinese Opium Question. Hertford, 1893. O.
The Civic Disabilities of Christian Converts in British India, 1894. O.
Evangelization of the Non-Christian World. London, 1894. O.

DANIEL, DR. JOHN. (Author). A Study of the Polarization upon a Thin Metal Partition in a Voltameter, 1894. D.

DAVIS, HON. J. C. B. (Author). Mr. Fish and the Alabama Claims. Boston, 1893. D.

DIKE, REV. SAMUEL W. Report of the National Divorce Reform League. Boston. O.

DIJON, UNIVERSITY OF. Two Academic Publications.

DIXWELL, E. S. Harvard College Observatory Annals. 6 vols. Q.

DODGE, W. E. History of the Centennial-Celebration of the Inauguration of George Washington as First President of the United States. New York, 1892. F.
Temperance in all Nations. Ed. by J. N. Stearns. 2 vols. New York, 1893. O.

DREXEL INSTITUTE. (Philadelphia). Drexel Institute of Art, Science and Industry. Dedication Ceremonies, December 17, 1891. F. 1893.

DYER, F. W. (Author). The Lingualumina. Part II. London, 1893. O.

ELDRIDGE, D. Massachusetts Coöperative Banks, 1877–1893. Boston, 1893. O.

ELLINGER, J. O. Rambler, Idler, Mirror and Lounger. London, 1825. O.

ERLANGEN, UNIVERSITY OF. Two hundred and eight Academic Publications.

ESKRIDGE, J. T. (Author). Two recent medical pamphlets.

EWING, DR. C. B. (Through Dr. E. A. Andrews). Dictionnaire Botanique et Pharmaceutique. Paris, 1802. O.
Forty-four miscellaneous volumes.

EWING, T. (Author). The Struggle for Freedom in Kansas. New York, 1894. O.

FAUST, DR. E. S. (Author). Ueber einige Derivate des R.-Cocains. München, 1894. O.

FERNALD, PROF. C. H. Clark, H. L. The Birds of Amherst and Vicinity, with introduction by C. H. Fernald. Amherst, 1887. O.

FERREE, BARR. (Author). Chronology of the Cathedral Churches of France. New York, 1894. O.

FEWKES, PROF. J. WALTER. (Author). Dolls of the Tusayan Indians. F.
On Certain Personages who appear in a Tusayan Ceremony. O.

FICKEN, HON. JOHN F. (Mayor of Charleston). Year-Book of Charleston, S. C., 1892 and 1893. 2 vols. O.

FIELD, HON. STEPHEN J. Personal Reminiscences of Early Days in California, with other sketches. O.

FINLEY, LIEUT. JOHN P. (Author). Certain Climatic Features of the two Dakotas. Washington, 1893. Q.

FISHER, RICHARD D. Webster's Dictionary. New Haven, 1806. 1st edition. D.

FITZGERALD, MRS. P. F. (Author). Philosophy of Self-consciousness. London, 1882. O.
A Treatise on the Principle of Sufficient Reason. London, 1887. O.
A Protest against Agnosticism. London, 1890. O.

FOERSTER, FRIEDRICH. (Publisher). Scheffler, H. Beleuchtung und Beweis eines Satzes aus Legendre's Zahlentheorie. Leipsic, 1893. O.
Scheffler, H. Die Aequivalenz der Naturkräfte und das Energiegesetz als Weltgesetz. Leipsic, 1893. O.

FORD, CORYDON. (Author). The Synthesis of Mind. O.

FRANCE, DEPARTMENT OF COMMERCE AND INDUSTRY. Six volumes of publications from its exhibit at the Columbian Exposition.

FRANCE, ÉCOLE DES PONTS ET CHAUSSÉES. Twenty-two volumes of publications from its exhibit at the Columbian Exposition.

FRANCE, DEPARTMENT OF PUBLIC INSTRUCTION. Twenty-nine volumes of publications from its exhibit at the Columbian Exposition.

FRANCE, UNIVERSITY OF. (Faculté de Droit de Paris). One hundred and two Academic Publications.

FREIBURG, UNIVERSITY OF. One hundred and ten Academic Publications.

FUERTES, PROF. E. A. (Author). Sanitary Improvements for the City and Port of Santos, Brazil. New York, 1894. Q.

FUJISAWA, R. (Author). Researches on the Multiplication of Elliptic Functions. Japan. O.

FULTON, R. I. AND TRUEBLOOD, T. C. (Authors). Practical Elements of Elocution. Boston, 1893. D.

GARRETT, P. C. Signs of the Times in Literature, by A. C. Garrett, Ph. D. Philadelphia, 1893. O.

GAUTHIERS-VILLARS ET FILS. (Publishers). De Launay, L. Statistique de la production des Gites Metallifères. Paris. D.

Croneau, A. Construction du navire. Paris. D.

GEORGIA GEOLOGICAL SURVEY. Spencer, J. W. The Paleozoic Group. Atlanta, 1893. O.

GERMAN PUBLISHING HOUSE OF THE REFORMED CHURCH. Sonntagsschul-Gesangbuch der Reformirten Kirche in the U. S.

GIESSEN, UNIVERSITY OF. Forty-eight Academic Publications.

GILDERSLEEVE, B. L. Scherman, L. Materialien zur Geschichte der Indischen Visionslitteratur. Leipsic, 1892. O.

GILMAN, BENJAMIN IVES. (Author). Pyschology of Pain and Pleasure. O.

GILMAN, PRESIDENT D. C. Thirty miscellaneous volumes.

GOODSPEED, PROF. GEORGE S. AND BUCKLEY, E. On the Need of Systematic Study of Religion. O.

GORMAN, HON. A. P. The American Ephemeris and Nautical Almanac for 1897. Washington, 1894.

A large number of public documents.

GÖTTINGEN, K. GESELLSCHAFT DER WISSENSCHAFTEN. Wilhelm Weber's Werke. Vols. V and VI. Berlin, 1894. O.

GÖTTINGEN, UNIVERSITY OF. Ninety-seven Academic Publications.

GRANT, DR. U. S. (Author). Seven of his recent publications.

GREEN, HON. SAMUEL A. The Boundary Line between Massachusetts and New Hampshire. Lowell, 1894. O.

Doggerel ballads and some social distinctions at Harvard College. Boston, 1894. O.

Phillips Brooks. A Memorial. Boston, 1894. D.

Remarks concerning long terms of membership in the Massachusetts Historical Society, 1894. O.

Eighteen volumes of Medical Communications of Massachusetts Medical Society, 1872-93. O.

Bradford. Dialogue concerning the Church, etc. Ed. C. Deane. Boston, 1870. O.

Twenty-four miscellaneous volumes.

GREENE, JACOB L. (Author). Bimetalism or the Double Standard. Hartford, 1893. O.

GREENE, PROF. H. E. (Author). A Grouping of Figures of Speech based upon the Principle of their Effectiveness. Baltimore, 1893. O.

GRENOBLE, UNIVERSITY OF. Four Academic Publications.

GREIFSWALD, UNIVERSITY OF. One hundred Academic Publications.

GROLIER CLUB. Catalogue of Original and Early Editions of English Writers. New York, 1893. O.

Catalogue of Early Printed Books presented to the Grolier Club by D. W. Bruce. New York, 1894. D.

Classified List of Early American Book Plates, by C. D. Allen. New York, 1894. D.

GUGGENHEIMER, R. Address at the New York Normal College. New York, 1894. D.

GUY, EDWARD A. (Author). The New Covenant according to Matthew. Cincinnati, 1888. D.

HACKETT, FRANK W. (Author). Memorial Address delivered at Portsmouth, May 30, 1892. Portsmouth, 1893.

HAGEN, REV. FR., S. J. (Director Georgetown College Observatory). The Photo-chronograph and its Applications. Washington, 1894.

HALLE, UNIVERSITY OF. Thirty-four Academic Publications.

HAMBURG, MEDICINAL INSPECTOR. Bericht des Medicinal-Inspectorats über die medicinische Statistik des Hamburgischen Staats, 1892. Q.

HAMMOND, HON. N. J. (Author). The University of Georgia. Constitutions of U. S. and of Georgia not Anti-Christian. Atlanta, 1893. O.

HARJES, JOHN H. (Paris). Mr. Whitelaw Reid in France. Paris. O.

HARRIS, PROFESSOR J. RENDEL. (Author). Stichometry. London, 1893. O.

HARVARD COLLEGE LIBRARY. Dante Society. Annual Reports 1–8. Cambridge.
Dante Collections in the Harvard College and Boston Public Libraries. By W. C. Lane, Cambridge, 1890. O.

HARVARD COLLEGE ASTRONOMICAL OBSERVATORY. Annals of the Observatory. (4 vols.). Waterville and Cambridge. Q.

HAYES, DR. C. WILLARD. (Author). Hayes, C. W. and Campbell, M. R. Geomorphology of the Southern Appalachians. Washington, 1894. O.

HEATH, D. C. & Co. Orndorff, W. R. Laboratory Manual. Boston, 1893. D.
Five miscellaneous volumes.

HEIDELBERG UNIVERSITY OF. One hundred and four Academic Publications.

HEIMWEH, JEAN. (Author). L'Alsace-Lorraine and La Paix. Paris, 1894. S.

HEMENWAY EXPEDITION. Fewkes, J. W. and Stephen, A. M. The Pa-lû-lû-kofi-ti. O.

HINKLEY, JOHN. (Secretary). Reports of the American Bar Association. Volumes VIII, XIV and XV. 3 vols. O.

HOADLEY, C. J. (State Librarian). Public Records of the State of Connecticut, 1776–1778. Hartford, 1894. O.

HOBBS, PROF. W. H. Publications of the Wisconsin Academy of Sciences, 1892–93.

HOFFMAN, SAMUEL V. Johnson, W. W. The Theory of Errors and Method of Least Squares. 1st ed. New York, 1893. D.
Lockyer, J. N. The Dawn of Astronomy. New York, 1894. O.
Webb, T. W. Celestial Objects. Ed. T. E. Espin. London, 1893. D.
Todd, M. L. Total Eclipses of the Sun. Boston, 1894. S.
Waldo, F. Modern Meteorology. London, 1893. D.
Bailly, J. L. Histoire de l'Astronomie Ancienne. 2 ed. Paris, 1781. Q.
Bailly, J. L. Histoire de l'Astronomie Moderne. 3 vol. Paris, 1785. Q.
Bailly, J. L. Traité de l'Astronomie Indienne et Orientale. Paris, 1787. Q.

HOLDEN, PROF. E. S. Publications of the Lick Observatory. Vol. 2. Sacramento, 1894. Q.

HOLLAND, SOCIETY OF SCIENCES. Oeuvres complètes de Christian Huygens. Vol. V. La Haye, 1893. Q.

HOLMES, BAYARD. (Author). Is it Desirable in Medical Schools to Teach Methods of Investigation in Medical Literature? Chicago. D.

HOLT, HENRY & Co. (Publishers). Falckenberg, R. History of Modern Philosophy. Tr. by A. C. Armstrong. New York, 1893. O.
De Quincey, T. Joan of Arc and the English Mail Coach. Ed. J. M. Hart. New York, 1893. D.
Symonds, J. A. Short History of Renaissance in Italy. New York, 1894. D.
Coleridge, S. T. Selections from his Prose Writings. Ed. H. A. Beers. New York, 1893. S.
Baker, G. P. Specimens of Argumentation. New York, 1893. S.
Bumpus, H. C. Laboratory Course of Invertebrate Zoology. New York, 1893.
Woodhull, J. F. First Course in Science. 2 vols. New York, 1894. O.
Taine, H. A. The Modern Regime. Tr. Durand. Vol. 2. New York, 1893. O.
Hittell, J. S. History of the Mental Growth of Mankind. 4 vols. New York, 1893. O.
Heinrich Heine's Life told in his own words. Ed. G. Karpeles. New York, 1893. D.
Lounsbury, T. R. History of the English Language. New York, 1894. D.
Duruy, V. History of Modern Times. Tr. E. A. Grosvenor. New York, 1894. D.
Fifteen miscellaneous volumes.

HORNE, DR. J. F. (Author). Trephining in its Ancient and Modern Aspect. London, 1894. D.

ILES, PROF. M. W. (Author). Curdling of Milk. O.

ILLINOIS, BUREAU OF LABOR STATISTICS. Seventh Biennial Report, 1892. Springfield, 1893. O.

INDIAN RIGHTS ASSOCIATION. Forty-eight pamphlets relating to the American Indian.

INDIANA ACADEMY OF SCIENCE. Proceedings, 1892. Brookeville. O.

INDIANA COLLEGE ASSOCIATION. Addresses, &c., 16th Annual Session, 1892. Indianapolis, 1893. O.

INDIANA, UNIVERSITY OF. Inaugural Address of Joseph Swain, President of Indiana University, June 14, 1893. Indianapolis, 1893. O.

IOWA GEOLOGICAL SURVEY. Keyes, C. R. Coal Deposits of Iowa. Des Moines, 1894. O.

IOWA STATE HISTORICAL SOCIETY. Shambaugh, B. N. Contributions to the Early History of Iowa. Iowa City, 1893. O.

ITALY: MINISTER OF AGRICULTURE, INDUSTRY AND COMMERCE. Annuario Statistico Italiano, 1892. Roma, 1893. O.

Bulletin de l'Institut international de statistique. Tome 1-7. 1886-93. O.

Notizie sulle condizioni demografiche, edilizie ed administrative, etc. Roma, 1893. O.

Cause di Morte, statistica degli anni 1891 e 1892. Roma, 1894. Q.

ITALY: MINISTER OF PUBLIC INSTRUCTION. Raccolti di documenti e studi publicati della R. Commissione Colombiana. 5 vols. F.

Le Opere di Galileo Galilei, Vol. III, part I. Firenze, 1892. Q.

JACKSON, H. R. (Author). American Loyalty. Savannah, 1893. O.

JACOBI, DR. A. (Author). Non nocere. New York, 1894. O.

JACOBY, PROF. HAROLD. (Author). The Rutherford Photographic Measures of the Group of the Pleiades. New York, 1892. O.

The Rutherford Photographic Measures of the Stars about B Cygni. New York, 1892. O.

JAMESON, PROF. J. F. (Editor). Stickney, C. Know-Nothingism in Rhode Island. Providence, 1894. O.

JAPANESE COMMISSIONER WORLD'S COLUMBIAN EXPOSITION. Five volumes and nineteen pamphlets descriptive of the resources of the Japanese Empire.

JENA, UNIVERSITY OF. Ninety-two Academic Publications.

JONES, CHARLES E. Memorial Resolutions at the 16th Annual Reunion, Confederate Survivors Association, on the death of Hon. C. C. Jones. Augusta, 1894. O.

JULIEN, DR. A. A. (Author). Notes of Research on the New York Obelisk. New York, 1893. O.

KANSAS, ACADEMY OF SCIENCE. Transactions, 1891-92. Topeka, 1893. O.

KANSAS, BOARD OF RAILROAD COMMISSIONERS. Eleventh Annual Report. Topeka, 1894. O.

KEELER, PROF. JAMES E. (Author). Physical Observations of Mars made at the Allegheny Observatory, 1892. London, 1893. Q.

Spectroscopic Observations of Nebulae. Q.

KIEL, UNIVERSITY OF. Ninety-five Academic Publications.

KIRKLAND, DR. J. H. Proceedings at his Inauguration as Chancellor of Vanderbilt University. Nashville, 1893. O.

KÖNIGSBERG, UNIVERSITY OF. Thirty-three Academic Publications.

LANG, COL. T. F. Report of the State of Maryland Gettysburg Monument Commission. Baltimore, 1891. O.

LATROBE, HON. FERDINAND C. Mayor's Message and Reports of the City Officers for 1893. Baltimore, 1893. O.

LAVAL UNIVERSITY (Quebec). Lernay, G. Petites Fantaisies Littéraires. Quebec, 1894. D.

Baillairgé, C. Nouveau Dictionnaire Français. Quebec, 1888. D.

Chauveau. L'Instruction Publique du Canada. Quebec, 1876. O.

Lefaivre, A. Essai sur la Litérature Allemande. Quebec, 1881. O.

Chouinard, H. J. J. B. Fête Nationale des Canadiens Français, Quebec, 1881-89. Quebec, 1890.

Siege of Quebec in 1759, copied from a manuscript brought to London by D. B. Viger. Quebec, 1836.

L'Abbé Joseph Aubry. Montreal, 1875. D.

Beaudet, ed. Recensement de la ville de Quebec for 1716. Quebec, 1887. O.

Laflamme, J. C. R. Report of the Geological Observations in the Saguenay Region. Montreal, 1894. O.

Dionne, C. E. Catalogue des Oiseaux de la province de Quebec. Quebec, 1889. O.

Laroche-Héron, C. de. Les Servantes de Dieu en Canada, 1853. Montreal, 1855. O.

Hamel, T. E. Address.

LEA BROTHERS & CO. (Publishers). Norris, W. F. and Oliver, C. A. Text book of Ophthalmology. Philadelphia, 1893. O.

LEANDER MCCORMICK OBSERVATORY. Publications. Vol. I. Charlottesville, 1893. O.

LEE & SHEPARD. (Publishers). (For a friend of the author). Wood, H. The Political Economy of Natural Law. Boston, 1894. D.

LEFFINGWELL, DR. ALBERT. (Author). Rambles through Japan. London, 1892. D.

LEVASSEUR, E. (Author). La France et ses Colonies. Paris, 1890. 3 vols. O.

LEVY, DR. ERNST VON. (Author). Die Hamburger Gero-Bank und ihr Ausgang. Berlin, 1891. O.

LEWIS, MRS. H. CARVILL. Lewis, H. C. Glacial Geology of Great Britain and Ireland. London, 1894. O.

LEYDEN, OBSERVATORY OF. H. G. van de Sande-Bakhuyzen. Résultats d'une compensation du réseau des longitudes, 1860; Rapport sur les Longitudes, &c.; Verslag van der staat der sterrenwacht te Leyden, 1890-92, 1892-93.

Four volumes of the Annals of the Observatory. Hague and Harlem, 1868-75. Q.

LEYDEN, UNIVERSITY OF. Five Academic Publications.

LILLE, UNIVERSITY OF. Sixteen Academic Publications.

LIVERPOOL, BIOLOGICAL SOCIETY. Proceedings and Transactions. Liverpool, 1894. O.

LOGAN, W. S. (Author). Siege of Cuantla. New York, 1893. O.

LORD, EDWIN C. E. (Author). Ueber die Basalte des Fichtelgebirges. Heidelberg, 1894 O.

LOUVAIN, UNIVERSITY OF. Twelve Academic Publications.

LOVELAND, A. E. (Author). On the Anatomy of Taenia Crassicollis, Rud. O.

LOWREY, CHARLES E. (Author). The University Library, its larger recognition in Higher Education. O.

LUND, UNIVERSITY OF. Acta Universitatis Lundensis. Tome 29. Lund, 1892-93. Q. Thirty-eight Academic Publications.

LYMAN, BENJAMIN S. (Author). Age of the Newark Brownstone. O.

The name "Newark" in American Stratigraphy. Philadelphia, 1893. O.

LYONS, UNIVERSITY OF. One hundred and sixteen Academic Publications. Annales. 11 vols. O.

MACFARLANE, PROF. ALEX. (Author). On the Definitions of the Trigonometric Functions. Boston, 1894. O.

Principles of Elliptic and Hyperbolic Analysis. Boston, 1894. O.

MACKELLAR, T. (Author). Hymns and Metrical Psalms. Philadelphia, 1893. D.

MADRID ASTRONOMICAL OBSERVATORY. Resumen de las Observaciones Meteorologicas efectuadas en la Peninsula. Madrid, 1893. O.

MAINE STATE LIBRARY. Memorial Addresses on the Life and Character of James G. Blaine. Augusta, 1893. O.

MALAQUIN, PROF. A. (Author). Recherches sur les Syllidiens. Lille, 1893. O.

MARSH, PROF. O. C. List of Scientific Publications of, 1861-92. New Haven, 1893. O.

MARSHALL, H. R. (Author). Are there Special Nerves for Pain? New York, 1894. O.

MARTELLO, TULLIO. (Author). L'Economia politica anti-Malthusiana e il socialismo. Venice, 1894. O.

MARTIN, PROF. H. NEWELL. Icones Zootomicae. Ed. by J. V. Carus. Leipsic, 1857. F.

MARTIN, SIR JOHN BIDDULPH. (Author). The "Grasshopper" in Lombard Street. London, 1892. O.

MARYLAND HISTORICAL SOCIETY. Archives of Maryland, July 7 to December 31, 1776. Q.

Daves, E. G. Maryland and North Carolina in the Campaign of 1780–81. Baltimore, 1893. O.

MASON, REV. GEORGE L. (Author.) Captive Cathay. Shanghai, 1893. O.

MASON, DR. LEWIS D. (Author). Differential Diagnosis of Alcoholic Coma. 1894. O.

MASSACHUSETS PUBLIC RECORDS COMMISSIONERS. Sixth Report on the Custody and Condition of the Public Records of Parishes, Towns and Counties. By R. T. Swan, Commissioner. Boston, 1894. O.

MCSHERRY, RICHARD M. (Author). Talks on Taxation in Maryland. Baltimore, 1893. O.

MELON, PAUL. (Author). L'Enseignement supérieure et l'Enseignement technique en France. 2d edition. Paris, 1893. O.

MERCER, H. C. (Author). Trenton and some Gravel Specimens compared with Ancient Quarry Refuse in America and Europe.

MERRIAM, DR. L. S. U. S. Land Office Reports, 1869–91. 23 volumes. Washington, 1869–91. O.

MEXICO, METEOROLOGICAL OBSERVATORY. Boletin di Agricultura, Mineria e Industrias. Mexico, 1892–93. 8 vols. O.

MICHIGAN STATE LIBRARY. Cook, A. J. Birds of Michigan. 1893. O.

Michigan and its Resources. Lansing, 1893. O.

MICHIGAN, UNIVERSITY OF. Adams, C. D. The Control of the Purse in the U. S. Government. 1894. O.

MINNESOTA UNIVERSITY LIBRARY. Brewster, H. W. Sensation and Intellection, etc. Minneapolis, 1893. O.

MISSOURI GEOLOGICAL SURVEY. Winslow, A. Preliminary Report on Coal Deposits of Missouri. Jefferson City, 1891. O.

Nason, F. L. Report on Iron Ores. Jefferson City, 1893. O.

Schweitzer, P. Report on Mineral Waters. Jefferson City, 1892. O.

Biennial Report of State Geologist. Jefferson City, 1892. O.

The Higginsville Sheet in Lafayette County with Map. Jefferson City, 1892. O.

MITCHELL, C. P. (Author). The Enlargement of the Sphere of Women. London, 1892. O.

MITCHELL, DR. S. WEIR. (Author). Catalogue of his Scientific and Literary Work. O.

MONACO, S. A. LE PRINCE ALBERT DE. Résultat des Campagnes Scientifiques Accomplies sur son Yacht. Monaco, 1893. 6 vols. 1894. F.

MONROE, WILL S. (Author). Joseph Neef and Pestalozzianism in America. O.

Education of Feeble-Minded Children in California. O.

Educational Labors of Henry Barnard. Syracuse, 1893., S.

MONTPELLIER, UNIVERSITY OF. Eighty-one Academic Publications.

MONTT, HON. PEDRO. Rosales, J. A. Instruccion publica. Santiago, 1890–91. 2 vols. O.

Recapilacion de leyes constitutionales y administrativas. Santiago, 1893. O.

Pissis, A. Geografia fisica de la Republica de Chile. Paris, 1875. E.

Pissis, A. Atlas de la geografia fisica de la Republica de Chile. Paris, 1875. Q.

MORISON, MISS A. S. (from the library of the late Dr. N. H. Morison).

Christian Examiner. 62 vols.

Lardner, Nathaniel, Works. 10 vols.

Monthly Journal American Unitarian Association. 10 vols.

American Association for the Advancement of Science. 11 vols.

London Quarterly Review. 2 vols.

Westminster Review. 2 vols.

Edinburgh Review. 2 vols.

Unitarian Annual Register.

Fifty-nine miscellaneous volumes.

MOSCOW, IMPERIAL UNIVERSITY OF. Matériaux par le Comité d'Organization des Congrès des expéditions scientifiques. Moscow, 1893. O.

MOSSO, PROF. UGOLINO. (Author). Seven of his recent publications. Turin, 1893. O.

MUNICH, UNIVERSITY OF. Bibliotheca Döllingeriana, Bibliothek des Professors J. J. J. von Döllinger. München, 1893. O.

MÜNSTER, UNIVERSITY OF. Twenty-three Academic Publications.

NANCY, UNIVERSITY OF. Eighteen Academic Publications.

NATIER, MARCEL. (Author). Des Polypes de la cloison des fosses nasales. Paris, 1893. D.

NATIONAL ACADEMY OF SCIENCES. Vol. VI. Eighth Memoir. Studies on the Brain of Limulus polyphemus. Washington, 1892. Q.

NEBRASKA, STATE HISTORICAL SOCIETY. Transactions and Reports. Vol. V. Lincoln, 1893. O.

NEW ENGLAND CONFERENCE OF EDUCATIONAL WORKERS. Conference on Manual Training. Ed. Isabel C. Barrows. Boston, 1893. O.

NEW HAMPSHIRE STATE LIBRARY. A collection of State Documents.

NEW JERSEY BUREAU OF STATISTICS OF LABOR AND INDUSTRIES. Fifteenth Annual Report, 1892. Trenton, 1893. O.

NEW JERSEY GEOLOGICAL SURVEY. Annual Report of the State Geologist for 1892. Trenton, 1893. O.

NEW JERSEY STATE LIBRARY. New Jersey Archives, Vols. XVII, XVIII. 2 vols. Trenton, 1893. O.

NEW SOUTH WALES GOVERNMENT BOARD FOR INTERNATIONAL EXCHANGES. Historical Records of New South Wales with maps. 2 vols. O.

Catalogue of Free Public Library. Sidney. O.

Five public documents of the Government of New South Wales.

NEW YORK ACADEMY OF SCIENCES. Annals of the Academy. 5 vols. O.

Transactions of the Academy. 5 vols. O.

NEW YORK METEOROLOGICAL OBSERVATORY. Reports for 1892–3.

NEW YORK STATE LIBRARY. Legislative Documents, etc. 26 vols.

NEW YORK, UNIVERSITY OF THE CITY OF. SCHOOL OF PEDAGOGY. Smith, A. F. Mind Evaluation for Teaching Purposes. O.

NEWBURY, PROF. SPENCER B. (Author). Natural and Artificial Cements in 1892. Washington, 1893. O.

Report on Chemical and Pharmaceutical Products. Washington, 1893. O.

NORWEGIAN NORTH ATLANTIC EXPEDITION. Grieg, J. A. Ophiuroidea (XXII). Christiania, 1893. F.

Vandstandsobservationer, V Hoefte. Christiania, 1893. Q.

OBERLIN COLLEGE. Tribute to the memory of John Millott Ellis, D. D. Oberlin, 1894. D.

O'CONOR, REV. JOHN F. X., S. J. (Editor). The Latin Play of The Two Captives of Plautus. By the students of St. Thomas Xavier. New York, 1893. O.

ONTARIO, MINISTER OF EDUCATION. Report for the year 1893. Toronto, 1894. O.

Seventh Annual Report of the Canadian Institute. Toronto, 1894. O.

OSLER, DR. W. Proceedings of the American Association for the Advancement of Science, 1848–50. Philadelphia, 1849–50. O.

Royal Society of Canada. Proceedings and Transactions. Montreal, 1887–93. 5 vols. Q.

Dominion Annual Register and Review for 18 years of the Canadian Union. Toronto. 4 vols. O.

PACKARD, PROF. A. S. A Study of the Transformations and Anatomy of Lagoa crispata. O.

PARIS, UNIVERSITY OF. Five hundred and thirty-two Academic Publications.

PENNSYLVANIA GEOLOGICAL SURVEY. Atlas to final report; Geological Maps.

PENNSYLVANIA STATE LIBRARY. Twenty-six Public Documents.

PENNSYLVANIA STATE MEDICAL SOCIETY. Transactions. Vol. XXIV. Philadelphia, 1893. O.

PENNSYLVANIA, UNIVERSITY OF: ALUMNI ASSOCIATION. Biographical Catalogue of the Matriculates of the College, 1749–1893. Philadelphia, 1894. O.

PERTZ, MRS. GEORGE H. Autobiography and Letters of George Henry Pertz. O.

PHELPS, HON. C. E. (Author). Juridicial Equity, Abridged. Baltimore, 1894. O.

PHILADELPHIA COLLEGE OF PHYSICIANS. Transactions. 3d Series. Vol. 15. Philadelphia, 1893. O.

PHILLIPS, DANIEL E. (Author). The End of Education. Nashville, 1894. O.

PICKERING, PROF. E. C. Harvard College Observatory Annals. Vol. XVIII. 1893. Q.

PIETTE, ED. (Author). L'époque éburnéenne et les races humaines de la période glyptique. St. Quentin, 1894. O.

PIHL, O. A. L. (Author). Occulting Micrometers and their Value as applied to exact Astronomical Measurements. Christiania, 1893. Q.

PITTSBURGH ACADEMY OF SCIENCE AND ART. Very, F. W. Hail Storms. O.

POITIERS, UNIVERSITY OF. Four Academic Publications.

POOLE, DR. WILLIAM F. (Author). The University Library and the University Curriculum. Chicago, 1894. D.

POOLE, MURRAY E. (Author). History of Edward Poole of Weymouth and his descendants. Ithaca, 1893. O.

POOR, DR. CHARLES L. Transactions of the American Institute of Electrical Engineers, 1890-91-92. New York. 3 vols. O.

PORTER, MRS. BURR. Forty-five volumes from the Library of the late Porter Poinier.

PORTER, M. B. (Author). Spherics. O.

PORTIER, PROF. B. (Author). Carrés diabolique de 9 et du Carré satanique de 9. 2d Edition. Alger, 1893. O.

POWELL, DR. ALFRED H. Trial of Hon. Samuel Chase before the United States Senate. Baltimore, 1806. S.

PROVIDENCE RECORD COMMISSIONERS. Early Records of the Town of Providence, Vols. III, IV and V. Providence, 1893. 3 vols. O.

PROUDFIT, REV. ALEXANDER, D. D. Titi Livii Historiae, ed. A. Drakenborch. 15 vols. O.
Tite-Live, Histoire Romaine, trans. Dureau de Lamalle et Noël. 17 vols. O.
Tacite, trans. Dureau de Lamalle et Noël. 5 vols. O.
Thirty-one miscellaneous volumes.

QUINLEY, DR. W. F. (Author). The Yard or the Metre. Wilmington, Del., 1891. O.

RANDOLPH, PROF. L. S. (Author). The Economic Element of Technical Education. New York, 1894. O.

REMSEN, PROF. IRA. Bunsen, Robert. Gasometriche Methoden. 2d edition. Braunschweig, 1877. O.
Roscoe H. and Lunt, J. Inorganic Chemistry for beginners. New York, 1893. O.
Zune, A. J. Traité général d'Analyse des Beurres. 2 vols. Paris. O.
Reissert, A. Chinolin. Braunschweig, 1889. O.
Metzger, J. Pyridin, Chinolin und deren Derivate. Braunschweig, 1885. O.
Reverdin and Fulda. Tabellarische Uebersicht der Naphtalinderivate, etc. Basel, 1894. 2 vols. O.

RENNES, UNIVERSITY OF. Fourteen Academic Publications.

RICHMOND COLLEGE LIBRARY. Poindexter, C. Captain John Smith and his Critics. Richmond, 1893. O.

RICOTTI, GIUSEPPE. (Author). La pazzia e la sua influenza a nel secolo XIX. Chieti. F.

ROGERS, MISS ELIZA. Rogers, A. M. Emendations in Aeschylus, etc. Baltimore, 1894. O.

ROME, OBSERVATORY OF THE VATICAN. Publications of the Observatory. Rome, 1893. Q.

ROSEN, P. G. (Author). Projet de mésure d'un Arc du Meridien de 4° 20′ au Spitzberg. Stockholm, 1893. Q.

ROYAL HISTORICAL SOCIETY. Transactions. New Series. Vol. VIII. London, 1893. O.

RYLANDS, T. GLAZEBROOK. (Author). The Geography of Ptolemy Elucidated. Dublin, 1893. Q.

SAIGO, COUNT YORIMICHI. Annual Report of the Health of the Japanese Navy, 1892. Tokyo, 1892.

ST. BARTHOLOMEW'S HOSPITAL. Reports. Vol. XXIX. London, 1893. O.

ST. LAWRENCE UNIVERSITY. Robinson, N. L. The St. Lawrence University; an Historical Sketch. Syracuse, 1894.

ST. PAUL'S SCHOOL. (Concord, N. H.) Eliot, S. George Cheyne Shattuck. A Memorial Address. Concord, 1893. D.

ST. PETERSBURG, IMPERIAL ACADEMY OF. Memoirs. 7th Series. Volumes 1–34, 38, 40, 41. Bulletin. Volumes 1–25, and New Series, 3, 1–3.

SANFORD, DR. E. C. Minor Studies from the Psychological Laboratory of Clark University. O.

SCHEINER, DR. J. (Author). Der grosse Sternhaufen im Hercules Messier 13. Berlin, 1892. Q.

SCHOULER, DR. JAMES. (Author). Law of the Domestic Relations. 4th edition. Boston, 1889. O.

Treatise on the Law of Wills. 2d edition. Boston, 1892. O.

SCOTLAND, FISHERY BOARD OF. Eleventh Annual Report. Edinburgh, 1893. O.

SCOTT, J. F. (Author). Hydrothionuria. D.

SHEEHAN, J. V. & Co. Ford, Corydon. The Child of Democracy. 1894. D.

SHERRARD, J. E. (Compiler). Illustrated Official Handbook of the Exhibition at Melbourne. Melbourne, 1894. O.

SIEMENS AND HALSKE ELECTRIC CO., BERLIN. Wissenschaftliche Abhandlungen der Physikalisch-Technischen Reichsanstalt. Berlin, 1894. F.

SLAFTER, REV. E. F. (Author). Enlargement of the Diocesan Library of Massachusetts. Boston, 1893. O.

SMITH, PROF. C. MICHIE. Madras Meteorological Observatory. Hourly Observations, 1856-61. Madras, 1893. Q.

——— ——— ———. (Author). Results of Observations of the Fixed Stars made with the Meridian Circle. Madras, 1893. Q.

SMITH, CAPT. J. DONNELL. (Editor). Enumeratio plantarum Guatemalensium. Vol. 3. Oquawkae, 1893. O.

SMITH, HARLAN I. (Author). Work in Anthropology at the University of Michigan. Ann Arbor, 1894. S.

SNELL, SIMEON. (Author). On the Relations of some Occupations to Eyesight. London, 1894. O.

SOCIETY OF COLONIAL WARS IN THE STATE OF MARYLAND. Annual Register of Officers and Members of the Society of Colonial Wars, and Constitution. New York, 1894. O.

SOLIS-COHEN, DR. S. (Author). Eight of his recent publications.

SOUTO, DR. A. ANTONIO DO. (Author). Relation Médico-légale de l'affaire Urbino de Freitas. Oporto, 1893. O.

SPENCER, HERBERT. (Author). A Rejoinder to Professor Weismann. London. O.

STEVENS, E. A. Stevens, B. F. The First Steam Screw Propeller Boats to Navigate the Waters of any Country. 1890. O.

STEVENS, W. LE CONTE. (Author). The Diffraction of Sound. Philadelphia, 1889. O.

STOKVIS, DR. B. J. (Author). Voordrachten over Geneesmiddelleer. Haarlem, 1893. O.

STRASSBURG, UNIVERSITY OF. Ninety-six Academic Publications.

SUNSET CLUB. Year-book, 1893, 1894. Chicago. 2 vols. O.

SWAIN, PRES. JOSEPH. (Author). Inaugural Address as President of Indiana University. Indianapolis, 1893. O.

TAYLOR, SAMUEL M. (Compiler). Election Laws of the State of Ohio and of the United States. Norwalk, 1893. O.

TEXAS GEOLOGICAL SURVEY. Cope, E. D. Preliminary report of the Vertebrate Paleontology of the Llano Estacado. Austin, 1892. O.

Eight reprints from the Fourth Annual Report, 1892. Austin, 1893. O.

THOMAS, PROF. CYRUS. (Author). Are the Maya Hieroglyphs Phonetic? Washington, 1893. O.

THUILLIER, COL. H. R. (Surveyor General of India). Account of the Operations of the Great Trigonometrical Survey of India, Vols. X–XV. 6 vols. O.

Catalogue of Stars, January 1, 1892. 1893. O.

TISCHNER, AUGUST. (Author). Le système solaire se mouvant. Leipzig, 1894. D.

TOLMAN, HERBERT C. (Author). Critical and supplementary notes to his Guide to Old Persian Inscriptions. Chapel Hill, 1894.

TOLMAN, DR. W. H. (Editor). Handbook of Sociological Information with special reference to New York City. New York, 1894. O.

TRELEASE, PROF. W. (Author). Further Studies of Yuccas and their Pollination. 1893. O.

TOULOUSE, UNIVERSITY OF. Forty Academic Publications.

TRINITY COLLEGE, DUBLIN: PROVOST AND SENIOR FELLOWS. Records of the Tercentenary Festival of the University of Dublin, July, 1892. Dublin, 1894. Q.

TÜBINGEN, UNIVERSITY OF. Eighty-five Academic Publications.

TYSON, JESSE. Four hundred and sixty-three volumes and fifty pamphlets (geological and chemical) principally from the library of the late Isaac Tyson.

UPSALA, UNIVERSITY OF. Rudbeck, O. Bref rörande Upsala Universitet utgifna med inledning af Claes Annerstedt. Upsala, 1893. O.

Sundberg, A. N. Om dem svenska kyrkoreformationen och Upsala Möte. Upsala, 1893. O.

Scriptores Rerum Svecicarum medii aevi. 4 vols. Upsala, 1818. F.

Twenty-one Academic Publications.

URUGUAY, CONSULATE GENERAL OF. Castro, J. J. Treatise on the South American Railways and the Great International Lines with Maps.

Ten Histories of Uruguay and its resources with maps.

Four Histories of Uruguay by the Count St. Foix.

VAN DER HEYDEN, DR. W. Description of a Newly Devised Sanitary Building. Yokohama, 1893. O.

VENEZUELA, UNITED STATES OF. The United States of Venezuela in 1893. New York. 1893. O.

VERMONT STATE LIBRARY. Twenty-one volumes of State Publications.

VIENNA, UNIVERSITY OF. Five Academic Publications.

VOLTA BUREAU. Twenty-seven publications of the Bureau.

WASHBURN OBSERVATORY OF THE UNIVERSITY OF WISCONSIN. Meridian Circle Observations, 1887-92. Madison, 1893. Q.

WASHINGTON MEMORIAL ARCH (N. Y.) COMMITTEE, (R. W. GILDER, SECRETARY). Two copies of the St. Gaudens medal in bronze.

WATERHOUSE, PROF. S. (Author). Importance of Ramie to the Agricultural Prosperity of our Gulf States. St. Louis, 1894. O.

WEEKS, PROF. S. B. (Author). General Joseph Martin and the War of the Revolution in the West. Washington, 1894. O.

A large number of books and pamphlets relating to the early history of North Carolina.

WELCH, PROF. W. H. (Author). Etiology of Acute Lobar Pneumonia considered from a Bacteriological Point of View. 1892. O.

General considerations concerning the Biology of Bacteria, Infection and Immunity. 1894. O.

WELCKER, ADAIR. (Author). Flavia. Berkeley. S.

WESLEY, W. & SON. (Publishers). Whewell, W. Principles of English University Education. 2d Edition. London, 1838.

WESTCHESTER CO. (N. Y.) HISTORICAL SOCIETY. Ferguson, H. Sir Edmund Andros. October 28, 1892. O.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO. Pope, F. L. Evolution of the Electric Incandescent Lamp. New York, 1894. O.

WHITING, DR. HAROLD. (Author). Questions on General Physics. Berkeley. O.

WIEGAND, HENRY H. Commercial Instruction organized by the Paris Chamber of Commerce. Paris, 1893. Q.

WILDE, HENRY. (Author). On the Origin of Elementary Substances. London. Q.

WILLETT, J. R. Heating and Ventilation of Residences. Chicago, 1893. O.

WILLIAM AND MARY COLLEGE LIBRARY. Two hundredth anniversary of the charter of the College, 1693-1893. Richmond, 1894. O.

WILLIAMS COLLEGE LIBRARY. Centennial Anniversary of Williams College, 1793-1893. 1894. O.

WILLIAMS, PROF. G. H. Distribution of Ancient Volcanic Rocks along the Eastern Border of North America. Chicago, 1893. O.

WINCHELL, PROF. N. H. Geological and Natural History Survey of Minnesota. Report for 1892. Minneapolis, 1893. O.

Spurr, J. E. Iron-bearings Rocks of the Mesabi Range. Minneapolis, 1894. O.

WISCONSIN STATE HISTORICAL SOCIETY. Mills, S. Readings from the Book of Nature. Chicago, 1893. D.

WOMAN'S BOARD OF WORLD'S FAIR MANAGERS OF CONNECTICUT. Selections from the Writings of Connecticut Women. Norwalk, 1893. Q.

WOODHULL, PROF. JOHN F. (Author). First Course in Science. New York, 1893. 2 vols. O.

WYOMING: SUPERINTENDENT OF PUBLIC INSTRUCTION. Biennial Report, 1892. Cheyenne, 1892. O.

School Laws of the State of Wyoming in force March 1, 1893. Cheyenne, 1893. O.

YALE UNIVERSITY LIBRARY. Wylie, L. J. Studies in the Evolution of English Criticism. Boston, 1894. D.

YONKERS HISTORICAL AND LIBRARY ASSOCIATION. Atkins, F. A. The Manor of Philipsburgh. 1894. O.

YOUNG MEN'S CHRISTIAN ASSOCIATION HISTORICAL LIBRARY.

Year-book of the Young Men's Christian Associations of North America. New York, 1894. O.

ZAHM, PROF. J. A. (Author). Moses and Modern Science. Philadelphia. O.

ZERR, G. B. M. Döllen, W. Stern-Ephemeriden auf das Jahr 1893. Dorpat, 1893. O.

ZIMMERMANN, DR. A. (Author). Botanische Mikrotechnik. Tübingen, 1892. O.

Pflanzenzelle, Band II. 1, and three other of his recent publications. Tübingen, 1893. O.

ZINKEISEN, F. (Author). Die Anfänge der Lehngerichtsbarkeit in England. Berlin, 1893. O.

ZURICH NATURAL HISTORY SOCIETY. Vierteljahrschrift, Band 1–34. Zurich. 34 vols. O.

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Reports and other current publications of the year have also been received from the societies and institutions named below. This list does not include publications received from many of the foreign and American correspondents of the University to whom exchanges are sent.

American Association for the Advancement of Science; American Historical Association; American Bible Society; American Board of Commissioners for Foreign Missions; American Dermatological Society; American Museum of Natural History; American Orthopaedic Association; Astor Library; American Economic Association; Baltimore City Library; Baltimore Boys' Home Society; Baltimore Corn and Flour Exchange; Baltimore Society for the Suppression of Vice; Baltimore Health Department; Baltimore and Ohio Railroad; Baltimore Young Mens' Christian Association; Baltimore Yearly Meeting of Friends; Boston Museum of Fine Arts; Boston Public Library; Bowdoin College Library; Brooklyn Library; Brooklyn Department of Public Instruction; Buffalo Library; Buffalo Historical Society; Buffalo Society of Natural Sciences; Canadian Institute (Toronto); Carnegie Free Library (Alleghany, Pa.); Chicago Public Library; Chicago Department of Public Works; Cincinnati Public Library; Cleveland Public Library; Columbia (S. C) City Schools; Connecticut Agricultural Experiment Station; Cornell University Library; Dayton Public Library; Detroit Public Library; Edinburgh University Library; Enoch Pratt Free Library; Friends' Free Library (Germantown); Fletcher Free Library; Glasgow University Library; Illinois State Medical Society; Japan, Imperial University of; Jersey City Public Library; Lenox Library; Liverpool Public Library; Los Angeles Public Library; Maimonides Library; Maine Geological Society; Maryland Insurance Commissioner; Maryland Penitentiary; Maryland Society for the Germans; Maryland Medical and Chirurgical Faculty; Maryland House of Reformation; Maryland Hospital for the Insane; Maryland School

Tax Commissioners; Maryland State Board of Health; Maryland School for the Deaf and Dumb; Maryland Prisoners Aid Association; Mason Science College; Massachusetts Board of Education; Massachusetts State Library; Massachusetts State Board of Health; Massachusetts Board of Railroad Commissioners; Melbourne University Library; Michigan University Library; Milwaukee Public Library; Minneapolis Public Library; Missouri Botanical Garden; National Association of Wool Manufacturers; Newark Public Library; New Bedford Public Library; New Jersey Board of Education; New York Free Circulating Library; New York Mercantile Library; New York Society of Mechanics and Tradesmen; New York State Commission in Lunacy; New York Reform Club; Newton (Mass.) Free Library; North Carolina Medical Society; Nova Scotia Public Schools; Ohio Mechanics Institute; Ohio Board of Public Schools; Ontario Department of Agriculture; Panjab College Library; Peabody Institute; Peabody Educational Fund; Perkins Institution; Philadelphia Library; Philadelphia Mercantile Library; Portland (Oregon) Library; Providence Public Library; Queensland Department of Agriculture; Salem Public Library; St. Andrews University Library; St. Louis Mercantile Library; St. Louis Public Library; San Francisco Board of Public Schools; San Francisco Mercantile Library; San Francisco Public Library; Slater Fund Trustees; Swarthmore College Library; Thomas Wilson Sanitarium; Toledo Public Offices; Wisconsin Academy of Sciences; Worcester Public Library.

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The University is indebted, as in previous years, for many and valuable gifts from the several Governmental Departments in Washington. In addition to a large number of unbound books and pamphlets the following should be specially acknowledged.

Department of Agriculture, including the Weather Bureau. 14 vols.

Department of the Interior, including the Geological Survey and Bureau of Education. 25 vols.

Civil Service Commission. 5 vols.

Commissioner of Fish and Fisheries. 12 vols.

Coast and Geodetic Survey. 6 vols.

Interstate Commerce Commission. 3 vols.

Department of Labor. 5 vols.

Navy Department, including the Naval Observatory. 8 vols.

Department of State, including the Bureau of American Republics. 15 vols.

Treasury Department. 6 vols.

Senate and House of Representatives. 40 vols.

Smithsonian Institution, including the Bureau of Ethnology. 16 vols.

War Department, including the Surgeon-General's Office. 18 vols.

Post Office Department. 8 vols.

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[Issued November 24, 1894.]

TWENTIETH

# ANNUAL REPORT

OF THE PRESIDENT OF THE

# Johns Hopkins University

Baltimore, Maryland

1895

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BALTIMORE
THE JOHNS HOPKINS PRESS
1895

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## 1895.

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* Arranged in the order of their accession to office.

# REPORT.

To the Trustees of the Johns Hopkins University:—

*Gentlemen:*

I have the honor to present my twentieth Annual Report as President of the Johns Hopkins University.

The academic staff numbered during the year eighty-six teachers, including sixteen professors and instructors in the Johns Hopkins Medical School. The number of students enrolled was five hundred and eighty-nine, of whom two hundred and sixty were residents of Maryland, and three hundred and one came here from thirty-eight other States of the Union, and twenty-eight from foreign countries. Among the students were four hundred and twelve already graduated, coming from one hundred and sixty-four colleges and universities; there were one hundred and twenty-six matriculates (or candidates for the degree of Bachelor of Arts); and there were fifty-one admitted as special students, to pursue courses of study for which they seemed fitted, without reference to graduation. The degree of Bachelor of Arts was conferred upon thirty-seven candidates, and forty-eight were promoted to the degree of Doctor of Philosophy.*

*The statistics have been prepared, as in former years, by the Registrar, Mr. T. R. Ball.

The following table indicates the enrolment of students in each year since the University was opened in the autumn of 1876:

| | Total Enrolled. | Graduates, (incl. Fellows.) | Matriculates. | Non-Matriculates. |
|---|---|---|---|---|
| 1876–77 | 89 | 54 | 12 | 23 |
| 1877–78 | 104 | 58 | 24 | 22 |
| 1878–79 | 123 | 63 | 25 | 35 |
| 1879–80 | 159 | 79 | 32 | 48 |
| 1880–81 | 176 | 102 | 37 | 37 |
| 1881–82 | 175 | 99 | 45 | 31 |
| 1882–83 | 204 | 125 | 49 | 30 |
| 1883–84 | 249 | 159 | 53 | 37 |
| 1884–85 | 290 | 174 | 69 | 47 |
| 1885–86 | 314 | 184 | 96 | 34 |
| 1886–87 | 378 | 228 | 108 | 42 |
| 1887–88 | 420 | 231 | 127 | 62 |
| 1888–89 | 394 | 216 | 129 | 49 |
| 1889–90 | 404 | 229 | 130 | 45 |
| 1890–91 | 468 | 276 | 141 | 51 |
| 1891–92 | 547 | 337 | 140 | 70 |
| 1892–93 | 551 | 347 | 133 | 71 |
| 1893–94 | 522 | 344 | 123 | 55 |
| 1894–95 | 589 | 412 | 126 | 51 |
| *1895–96 | 557 | 369 | 147 | 41 |

During nineteen years, two thousand seven hundred and thirty-eight individuals have been enrolled as students, of whom eleven hundred and fifty are registered as from Maryland (including nine hundred and thirty-four from Baltimore) and fifteen hundred and eighty-eight from fifty-nine other States and countries. Sixteen hundred and forty-four persons entered as graduate students, and ten hundred and ninety-four entered as undergraduates. Of the undergraduates, two hundred and fifty-three have continued as graduate students,

*At the beginning of the year.

many of them proceeding to the degree of Doctor of Philosophy. It thus appears that eighteen hundred and ninety-seven persons have followed graduate studies here.

The following table indicates the geographical distribution of the students each year since the opening, as shown by the Annual Registers:

| | *Of Md.* | *Not of Md.* | | *Of Md.* | *Not of Md.* |
|---|---|---|---|---|---|
| 1876–77 | 59 | 30 | 1886–87 | 162 | 216 |
| 1877–78 | 71 | 33 | 1887–88 | 199 | 221 |
| 1878–79 | 76 | 47 | 1888–89 | 183 | 211 |
| 1879–80 | 97 | 62 | 1889–90 | 215 | 189 |
| 1880–81 | 95 | 81 | 1890–91 | 235 | 233 |
| 1881–82 | 97 | 78 | 1891–92 | 273 | 274 |
| 1882–83 | 106 | 98 | 1892–93 | 266 | 285 |
| 1883–84 | 123 | 126 | 1893–94 | 260 | 262 |
| 1884–85 | 130 | 160 | 1894–95 | 260 | 329 |
| 1885–86 | 130 | 184 | | | |

The attendance upon the courses given in some of the principal subjects has been as follows during the last five years:

| | 1890–91. | 1891–92. | 1892–93. | 1893–94. | 1894–95. |
|---|---|---|---|---|---|
| Mathematics and Astronomy, | 85 | 98 | 118 | 115 | 132 |
| Physics, | 98 | 138 | 145 | 123 | 156 |
| Chemistry, | 114 | 135 | 127 | 119 | 130 |
| Mineralogy and Geology, | 30 | 27 | 28 | 32 | 26 |
| Biology, | 59 | 72 | 58 | 60 | 65 |
| Pathology and Bacteriology, | 40 | 44 | 57 | 35 | 66 |
| Greek, | 61 | 59 | 49 | 45 | 49 |
| Latin, | 70 | 73 | 77 | 67 | 68 |
| Sanskrit, etc., | 35 | 46 | 41 | 46 | 60 |
| Semitic Languages, | 26 | 22 | 18 | 18 | 24 |
| German, | 104 | 121 | 110 | 103 | 152 |
| French, Italian, etc., | 84 | 91 | 80 | 83 | 83 |
| English, etc., | 84 | 94 | 84 | 85 | 140 |
| History and Political Science, | 143 | 165 | 192 | 154 | 107 |
| Logic, Psychology, Ethics, | 72 | 61 | 58 | 63 | 51 |

Since degrees were first conferred, in 1878, four hundred and fifty-nine persons have attained the Baccalaureate degree, and three hundred and fifty-eight have been advanced to the degree of Doctor of Philosophy, as appears from the following table,—the whole number of individuals graduated being seven hundred and forty-eight:

| | *B. A.* | *Ph. D.* | | *B. A.* | *Ph. D.* |
|---|---|---|---|---|---|
| 1877–78 | 0 | 4 | 1886–87 | 24 | 20 |
| 1878–79 | 3 | 6 | 1887–88 | 34 | 27 |
| 1879–80 | 16 | 5 | 1888–89 | 36 | 20 |
| 1880–81 | 12 | 9 | 1889–90 | 37 | 33 |
| 1881–82 | 15 | 9 | 1890–91 | 50 | 28 |
| 1882–83 | 10 | 6 | 1891–92 | 41 | 37 |
| 1883–84 | 23 | 15 | 1892–93 | 40 | 28 |
| 1884–85 | 9 | 13 | 1893–94 | 41 | 33 |
| 1885–86 | 31 | 17 | 1894–95 | 37 | 48 |
| | | | | 459 | 358 |

The following table indicates the enrolment of students in the Medical School since its opening in October, 1893:

| | *Candidates for the Degree of M. D.* | *Doctors of Medicine.* | *Total Enrolment.* |
|---|---|---|---|
| 1893–94 | 18 | 65 | 83 |
| 1894–95 | 51 | 76 | 127 |
| *1895–96 | 86 | 36 | 122 |

The following promotions and appointments have been made during the year, the tenure of office being fixed, in each case, by the action of the Trustees:

*In the Philosophical Department:—*

To be Associate Professors:

ALEXANDER S. CHESSIN, Ph. D., *Mathematics and Mechanics.*

CHARLES L. POOR, Ph. D., *Astronomy.*

SIDNEY SHERWOOD, Ph. D., *Economics.*

JOHN M. VINCENT, Ph. D., *History.*

*At the beginning of the year.

To be Associates:

HERBERT G. GEER, M. E., *Mechanical Engineering.*
EDWARD B. MATHEWS, Ph. D., *Mineralogy.*

To be Lecturers:

CLEVELAND ABBE, Ph. D., LL. D., *Climatology.*
DAVIS R. DEWEY, Ph. D., *Social Economics.*
GROVE K. GILBERT, A. M., *Physiographic Geology.*
JAMES E. HUMPHREY, Sc. D., *Botany.*
FREDERICK M. WARREN, Ph. D., *French Literature.*
BAILEY WILLIS, M. E., C. E., *Structural and Stratigraphic Geology.*
FREDERICK H. WINES, LL. D., *Sociology.*

To be Instructors and Assistants:

RUFUS M. BAGG, Ph. D., *Geology.*
THOMAS S. BAKER, Ph. D., *German.*
JAMES C. BALLAGH, Ph. D., *History.*
ABRAHAM COHEN, Ph. D., *Mathematics.*
HARRY C. JONES, Ph. D., *Physical Chemistry.*
GEORGE C. KEIDEL, Ph. D., *Romance Languages.*
JOHN R. SCOTT, A. M., *Vocal Culture.*
CHARLES P. SIGERFOOS, S. B., *Zoölogy and Embryology.*
HARRY L. WILSON, A. M., *Greek and Latin.*

*In the Johns Hopkins Medical School:—*

To be Associate Professor of Pathology:

SIMON FLEXNER, M. D.

To be Associates:

WILLIAM W. RUSSELL, M. D., *Gynecology.*
WILLIAM S. THAYER, M. D., *Medicine.*

To be Instructors and Assistants:

JOSEPH C. BLOODGOOD, M. D., *Surgery.*
GEORGE BLUMER, M. D., *Pathology.*
THOMAS S. CULLEN, M. B., *Gynecology.*
GEORGE W. DOBBIN, M. D., *Obstetrics.*
THOMAS B. FUTCHER, M. B., *Medicine.*
ADOLPH G. HOEN, M. D., *Photo-Micrography.*
FRANK R. SMITH, M. D., *Medicine.*

Two highly valued members of the Academic Staff resigned their positions at the end of the academic year,—one of them to become a leading editorial writer in a daily newspaper of Baltimore, the other to become a professor in the University of Pennsylvania,—Dr. Franklin and Dr. Learned.

Professor Franklin was enrolled as a student of Mathematics under Professor Sylvester at the opening of the University in 1876, and he rose through the various grades of promotion—the Fellowship, the Instructorship, and the Associateship—to the rank of Professor of Mathematics. Throughout this period of nineteen years, his ability and fidelity and his skill as a teacher commanded the respect of his pupils, his colleagues, and the Board of Trustees.

Professor Learned, who has been connected with the University for eleven years, came here in 1884 as a graduate student, having taken his first degree in Dickinson College. He was soon promoted to be a Fellow and then successively to be an Instructor, an Associate, and an Associate Professor. In all these stations, he sustained a high reputation for scholarship and character. In his new position he becomes the head of the department of German,—the study to which his life is devoted.

The vacancy created in the leadership of geological studies was filled, in the autumn of 1894, by the promotion of Dr. William B. Clark, who had been an efficient collaborator with Dr. Williams. At the same time, Dr. Edward B. Mathews was made Instructor in Mineralogy, and two gentlemen connected with the United States Geological Survey, Mr. G. K. Gilbert and Mr. Bailey Willis, were appointed to give prolonged courses of lectures,—the former, upon Physiographic Geology, the latter, on Stratigraphic and Structural Geology.

The coöperation of these gentlemen has been most serviceable and will be continued during another year. Professor Cleveland Abbe, of the United States Weather Bureau, has also promised a course of lectures on Climatology.

The year has been in all respects one of quiet and satisfactory progress. There have been but few unusual incidents,—no large accessions to our resources.

The new hall, which we owe to the bequest of Mr. John W. McCoy, has proved to be admirably adapted to the study of Languages, Literature and History. In addition to our own uses, it has been the place of assembly for a large number of literary and scientific societies, including many that are local and others that have come to Baltimore from a distance. Among the associations chiefly composed of persons living at a distance from Baltimore, that have met here during the year, are these:—The American Bankers' Association; the Association of Colleges and Preparatory Schools in the Middle States and Maryland; the American Society of Naturalists; the American Physiological Society; the American Morphological Society; the Geological Society of America; the American Gynecological Society; and the American Academy of Medicine.

The distinctive event of the year has been the condemnation by the city, through the regular processes of law, of an estate bequeathed to the University by its founder—the property known as "Clifton,"—which was for many years the summer residence of Johns Hopkins.

"Clifton" came to the University under the following clause of the founder's will, viz: "I give, devise and bequeath unto the Johns Hopkins University, . . . . my country

place known as "Clifton," containing about 330 acres." It was this simple language which constituted the absolute and unconditional devise of this valuable property to the University. In the total number of acres (three hundred and thirty) supposed to be contained in the entire tract, there resulted, by actual survey, a deficiency of seventeen acres.

In the recent condemnation, the price allowed to the University by a fair and honorable jury after hearing all that could be said, on both sides, respecting the value of the property, was $710,000. Although this was less than the Trustees had hoped to receive, they acquiesced in the decision.

Previously, in 1879, forty-four acres, two roods and twenty-four perches of the original bequest from Mr. Hopkins were taken by the city, by condemnation, for a reservoir; and, in 1892, the University sold to the city, for a gate house, one rood and eighteen perches. In 1892, the Baltimore and Ohio Railroad, by condemnation, became the owner of fifteen and seven hundred and sixteen thousandth acres which were taken for the use of the Belt Railroad.

The lectures provided by the liberality of Mr. Eugene Levering were given, in the autumn of 1894, by Professor W. M. Ramsay, D. C. L., formerly of Aberdeen and now of Glasgow, on The Journeys of St. Paul. The learning of this scholar and his personal familiarity with the places referred to made this course one of particular interest to all who study carefully the apostolic age.

The Turnbull lectures were omitted during the year, as the lecturer selected to give the next course was not able to come until the spring of 1896. The fifth series may then be ex-

pected from the Rev. Professor George A. Smith, of Glasgow, on the Poetry of the Hebrews.

By the liberality of Mr. J. B. Noel Wyatt, Architect, of Baltimore, provision has been made for the delivery (in the autumn of 1895) of three lectures upon the History of Architecture. Mr. Henry Van Brunt is to speak on Classical Architecture; Professor W. R. Ware, on Gothic Architecture; and Mr. C. Howard Walker, on the Architecture of the Renaissance. These lectures are designed to interest the students of the University and other educated persons in the principles of one of the noblest arts, and especial acknowledgments are due to the gentleman who enabled the University to provide this means of instruction.

A course of lectures on the Donovan foundation were given by Professor C. T. Winchester, of Wesleyan University, upon some representative Victorian writers, especially Carlyle, Clough, Arnold, Tennyson, and Browning.

Rev. Solomon Schechter, Reader in the Talmud in the University of Cambridge, England, gave a lecture before the students of the Oriental Seminary on the subject of Rabbinical Theology.

Six lectures on educational subjects were given in the spring to the graduate students, on successive Saturday mornings, by six members of the faculty, namely: Messrs. Warren, Adams, Smith, Brooks, Griffin, and the President.

Dr. J. Rendel Harris, formerly connected with this University, and now of the University of Cambridge, England, gave two lectures on the discovery of the new Syriac Gospels at the Convent of St. Katherine on Mount Sinai.

The birthday of George Peabody was observed, February 18, 1895, by the delivery of an address in Levering Hall. The

speaker was the Rev. A. D. Mayo, who has spent many years in the observation of the progress of southern education, a movement largely promoted by the munificence of George Peabody.

Arrangements have been made, by the liberality of Mrs. George H. Williams, for the delivery of lectures next year, and probably in future years, on the subject of Geology. Thus the name and influence of our departed colleague are to be held in constant remembrance. It is expected that the first series of these lectures will be delivered in the year 1896 by Sir Archibald Geikie, Director of the Geological Survey of the United Kingdom.

Hon. William T. Harris, U. S. Commissioner of Education, has continued his valuable services by giving to the historical students a course of lectures on the Educational Influence of Art and Literature.

Commemoration Day, February 22, 1895, was observed by an assembly of all the members of the University in the large hall of the McCoy building. The principal speaker was the Honorable Seth Low, LL. D., President of Columbia College in New York, who took for his theme, "A City University." The discourse was a vigorous defence of the advantages of a municipal environment to a great institution of learning and was full of lessons to the citizens of Baltimore respecting the relation of the Johns Hopkins University to the city in which it is placed. This discourse was printed in *University Circular* No. 118, for April, 1895.

In addition to the principal discourse, short addresses were made by Professor Remsen, on the discovery of "Argon," and by the President, on contributions to electrical science that have been made in this University.

On this occasion two young men were promoted to the degree of Doctor of Philosophy, and one to that of Bachelor of Arts.

Commencement was held on the thirteenth day of June in the Academy of Music. The principal addresses on this occasion were made by Professor Franklin, on the Art of Clear Thinking, and by Professor Learned, on the Study of German Literature.

Forty-six bachelors were promoted to the degree of Doctor of Philosophy, and thirty-six undergraduates were admitted to the degree of Bachelor of Arts. There were ten proficients in Applied Electricity who received formal certificates of their attainments.

As in former years, the University continues to receive important gifts from the citizens of Baltimore and others who are interested in its welfare. These are among the most important of such gifts made within the last twelve months:

Mr. G. W. Gail, of Baltimore, has purchased and presented to our library the valuable collection of books pertaining to Biblical and Oriental literature which was made by the late Professor August Dillmann, the well-known Orientalist of the University of Berlin. This collection includes several thousand books and pamphlets. They have already been received at the University, and, as this report is going through the press, they are being arranged and catalogued. A special room is set apart to receive them, which will be known as the "Dillmann Room," and will be used as the Seminary for the instruction of students in Hebrew and other Semitic languages, under Professor Haupt. The gift is one of the most important that the library has ever received and will certainly give an

impulse to a most important department of study. Further reference to it will be made when the books are placed in order and the room appropriately fitted up. It brings pleasantly to mind the gift of the Bluntschli Library, in 1882, by the German residents of Baltimore.

From President Low, of Columbia College, the Library has received a well bound set of a new encyclopedia, entitled La Grande Encyclopédie, in forty volumes,—a memento of his visit to this University on our last Commemoration Day.

A marble bust of the late George H. Calvert, by Hiram Powers, has been given to the University by Mrs. Calvert. Mr. Calvert took a deep interest in the success of the Johns Hopkins University from its earliest days. As a descendant of Lord Baltimore, as a former resident of Maryland, and as a man of letters, he rejoiced in the establishment and growth of this institution, and it is a great pleasure to have his likeness placed among mementos of men of scholarship and character which have been collected by the University.

A bust in plaster of the late Robert Goodloe Harper, the distinguished statesman of Maryland, has been presented by Mrs. John H. B. Latrobe, through her son Col. Osmun Latrobe. The bust was modelled in 1819 by an Italian artist at Rome.

A portrait of Professor George H. Williams, painted by Mr. Robert G. Hardie, the well-known artist of New York, has been given to the University. The donors were the former colleagues and pupils of Mr. Williams. A memorial tablet is to be placed in the geological rooms by his parents.

From Columbia College we have received a copy of the medal that was struck and a copy of the minute that was

adopted in honor of the jubilee of Professor Henry Drisler, the eminent Hellenist.

A large map of Palestine in relief, constructed upon the basis of the work of the Palestine Exploration Society, was given to the University by Dr. Howard A. Kelly.

Mr. S. V. Hoffman has continued his gifts to the astronomical observatory by presenting, for its use, a valuable chronograph.

The report of the Librarian, as given in the Appendix, calls attention to several other gifts, among the more noteworthy of which are those received from the King of Siam, the Prince of Monaco, and the Governments of Italy, France, the Argentine Republic, and the United States.

An important edition of the Talmud in twelve folio volumes has been presented by Mr. David Sulzberger, of Philadelphia; and Mr. S. P. Avery, of New York, has added to his other acceptable gifts a copy of the celebrated illustrated Bible, known as the Macklin Bible, together with four other volumes.

The Sprague Electric Elevator Company generously gave to the University a very considerable part of the expenses incurred in constructing the excellent electric elevators which are constantly running in McCoy Hall.

The Monson (Maine) Slate Company, of Boston, presented to the Geological Laboratory several choice pieces of slate, adapted to blackboard use, which were taken from their quarries.

Prizes offered by individuals for the encouragement of the art of literary expression have been welcomed. The particulars respecting these gifts are given in *University Circular* No. 120, July, 1895.

The John Marshall Prize was awarded in 1895 to Albert Shaw, Ph. D., for his book entitled "Municipal Government in Great Britain" and to Amos G. Warner, Ph. D., for his work entitled "American Charities: A Study in Philanthropy and Economics."

The prize of one hundred dollars, offered for the best essay by a Bachelor of Arts of this University of not more than five years' standing, was awarded to W. Stuart Symington, Jr. (A. B., 1891), the subject of his essay being "The Influence of the Medici on Literature and Learning." The Committee of Award consisted of Professors Bright, Browne, and Greene.

The prizes of thirty dollars and twenty dollars respectively, offered to members of the undergraduate class that entered in October, 1893, were awarded to Charles B. Torsch (the first prize) for his essay entitled "A Review of Lodge's Life of Washington," and to Arthur W. Machen, Jr. (the second prize) for his essay entitled "Why Americans should study Greek." The Committee of Award consisted of Professors Adams, Browne, and Smith.

The prize of fifty dollars, for the encouragement of public speaking by the undergraduates, was awarded to Arthur C. Watkins, whose address, on "Napoleon Bonaparte," was considered the best of seven delivered in Levering Hall before an audience of students and their friends. The judges were Messrs. Skipwith Wilmer and Allan McLane, Jr., and Professor Elliott.

A prize of one hundred dollars for an essay on "The Relation of Chemistry to the Useful Arts" has been offered by a friend of the University. The award has not yet been made.

The publications of the University have been carried forward upon the same plans as in former years.

The various journals have been thoroughly sustained. The American Journal of Mathematics has completed its seventeenth volume; the American Journal of Philology, its fifteenth volume; the American Chemical Journal, its seventeenth volume; the Historical Studies now number thirteen volumes of the regular series and thirteen extra volumes; the Johns Hopkins University Circulars have reached the conclusion of Volume XIV.

Measures are in progress for the establishment of a journal of experimental medicine.

In addition to these serials, an important volume has been published by the former pupils and friends of Professor H. Newell Martin. This is numbered the third, in the series of memoirs proceeding from the Biological Laboratory. It includes the contributions to physiology made by our colleague during his residence in Baltimore, together with some addresses which were delivered in public. The collection fitly records the ability and sagacity with which Dr. Martin initiated the physiological work of this University, during his residence here from 1876 to 1893.

The Chesapeake Marine Laboratory continued its work, on a less extended scale than heretofore, during the summer of 1895, at Beaufort, N. C. In addition to his report of the work of the last season, Dr. Brooks has placed upon record a bibliographical statement of the publications made by the former holders of the Bruce Fellowship. A glance at this compact narrative will convince any one of the value of the foundation which constantly reminds us of a bright young

student and teacher of this University, cut down at the beginning of his career; and at the same time it perpetuates the work in which he was engaged by the encouragement, year after year, of young men who have rare aptitudes for biological investigation, to prosecute their studies here before their acceptance of positions elsewhere.

I call the attention of the Trustees, and of all who are interested in the educational work of this University, to the ample details, which are given as usual in an appendix, respecting the lectures, classes, and researches of the various departments. The success of this foundation depends not upon the number of our students, nor upon the tokens of public confidence, but on the quality of the professors and teachers who are here engaged, and on the enthusiasm, industry, and talent of their pupils. To such a scrutiny the attention of the authorities and of the public is invited.

The year now opening is the twentieth year of instruction in the Johns Hopkins University. A review of its activity during this score of years may be deferred until the close of this session.

In conclusion, I would once more place on record my grateful appreciation of all that is done by the Trustees and by the Faculty to make the duties of administration agreeable and efficient. Without the constant and hearty co-operation of both factors, the educational and the financial, the tasks of the office which I have the honor to hold would be wearisome; with the co-operation I have received they are always pleasant.

Respectfully submitted,

DANIEL C. GILMAN,
*President.*

*December* 2, 1895.

# REPORTS ON THE INSTRUCTION IN THE CHIEF BRANCHES OF STUDY.

Prepared by the Principal Instructors in the several departments.

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## Mathematics and Astronomy.

### I.—Mathematics.

Professor Craig gave the following courses:

*a*) A course in Abelian Integrals, followed by a course in Elliptic Functions, the two combined lasting through the year. For the Abelian Integrals Picard's *Traité d'Analyse* and Clebsch and Gordan's *Abelsche Functionen* were employed, with occasional references to other treatises and to memoirs. A fairly full account of the Theory of Inversion was included in the course. In Elliptic Functions Weber's *Elliptische Functionen* and Tannery and Molk's *Fonctions Elliptiques* were mainly employed.

*b*) A course in the Calculus of Variations, in the first half-year. This was mainly taken from t. III. of Jordan's *Cours d'Analyse.*

*c*) In the second half-year a course on the Theory of Lines traced on Surfaces was given. This was based mainly on Vol. I. of Darboux's *Théorie générale des Surfaces.* The subject was not treated in a continuous manner, the lecturer confining himself to the general principles connected with the various families of lines treated. A number of interesting additions were made to the Theory by members of the class.

*d*) The Mathematical Seminary met weekly throughout the year. A large number of subjects were presented, but the work for the most part was in Geometry.

Professor Franklin gave the following courses:

1. Theory of Invariants. *Three times weekly, first half-year, twice weekly, second half-year.* After a brief discussion of symmetric functions, resultants, etc., the theory of invariants of binary and higher forms was treated without the use of symbolic methods. During the second half-year, the application of the German symbolic method to the theory of invariants was given, regard being had almost exclusively to binary forms. Salmon's *Modern Higher Algebra* and Gordan's *Theorie der Binaeren Formen* were referred to.

2. Elementary Theory of Functions. *Twice weekly, through the year.* The main points of the Cauchy theory, the theory of series, and Weierstrass' and Mittag-Leffler's theorems were the chief subjects treated. Professor Craig's Lecture Notes were referred to.

Dr. Chessin gave the following courses:

1. Partial Differential Equations. *Three times weekly, first half-year.* In this course were treated the methods of Lagrange and Charpit, Cauchy's method, and the methods of Jacobi and Mayer. An introduction was given to Lie's method.

2. Partial Differential Equations of the second order, with applications to Mechanics and Physics. *Three times weekly, second half-year.* Only linear equations were treated in this course. In connection with it was given a course on Spherical Harmonics.

Dr. Hulburt gave the following courses:

Theory of Plane Algebraic Curves. *Three times weekly, first half-year.* In this course the Non-metrical Properties of Curves were studied. The authors chiefly referred to were Clebsch-Lindemann and Salmon.

The Metrical Theory of Surfaces and Twisted Curves. *Three times weekly, second half-year.* The course was based upon the text-books of Joachimsthal and Knoblauch, with frequent references to Salmon and Darboux.

## II.—Astronomy.

During the year 1894–95, the following courses of instruction have been given:

By Dr. Poor:

1. General Course in Theoretical and Practical Astronomy. *Twice weekly, through the year.*

This course was intended for those beginning the subject and for those who wished to take Astronomy as a subsidiary subject for the doctorate. It included a general outline of the principal problems of Spherical Astronomy, the first principles of the method of Least Squares, and a discussion of the fundamental laws and equations of Gravitational Astronomy. A short historical sketch of the science was also given.

Among the books consulted and referred to in this connection were: *Spherical and Practical Astronomy*, Chauvenet; *General Astronomy*, Young; *Histoire de l'Astronomie*, Delambre.

2. Theory of Instruments. *Three times weekly, first half-year.*

This course included a general outline of the theory of astronomical measuring instruments. The theory of the astronomical objective was first taken up and treated by the Gaussian as well as by the analytic method; then followed a discussion of the division errors of graduated circles; the errors incident to the use of a Meridian Circle and of an Equatorial. The best methods of observation were pointed out.

3. The Construction of Planetary Tables. *Three times weekly, second half-year.*

This course was practical in character. The works of Le Verrier were made the basis, and as an example the general perturbations of the Earth by Uranus, and of Mars by Venus, were computed by the class. The collation of results and the formation of tables of planetary motion were also explained and illustrated by practical work.

4. General Astronomy. *Twice weekly, through the year.*

This was an elective course for third-year undergraduate students. It embraced a general outline of the principal problems of Spherical and Practical Astronomy, with an historical sketch of the science.

By Dr. Chessin:

1. Celestial Mechanics. *Three times weekly, through the year.*

This was a course in the General Theory of Perturbations. The method of variation of the elements was developed rather fully. In connection with this theory was given the method of integrating the differential equations of Mechanics in general after Hamilton and Jacobi. Laplace's and Hansen's methods were also treated. For the development of the perturbative function, Professor Newcomb's method was chosen with some modifications. In connection with this development was treated the problem of developing functions into series in general, and by means of Bessel's functions especially. The modern methods in Celestial Mechanics were touched upon at the close of this course.

The work in the observatory was carried on whenever weather permitted. Up to May 15th observations were made on sixty-two nights. All students were trained in the use of the transit instrument and the equatorial. The meridian circle was used for practice by Mr. Ebaugh. The equatorial was used mainly for general practice by the students, although a number of double stars were measured by Messrs. Clutz, Harrison, Johnson, and Tillman. The results of such measurements were published in the *University Circulars.*

Seminary work was carried on through the year.

## III.—Undergraduate Courses in Mathematics.

These courses are the same from year to year. During the year 1894–95 they were given as follows:

*First Year Course:*

Analytic Geometry. *Daily, till Christmas.* Dr. Hulburt.

Differential and Integral Calculus. *Daily, from January 1 to end of year.* Professor Franklin.

*Second Year Course:*

Differential and Integral Calculus (Special Topics), and Determinants. *Daily, till Christmas.* Professor Franklin.

Theory of Equations. *Daily, January* 1 *to February* 1. Dr. Hulburt.
Modern Plane Analytic Geometry. *Daily, February* 1 *to April* 1. Dr. Hulburt.
Solid Analytic Geometry. *Daily, April* 1 *to end of year.* Dr. Hulburt.
Differential Equations. *Twice weekly, through the year.* Dr. Hulburt.

Classes were conducted by Mr. Landis and Mr. Roszel in
Trigonometry and Analytic Geometry for matriculation. *Three times weekly, through the year.*

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## Physics.

The Physical Laboratory has been open daily during the year for the work of advanced and undergraduate students. The Physical Seminary, to which only the most advanced students have been admitted, has met weekly through the year. Ostwald's "Lehrbuch der Allgemeinen Chemie" has served as the basis for the study of the modern theories of electro-chemistry. Dr. Ames and the students have in turn presented papers upon the different subjects. Regular courses of lectures and instruction have been given as follows:

By Professor Rowland:
1. Mathematical Physics, treating the subjects of Electricity and Magnetism. *Four times weekly, through the year.*
2. Meetings for the discussion of the current physical journals. *Weekly, through the year.*

By Associate Professor J. S. Ames:
1. Mechanics and Hydrodynamics. *Twice weekly, through the year.*
2. Advanced General Physics (Major Course). *Four times weekly, through the year.*
3. General Physics (Minor Course). *Four times weekly, through the year.*
4. Meetings of the Physical Seminary. *Weekly, through the year.*

By Associate Professor Louis Duncan:
1. Applied Electricity (First Year). *Twice weekly, through the year.*
2. Applied Electricity (Second Year). *Twice weekly, through the year.*
3. Electrical Seminary. *Second half-year.*

By Mr. H. S. Hering:
1. Steam and Hydraulic Engineering. *Twice weekly, through the year.*
2. Electrical Measurements. *Twice weekly, through the year.*
3. Electrical Seminary. *Second half-year.*

By Mr. H. G. Geer:
1. Mechanics of Engineering. *Twice weekly, first half-year.*
2. Applied Kinematics and Machine Design. *Twice weekly, second half-year.*
3. Steam and Hydraulic Engineering. *Twice weekly, first half-year.*

4. Experimental Steam Engineering. *Weekly, first half-year.*
5. Mechanical Drawing (First and Second Year). *Two afternoons weekly, through the year.*

Dr. H. C. Jones, Fellow by Courtesy, gave twenty lectures on Electro-Chemistry, in the second half-year.

In the Electrical Seminary, papers have been read by the students upon their projected work and upon subjects connected with their studies in the laboratory.

In the laboratory the following work has been done:

The Director has been occupied most of the year in three investigations:

The design of a constant-speed electric motor which can be used to record the time-integral of any direct current, or to drive an astronomical telescope or a siren.

The design of more perfect electrical measuring instruments for both direct and alternating currents.

The design of motors which can be synchronized even at long distances, with special reference to telegraphic lines.

Also, under his direction and that of Associate Professor J. S. Ames, the researches that follow have been carried on:

The final reduction and publication of the tables of solar-spectrum wave-lengths. The measurements of the photographic plates have been made by Mr. L. E. Jewell, and the wave-lengths of some 7,000 have already been published in The Astrophysical Journal.

Measurements of the wave-lengths of certain elements: Boron, Beryllium, Germanium, Platinum, Palladium, Osmium, etc. These measurements were made by Mr. R. R. Tatnall upon photographic plates taken by Professor Rowland, and they are now being published in The Astrophysical Journal. A description of this research and its results has been offered by Mr. Tatnall as a dissertation for the degree of Doctor of Philosophy.

Measurements of the wave-lengths in the infra-red spectra of certain elements: Sodium, Potassium, Lithium, Strontium, Calcium, Silver. This investigation, begun last year, has now been completed by Mr. E. P. Lewis, Assistant in Physics, and he has presented it as his dissertation for the degree of Doctor of Philosophy. It appeared in full in The Astrophysical Journal for June.

Measurement of the temperature-coefficient of the surface-tension of water at temperatures below 0° C. This work was done by Mr. W. J. Humphreys and Mr. J. F. Mohler, and has been published in the Physical Review.

A study of the use of instruments of different dispersive powers for the detection of water-vapor in the atmosphere. This investigation was made by Mr. L. E. Jewell, and has already appeared in The Astrophysical Journal.

A study of the changes in length of iron wires when magnetized. This research was made by Mr. L. T. More, Fellow in Physics, and has been offered by him as a dissertation for the degree of Doctor of Philosophy.

Measurements of the surface-tension of aqueous solutions of various salts. To carry on this research Mr. N. E. Dorsey has made use of Lord Rayleigh's method of ripples, which seems especially suitable for the purpose.

A study of the effect of changes in pressure and temperature upon the wave-lengths of the elements. This work, carried on by Mr. Humphreys and Mr. Mohler, has already led to some exceedingly interesting results, which will shortly be published.

The determination of the variation in the specific heat of water between 5° and 35° C. This research was begun last year by Mr. W. S. Day, and is now nearly completed.

Investigations have also been begun on the following subjects:

The nature of the effect of light upon electric discharge. Diffusion of salt solutions through capillary spaces. The effect of the resistance of the air upon projectiles.

Dr. H. F. Reid, Lecturer in Physics, has carried on a research to determine the variation in the position of the maximum energy in the heat spectrum of platinum at different temperatures. A preliminary note on the results obtained appeared in The Astrophysical Journal for August.

The following researches have been made under the direction of Associate Professor Louis Duncan:

A determination of the relation between the various electromotive forces acting on the synchronous motor under various excitations and load. The work was carried on by Messrs. W. D. Ball, E. F. Gallaudet, J. J. Rothermel, and Mr. B. B. Brackett, Assistant in Electricity.

Experiments on the new telephone method of obtaining alternating current curves were continued, and a new method of increasing the initial torque of induction motors were investigated by Messrs. Alexander McIver, F. S. Wilcox, and H. C. Ridgely.

A method of measuring alternating currents independently of the period was experimentally investigated by Messrs. B. Harrison Branch and Jos. Mullen, Jr.

The effects on the regulation and losses in a transformer when supplied with an alternating current following a sine curve and one following an irregular curve have been studied by Messrs. Charles Reutlinger and Norman Rogers.

A comparative study of alternating "resonance" currents with ideal and practical conditions, and also a study of "consonance" currents, were made by Messrs. George H. Hill and H. Bissing.

Experiments on the effect of carbon at excessively high temperatures upon various substances, in a new form of electrical furnace, were made by Mr. Henry H. Wiegand.

The following researches have been carried on under the direction of Mr. Hering:

A study of the variations of the disruptive strength of dielectrics with thickness and temperature was made by Mr. C. L. Reeder.

Experiments on the effect of temperature and time of previous discharge of insulated wires, upon their insulation resistance, capacity and electrification, were made by Messrs. C. L. Reeder and H. M. Harriman.

Experiments on a portable form of graphical recording ammeter and voltmeter, for use on electric cars, were made by Messrs. G. S. Maynard and J. H. Gordon, Jr.

The effect of cross magnetization upon hysteresis was studied by Mr. H. M. Frazer.

Mr. Hering was engaged during the summer and fall in making an extensive series of tests of electric cars of various kinds, and a special study of the effect of the number of passengers, stops, and character of acceleration upon the power required. Assistance was rendered by Messrs. Charles Reutlinger, B. Harrison Branch, and several other students.

There have been in the laboratory during the year more than one hundred and fifty-six students; twenty have been taking Physics as their principal study for the degree of Doctor of Philosophy; thirty have followed courses in Electrical Engineering. Four students received their doctor's degree in June, and ten received certificates of proficiency in Electrical Engineering.

H. A. ROWLAND,
*Professor of Physics.*

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## Chemistry.

During the past academic year the chemical laboratory has been open as usual for advanced and collegiate students. Lectures and class-room instruction have been given as follows:

By Professor Remsen:

1. History of Chemistry, for graduate students. *Twice weekly, until Christmas.*
2. Chemistry of the Compounds of Carbon, for graduate students. *Five times weekly, from Christmas to the end of the year.*
3. Meetings for reports on the current journals of Chemistry. *Once or twice weekly, through the year.*
4. General Chemistry (Minor Course). *Three times weekly, until Christmas.*

By Professor Morse:

1. Analytical Methods, for graduate students. *Once weekly, through the year.*

2. Compounds of Carbon (Major course). *Three to five times weekly, second half-year.*

By Professor Renouf:

1. Advanced Inorganic Chemistry (Major Course). *Three times weekly, first half-year, and twice weekly, second half-year.*
2. General Chemistry (Minor Course). *Three to five times weekly, from Christmas to the end of the year.*

By Dr. Randall:

1. The Principles of Physical Chemistry. *Twice weekly, until Christmas.*
2. Reviews in General Chemistry (Minor Course). *Twice weekly, through the year.*
3. Inorganic Chemistry (Major Course). *Twice weekly, during part of the second half-year.*

Besides the lectures included in the above list, four historical lectures were given by the advanced students on topics selected and assigned by the Director. The lecturers and their subjects were as follows:

W. J. Karslake, The History of Furfuran.
E. Mackay, Guye's Hypothesis.
W. E. Henderson, The History of Acetone.
M. D. Sohon, The History of Glycerol.

Twelve candidates presented themselves for the degree of Doctor of Philosophy. They were Messrs. D. Base, W. Bromwell, H. Fay, G. W. Gray, J. J. Griffin, H. H. Higbee, J. F. Hunter, W. J. Karslake, S. R. McKee, A. M. Muckenfuss, L. C. Newell, J. F. Norris. Their theses are entitled: "On the Double Halides of Zinc and Aniline and the Toluidines"; "On the Action of Methyl Alcohol on the Diazo-Compounds from Orthotoluidine"; "The Action of Light on Some Organic Substances in the Presence of Salts of Uranium"; "The Isomeric Chlorides of Nitro-orthosulphobenzoic Acid"; "Metatoluenesulphonic Acid"; "On the Double Halides of Antimony and Aniline and the Toluidines"; "The Anilides of Orthosulphobenzoic Acid"; "Orthocyanbenzenesulphonic Acid and its Derivatives"; "The Isomeric Chlorides of Orthosulphobenzoic Acid"; "The Action of Phosphorus Pentachloride on Parasulphaminebenzoic Acid"; "On Parabenzoyldiphenylsulphone"; "On Double Halides of Selenium and the Substituted Ammonias." These will be printed in separate form as theses, and the more important parts will be published in the American Chemical Journal. The large supply of material sent in for publication in the Journal has necessitated an increase in its size. Beginning with this year, ten numbers will be issued annually instead of eight.

IRA REMSEN,
*Professor of Chemistry.*

## Geology.

At the opening of the last academic year, the Geological Laboratory and collections were moved into new quarters on the second and third floors of Hopkins Hall, where nearly twenty rooms had been fitted up to receive them. The facilities of the department have been much increased by the transfer, commodious accommodations being furnished for all features of the work.

Dr. E. B. Mathews, appointed Instructor in Mineralogy and Petrography, began his work at the opening of the year. The arrangements made with Mr. G. K. Gilbert and Mr. Bailey Willis, of the U. S. Geological Survey, resulted in important courses of lectures,—the former dealing with the subject of Physiographic Geology, the latter with that of Stratigraphic and Structural Geology.

During the year the following courses of instruction were given:

(*a*) General Geology, by Professor Clark and Dr. Mathews. *Four lectures and one afternoon of practical work each week through most of the year.*

(*b*) Paleontology, by Professor Clark. *Three lectures each week, from December to April.*

(*c*) Organized Geological Work, by Professor Clark. *One lecture each week during March and April.*

(*d*) Petrography, by Dr. Mathews. *Three lectures each week through most of the year.*

(*e*) Physiographic Geology, by Mr. Gilbert. *Two lectures each week from January 1st to February 15th.*

(*f*) Stratigraphic and Structural Geology, by Mr. Willis. *Two lectures each week from February 15th to May 1st.*

(*g*) Geological Conferences. *Fortnightly, from November 15th to April 1st.*

(*h*) Student Lectures. *Fortnightly, from November 15th to April 1st.*

The laboratories were open daily to students from 9 a. m. till 5 p. m.

*Original Work and Publications.* Geological studies were continued by Professor Clark upon the Cretaceous and Tertiary formations of New Jersey, under the auspices of the U. S. Geological Survey and State Geological Survey, with the co-operation of Messrs. R. M. Bagg and George B. Shattuck, students of the department. Professor Clark also carried on further investigations upon the Mesozoic and Cenozoic Echinodermata of the United States and the Eocene Fauna of the Middle Atlantic slope, the latter work being brought to a conclusion and an extended report prepared. Several papers upon phases of Atlantic Coastal Plain Geology and Paleontology were read before geological societies and subsequently published.

Dr. Mathews carried on investigations upon the granites of the Pike's Peak region in Colorado, under the supervision of Dr. Whitman Cross, of the U. S. Geological Survey, with whom Dr. Mathews had been associated during the previous summer. A paper on this subject was presented at the

Baltimore Meeting of the Geological Society of America. Several studies were also conducted upon mineralogical topics, and an article prepared upon "Some Flattened Garnets from North Carolina."

Three candidates came forward for the degree of Doctor of Philosophy in June, two of whom had held Fellowships during the year. Mr. H. S. Gane, Fellow in Organic Geology, presented a thesis upon "The Neocene Corals of the United States." During the past summer he has been connected with the U. S. Geological Survey in Colorado in the study of the Mesozoic formations. Mr. S. W. Beyer, Fellow in Inorganic Geology, presented a thesis upon "The Sioux Quartzite near Sioux Falls in South Dakota, with especial reference to an Intrusive Diabase;" this and other investigations being conducted under the auspices of the Iowa Geological Survey. Mr. R. M. Bagg presented a thesis upon "The Cretaceous Foraminifera of New Jersey," while at the same time continuing field work under the supervision of Professor Clark, upon the Cretaceous formations of New Jersey.

Several investigations were carried on by the other members of the department. Mr. L. M. Prindle made a study of an andalusite contact zone near Washington, and, during his summer vacation, of the Paleozoic formations of eastern New York, under Professor T. Nelson Dale, of the U. S. Geological Survey.

Mr. George O. Smith took up for examination the volcanic area of the Fox Islands, Maine, and, during the summer, he was associated with Mr. Bailey Willis in a study of the eruptive rocks of the Cascade Mountains in Washington. Mr. George B. Shattuck has been preparing a report upon the Shoal Creek Fauna of Texas, and at the same time carrying on field work under the direction of Professor Clark in New Jersey. Mr. A. C. Spencer has been engaged in a study of the Massanutten Mountain in Virginia, under the direction of Mr. Bailey Willis. Mr. D. E. Roberts has been investigating the Cretaceous formations of the Eastern Shore of Maryland.

*Excursions.* Numerous short excursions were made during the autumn months into the surrounding country, both in the Coastal Plain and the Piedmont Plateau, under the guidance of Professor Clark and Dr. Mathews. Two longer excursions were made in May—the first for a study of the Cretaceous-Tertiary formations for fifty miles along the banks of the Potomac River, from Washington southward, and the second to the Caverns of Luray, the Natural Bridge, and the Massanutten Mountain in Virginia—the latter expedition being under the guidance of Mr. Willis.

*Coöperation.* The U. S. Geological Survey has continued to assist the geological work carried on at the University by facilitating field work in Maryland and in New Jersey.

Material assistance has likewise been received from the State Geological Survey of New Jersey.

The Maryland State Weather Service, organized in 1891, has further extended its work during the past year. New stations have been added

from time to time, until now nearly every portion of the State is represented. Weekly Crop Bulletins and Monthly Meteorological Reports have been published. Opportunities have been open to the members of the department to take part in the work of the bureau whenever they desired.

Professor Clark continues as the Director of the State Weather Service, representing the Johns Hopkins University; Professor Milton Whitney as Secretary and Treasurer, representing the Maryland Agricultural College; and Dr. C. P. Cronk as Meteorologist in charge, representing the U. S. Weather Bureau. The three officers mentioned constitute a commission appointed by the Governor.

*Scientific Societies.* During the Christmas holidays the Geological Society of America held its annual meeting in the new Geological Laboratory. The gathering was largely attended, and many important papers were presented.

The fortnightly meetings of the Geological Society of Washington were regularly attended during the winter by the instructors and students of the department, all of whom had been elected as non-resident members. As the results of many of the most noteworthy investigations of the year were presented at these gatherings, great benefit was derived by those in attendance.

Several members of the department also became members of the National Geographic Society, and availed themselves of its privileges.

*Apparatus and Collections.* Many important additions were made to the apparatus and collections during the year. The purchase of a stereopticon has made it possible to illustrate many of the courses with lantern views, while the large increase in maps has materially aided the work in every direction. By correspondence with the various Geological Surveys of this and other lands, large numbers of maps and reports have been obtained, either as gifts or by exchange. Several important collections of rocks and fossils have likewise been acquired, the most extensive representing the Permian and Cretaceous of Kansas and Indian Territory.

WILLIAM B. CLARK,
*Professor of Organic Geology.*

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## The Biological Sciences.

During the past academic year the biological laboratory has been open for advanced and collegiate students, and certain courses have been attended by students in the medical school. Lectures and class-room instruction have been given as follows:

By Professor Brooks:

1. Advanced Zoology, for graduate students. *Three times a week, from October 5th to March 31st.*

2. Meetings of graduate students for reports on the current literature of Zoology. *Weekly.*
3. Elementary Zoology. *Four times a week, January 1st to April 1st.*

By Professor Howell:

1. Physiology. *Three times a week, through the year,* for medical students and graduate students in biology.
2. Meetings of graduate students for reports on the current literature of Physiology. *Weekly, through the year.*
3. Physiological Seminary. *Weekly, through the year.*

By Dr. Andrews:

1. General Biology. *Daily, to April 1st.*
2. Elements of Embryology. *Three times a week, from April 1st to end of session.*
3. Comparative Embryology. *Daily, April 1st to end of session.*
4. Meetings of graduate students for reports on the current literature of Zoology. *Weekly.*

By Dr. Dreyer:

Histology and Physiology. For undergraduates. *Four times weekly, from October 9th to Christmas recess.*

Normal Histology. For medical graduates. *Three times weekly, from November 1st to January 1st.*

By Dr. Lotsy:

Advanced Botany for graduate students. *Three times weekly, from November 1st to March 1st.*

By Dr. Barton:

Analysis of plants. *Twice weekly, from April 1st to end of session.*

### Advanced Work in Zoology.

A list of researches carried on during the year in the Biological Laboratory and in the Marine Laboratory was printed in the University Circulars for June, 1895.

The zoological seminary met weekly through the year, and studied the life and the scientific writings of K. E. von Baer.

The following lectures on topics assigned by the Professor of Zoology were given by the instructors and more advanced students in Zoology:

F. S. Conant: three lectures on the Chaetognaths.

S. Goto: ten lectures on Trematodes and Cestodes.

George Lefevre: three lectures on the Protochordata.

H. McE. Knower: four lectures on Embryology of Insects.

Dr. E. A. Andrews: three lectures on the Structure of Protoplasm.

Dr. J. E. Humphrey: ten lectures on the Morphology of the Vegetable Cell.

The Bruce Fellowship was awarded to Seitaro Goto.

Fellowships in Zoology were awarded to H. McE. Knower, who took charge of the museum during the year, and to George Lefevre.

The University table at the laboratory of the U. S. Fish Commission, at Wood's Holl, was occupied by H. L. Clark during the summer of 1895. George Lefevre and F. S. Conant occupied tables in the laboratory through special invitation from the Commissioner of Fisheries.

In the winter of 1894, Professor T. H. Morgan, of Bryn Mawr College, gave three lectures to the advanced students in Zoology on the ancestry of the Chordata, and in the winter of 1895 Dr. R. G. Harrison, of Bryn Mawr College, gave two lectures on the Limbs of Vertebrates.

The large and valuable collection of microscopic preparations which was presented to the Biological Laboratory by the late Dr. Christopher Johnston, has been placed in a cabinet, constructed for its reception, in the hall of the laboratory.

### Advanced Work in Physiology.

The following courses of lectures given by Professor Howell were attended by the advanced students in physiology and by the students in the medical school:

1. The Physiology of the Central Nervous System. *Three times a week, from November 15th to the Christmas Holidays.*
2. The Physiology of the Tissues, Circulation, and Digestion. *Twice weekly, from January 1st to March 15th, and five times a week from March 15th to June 1st.*

The physiological seminary met weekly through the year. Tiegerstedt's "Lehrbuch der Physiologie des Kreislaufes" was used as the basis for the seminary work, which was confined entirely to the study of the physiology of the circulation. The Physiological Journal Club met weekly to listen to reports upon current physiological literature. The following researches have been published during the year: The effect of stimulation and of changes in temperature upon the irritability and conductivity of nerve fibres, and the effect of oxalate solutions upon nerve and muscle irritability and rigor mortis. The following researches have been completed and are now ready for publication: A study of the fall of blood pressure following upon the stimulation of various afferent nerves; the effect of "differential respiration" upon blood-pressure and pulse rate; a plethysmographic study of the changes in blood-flow produced by olfactory sensations, mental reaction, and stimulation of the nasal mucous membrane. A number of additional investigations are in progress upon the following topics: The relation of calcium salts to the automaticity of the heart; the circulation of the blood during sleep; the effect of the stimulation of afferent nerves upon the heart rate; the effect of nitrous oxide anæsthesia upon the gases

of the blood; a study of the movements of the stomach. During the year two special students have taken courses in the laboratory in methods of demonstration to prepare themselves as teachers of physiology.

### Advanced Work in Botany.

Dr. Lotsy has published during the year, in the Botanical Gazette, an account of "Some new species of Euphorbiaceae collected by Captain J. Donnell Smith in Guatemala."

A report by Dr. Lotsy on the Food of the Oyster has been published in the Bulletin of the U. S. Fish Commission.

Dr. J. E. Humphrey has published in the Annals of Botany a paper "On Seed-development in the Scitamineae," and a paper "On some Constituents of the Cell."

Mr. D. S. Johnson has published in the Botanical Gazette a paper on the "Crystallization of Cellulose."

W. K. Brooks,
*Professor of Zoology.*

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## Greek.

Under the direction of Professor Gildersleeve the advanced students of Greek have been organized into a Greek Seminary. According to the plan of the Seminary, the work of each year is concentrated on some leading author or some special department of literature. During the past year the centre of work has been Aristophanes.

In the Seminary proper, which met twice a week during the academic year, the Aristophanic comedies selected for closer study were The Frogs, The Wasps, and The Birds; and the members of the Seminary were required to present in turn critical and exegetical commentaries on parts of these plays. Introductory lectures to all the plays, with elaborate analyses, were also prepared by the students, and all were made the subject of cursory comment by the Director. In connection with the Seminary, the Fragments of the Old Attic Comedy were studied, and lectures were delivered by the Director on Aristophanes and his art.

Of investigations carried on by the graduate students may be mentioned: The Character of Dionysos in the Frogs and in the Bacchae; Comic Terminations in Aristophanes; Review of Graves' Wasps; Demosthenic Style in the Private Orations (Thesis); Subjects of the Thing in the Attic Orators and Thukydides (Thesis); History of μή with Participle and the Participle in Hesiod (researches continued from a previous session); a Comparative Study of Hesiod and Pindar. The number of papers read before the Seminary was thirty-two.

Besides conducting the Seminary course in the auxiliary work, Professor Gildersleeve delivered thirty lectures on the Syntax of the Greek Verb, gave some seventeen readings in the Greek Tragic Poets, and conducted twenty-four exercises in extemporaneous translations from Greek into English and English into Greek.

Dr. C. W. E. Miller conducted a course of lectures and practical exercises on Greek Rhythms and Metres, weekly throughout the year.

Associate Professor Spieker conducted undergraduate courses as follows:

Plato, *Protagoras.* *Three times weekly, first half-year.*

Aeschylus, *Prometheus;* Sophocles, *Oedipus Tyrannus.* *Three times weekly, second half-year.*

Andocides, *De Mysteriis.* *Three times weekly, first half-year.*

Plato, *Apology;* Euripides, *Iphigenia in Tauris.* *Three times weekly, second half-year.*

Aristophanes, *Frogs.* *Twice weekly, first half-year.*

Prose Composition (two classes). *Weekly, through the year.*

Undergraduates have read privately for examination the following books:

Aristophanes, *Clouds.* (2).

Demosthenes (Olynthiacs and Philippics). (3).

Herodotus (selections). (10).

Lysias (select orations). (8).

Isocrates, *Panegyricus.* (1).

B. L. GILDERSLEEVE,
*Professor of Greek.*

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## Latin.

The Latin Seminary, under the direction of Professor Warren, held two meetings a week throughout the year, the centre of work being Roman Satire,—Horace in the first half, and Juvenal in the second half of the year.

The fifth and ninth satires of the first book, and the first satire of the second book of Horace's Satires were interpreted by the members in turn, and analyses were read of the first, second, fourth, sixth, seventh and tenth satires of the first book, and of the fifth and eighth of the second book, with a discussion of the important questions involved in each satire. Of the Satires of Juvenal, the first and seventh were interpreted, and papers were read on the genuineness of Satires XI, XII, XIII and XIV. A paper was also read on Sulpicia.

In connection with the work of the Seminary, Professor Warren gave during the first half-year a course of weekly lectures on Roman Satire. In a class meeting once weekly throughout the year, the fragments of satire of Ennius and Lucilius, Varro's Saturae Menippeae, Seneca's Apocolocyntosis, Petronius, and Persius were read. Throughout the year Professor

Warren lectured weekly on Historical Latin Grammar, and the Journal Club met fortnightly to report on the recent periodical literature in the field of Latin.

In the second half-year Associate Professor Smith gave a course of weekly lectures on the Roman Lyric and Elegiac Poets.

Undergraduate courses have been conducted as follows:

Professor Warren:

Plautus, *Menaechmi*, and Terence, *Andria*. *Three times weekly, second half-year.*

Associate Professor Smith:

Catullus and Tibullus. *Three times weekly, first half-year.*
Livy, book i. *Three times weekly, first half-year.*
Horace, *Odes, Epodes, Satires*. *Three times weekly, second half-year.*
Tacitus, *Germania, Annales*, book i. *Twice weekly, second half-year.*
Latin Prose Composition (two classes). *Weekly, through the year.*

Undergraduates have read privately for examination the following books:

Caesar, *Bellum Civile*, book i. (24.)
Cicero, *de Amicitia*. (24.)
Phaedrus. (24.)
Horace, *Ars Poetica*. (24.)
Propertius (selections.) (5.)
Plautus, *Miles Gloriosus*. (7.)
Cicero, *de Natura Deorum*, books i and ii.
Plautus, *Pseudolus*. (1.)
Terence, *Heautontimorumenos*. (1).

MINTON WARREN,
*Professor of Latin.*

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## Sanskrit and Comparative Philology.

In glancing through the President's Annual Reports, I find that the term "Vedic Seminary" first appears in the twelfth, for the year 1887. It was at that time a new term, coined to meet certain conditions which had gradually evolved at this University.

Systematic study of the Vedas leads practically to a fourfold division:

1. The Rig-Veda, the great collection of priestly poetry of early India, consisting largely of prayers to the gods at the sacrifices.
2. The Atharva-Veda, the prayers connected with popular life, customs, folk-lore, superstitions, and witchcraft (charms and incantations).
3. The Brāhmaṇas and Upaniṣads, the literature of speculation. The first deals with the power and mystery of the sacrifice; the second with

the fundamental causes of the existence of man and the universe (philosophy and theosophy).

4. The Sūtras, the codified rules of action at the great priestly sacrifices (çrauta-sūtras); at the practices of every-day life (gṛhya-sūtras, "house rules"); and the laws governing the social and civic relations of men (dharma-sūtras).

In the annual rotation of the Seminary it was found best to relegate the fourth division to a subsidiary position, because the language of the Sūtras does not differ enough from the later classical Sanskrit to call for specific treatment, and because the study of the Sūtras blends naturally and incidentally with the treatment of the first three main divisions. These latter are now treated periodically in three successive years of seminary work, furnishing within this time a survey of the main phases of early Hindu language, thought, and life. It may be remarked that neither the name "Vedic Seminary," nor the system of Vedic study just indicated, are, as far as is known, in vogue at any other institution of learning.

During the session of 1894–95 the work of the Vedic Seminary centered about the Brāhmaṇas and Upaniṣads. The texts which go by that name hold the same position in relation to the Vedic hymns, as is occupied by the Talmud in reference to the Old Testament. The exegesis of the hymns and the exposition of the sacerdotal practices which grew up around them, are interwoven with mythical accounts of the origin of the sacrifice. And this, again, calls out incidentally some of the most prominent and interesting legends of the Vedic period. An introductory description of the style and language of these writings was followed by the critical exegesis of selected materials. Towards the end of the second year the sixth book of the Chāndogya-Upaniṣad was interpreted. This deals with the *Sat* (τὸ ὄν), the pantheistic, fundamental cause, and its relation to phenomenal and individual existence; it furnished the basis of a characterization of that Hindu speculative thought which has growingly held the attention of Western minds from the days of Schopenhauer until the present time.

Dr. Alfred W. Stratton, Fellow in Sanskrit and Comparative Philology, who obtained the degree of Doctor of Philosophy at the end of the present session, had charge of a second, more elementary, course of Vedic study. This is designed to serve as an introduction to the Vedic dialect, and to mark out its relation to the classical Sanskrit. A short preliminary course in Vedic grammar was followed by the study of selected specimens of the Rig-Veda. The metres, the accent, the special phonetic, morphological, and lexical peculiarities claimed the chief interest.

In classical Sanskrit there were courses in interpretation of the Nala and Hitopadeça and an elementary course in grammar, followed by the interpretation of an easy text. Here, again, Dr. Stratton lent his assistance.

The work in Comparative Philology was twofold. First, a course of lectures during the entire session on General Comparative Philology. It began with a sketch of the linguistic ethnology of the Indo-European peoples,

dealing with their ethnical interrelations, their original seat and common characteristics. Then came, in brief survey, sketches of India, the Vedas, Brahmanism, Buddhism; Iran, the Achemenidan inscriptions, the Zoroastrian (Avestan) religion and literature; the Indo-European peoples on the boundary between Asia and Europe; and finally a still briefer treatment of the European peoples. This was followed by a sketch of the history of linguistic science, and finally the rest of the year was devoted to the principles of the science of language, and the exposition and criticism of modern methods in scientific grammar.

The second was in the Comparative Grammar of the Indo-European Noun-formations, with special reference to the classical languages, Sanskrit, and the Teutonic languages. Dr. A. W. Stratton has undertaken the complete comparative treatment of the history of Greek Noun-formation, and a specimen of this work, entitled "Chapters in Greek Noun-Formation," was presented by him as a thesis for the degree of Doctor of Philosophy. The corresponding work during the preceding session was the history of the Indo-European consonants. The coming session will be devoted to the history of Indo-European vowels and their correlations (ablaut). These courses aim to cover the most important chapters in the formal development of the Indo-European languages; they offer an opportunity to the students of the classical and Teutonic languages to acquaint themselves with the comparative treatment of sounds and inflections, and to gain at the same time a general knowledge of the structure of Indo-European speech.

MAURICE BLOOMFIELD,
*Professor of Sanskrit and Comparative Philology.*

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## Oriental Seminary.

Twenty courses were given in the Oriental Seminary, special attention being paid to the study of Hebrew, Assyrian, and Arabic.

Dr. C. Johnston being prevented from meeting his classes during the first two months of the session, the courses announced by him were opened by Professor Haupt, assisted by the Fellow in Semitic, Mr. C. Levias.

To the study of the *Old Testament* seven hours weekly were devoted during the first, and eight hours during the second half-year. Professor Haupt gave a critical interpretation of the Book of *Ecclesiastes*, two hours weekly through the year, laying special stress on the reconstruction of the original order of the book. He also read, during the first half-year, with the second year's students, selections from the Books of *Samuel*, on the basis of Professor Budde's new edition of the Hebrew text in *The Sacred Books of the Old Testament*, and conducted a class in *Hebrew Prose Composition*, weekly through the year, the students translating selected English sentences into Hebrew. The syn-

tactical instruction thus imparted was supplemented by a course in *Hebrew Conversation*, extending through the year, under the guidance of Mr. Levias. Dr. Johnston met the second year's students in Hebrew one hour weekly during the first half-year, the number of hours being doubled during the second half-year; the class read at sight selections from the *Historical Books;* in connection with these practical exercises, grammatical questions and critical problems were incidentally discussed. The instruction in *Elementary Hebrew* was given by Professor Haupt two hours weekly, and continued by Dr. Johnston through the year. Mr. Levias conducted a course in *Post-Biblical Hebrew*, the Mishnic tract *Pirqê Abôth* (ed. Strack) and the Talmudic tract *Abôth de Rabbi Nathan* (ed. Schechter) serving as text-books, during the first and second half-years respectively. Special attention was paid to the parallel passages in the New Testament as well as to Rabbinical Ethics and to Jewish manners and customs during the Talmudic period. Professor Haupt gave a course of weekly lectures during the first half-year on the *Composition of the Hexateuch*, and during the second half-year Dr. Johnston lectured weekly on the *Historical Geography of Palestine*, on the basis of George A. Smith's new work on that subject.

Six hours weekly through the year were devoted to the study of *Assyriology*. Under the direction of Professor Haupt the *Assyrian Seminary* met two hours weekly, reading selected cosmological and mythological cuneiform texts. An *Elementary Course in Assyriology* was conducted by Professor Haupt, and afterward continued by Dr. Johnston, Professor Haupt's *Keilschrifttexte* serving as text-book. Dr. Johnston also met the more advanced Assyrian students weekly through the year, interpreting Selected Historical Inscriptions of Tiglath Pileser, Assurnaçirpal, &c., in Abel and Winkler's Cuneiform Chrestomathy, and some *Assyro-Babylonian Letters and Hymns* in the fourth volume of Sir H. Rawlinson's *Corpus Inscriptionum*. During the second half-year Professor Haupt lectured two hours weekly on *Comparative Assyrian Grammar*. This work was supplemented by occasional *Exercises* in rendering dictated Hebrew into Cuneiform.

To the study of *Arabic* were devoted six hours during the first half-year, and eleven during the second. Professor Haupt interpreted selected *Extracts from Arabic Geographers*, besides conducting exercises in *Arabic Prose Composition* weekly through the year. *Elementary Instruction in Arabic* was given by Dr. Johnston, the class reading the texts in Socin's Arabic Grammar and Brünnow's Chrestomathy. Dr. Johnston also conducted weekly *Exercises in Reading at Sight* selected stories and anecdotes from the Beyrout Chrestomathy *Majâni-el-adab*. Two *Special Courses in Arabic*, six hours weekly, were given during the second half-year, Dr. Johnston interpreting the voyages of Sindbad from the Arabian Nights, and Mr. Levias conducting a series of elementary exercises in Arabic Prose Composition.

Four parts of the new polychrome edition of *The Sacred Books of the Old Testament*, prepared under the direction of Professor Haupt, were published by the Johns Hopkins Press during the session. They comprise the Book of

*Leviticus* with critical notes by Professor S. R. Driver and Rev. H. A. White, of Oxford; *Samuel* by Professor Budde, of the University of Strassburg (English translation of the notes by Rev. B. W. Bacon, D. D., of Oswego, N. Y.); *Joshua* by Professor W. H. Bennett, of London; and *Jeremiah* by Professor Cornill, of Königsberg, the critical notes on Jeremiah being translated by Dr. C. Johnston. *Psalms* by Professor Wellhausen, of Göttingen; *Chronicles* by Professor Kittel, of Breslau; *Ezekiel* by Professor Toy, of Cambridge, Mass., and parts III and IV of the new English translation of the Old Testament (*Leviticus* and *Joshua*) are in press.

The first part of the third volume of the *Contributions to Assyriology and Comparative Semitic Philology*, published with the coöperation of the Johns Hopkins University, and edited by Professor Haupt in conjunction with Professor Delitzsch, of Breslau, appeared at the beginning of the session. The volume contains papers by Dr. C. Brockelman and Professor S. Fränkel, of Breslau, and an important memoir on the Fall of Nineveh and the Prophecy of Nahum by Colonel Billerbeck and Rev. A. Jeremias, with valuable new topographical diagrams.

As delegate of the Johns Hopkins University, the Smithsonian Institution, and the Oriental Club of Philadelphia, Professor Haupt attended the Tenth International Congress of Orientalists, held in Geneva from September 3 to September 12, presenting three papers, on The Final Redaction of the Hexateuch, on The Votive Tablets of Sargon II., and on The Location of Paradise. A popular abstract of the last-mentioned paper, with maps and diagrams, is printed in No. 15 of vol. 73 of *Ueber Land und Meer*. Other communications and papers by the members of the Oriental Seminary are recorded in the *University Circulars*.

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## German.

The German Seminary, under the direction of Professor Wood, met three times weekly through the year. During the first half-year the Courtly Lyric of the Twelfth Century was studied on the basis of Lachmann and Haupt's *Minnesangsfrühling*. The work was confined to the lyrics of Heinrich von Morungen, Friedrich von Hausen and Hartmann von Aue, and was directed chiefly towards the question of song-books, cycles of poems, and the development of lyrical style in Middle High German. For Hartmann's attitude towards the Minnedienst, the two *Büchlein* were considered. The subject for the second half-year was the History of German Literature from the end of the Thirty Years' War to the accession of Frederick the Great. The material in Wackernagel's *Litteraturgeschichte* on the novel and the drama was supplemented in a series of lectures, and the members of the Seminary reported in turn upon the most important works in the period chosen.

The Germanic Society, which is composed of the Director of the Seminary, the Instructors and Graduate Students in German, met fortnightly through the year in an evening session. Besides reviews and reports, papers on the following subjects were presented, which gave from time to time preliminary results of studies still in progress: the dialect of the Ries, the use of *du* and *ir* as pronouns of address in Wolfram, Willehalm and its sources, definitions of breaking in the Germanic languages, the reflexive verb in Old Norse, German-American Hymnology, Young Germany in America (Goepp and Poesche's *The New Rome*), the position of Hölderlin's *Hyperion* in romantic literature, a source for von Arnim's *der tolle Invalide*, Herder's translations of English ballad poetry, Lucian's dialogue *the surveyor general* as a source for the picaresque novel, the origin of Moscherosch's *Expertus Robertus* in Burton's *Anatomy of Melancholy*, the linguistic movement in Norway.

Professor Wood gave a course in Gothic and the Elements of Comparative German Grammar, twice weekly, through the year. The scope of the work was similar to that during the session 1893–94. He gave also a course in Old Norse, twice weekly through the year. Noreen's *Grammatik* was studied, after which the following works were read: Gunnlaugssaga (in Möbius' *Analecta*), Are's *Isländerbuch* (ed. Golther), and the first third of the Njálssaga. Noreen's *Grundriss* was used as an adjunct to the grammatical work. Historical German Grammar was studied by a class, under the guidance of Professor Wood, weekly through the year.

In the undergraduate major course, Professor Wood conducted a class, twice weekly, from January 1 to the end of the year, in Goethe's *Faust*, the First Part of which was read.

Associate Professor Learned gave the following courses:

1. Old Saxon. Twice weekly, first half-year. Part of the Heliand (1200 verses) was read, and the recently discovered (Vatican) fragments of the poem were studied.

2. Old High German. Twice weekly, second half-year. Isidor was read entire, and the question of dialect, both of Isidor and the Monsee Fragments, was discussed.

3. Middle High German. Weekly, through the year. Paul's *Grammatik* was studied, and Hartmann's *Armer Heinrich*, together with some twenty poems of Walther von der Vogelweide, were read.

4. Undergraduate courses:

In the major course, Schiller's *Wallenstein* (*Lager, Piccolomini*) and Freytag's *Rittmeister von Alt-Rosen* were read. The history of German literature from Luther to the Nineteenth Century was studied synoptically in Kluge's *Nationallitteratur*. Buchheim's *Prose Composition* (with Wilmanns' *Deutsche Schulgrammatik*, Second Part) furnished the material for exercises in translation. The class read *Wallenstein's Tod*, as private reading.

In the minor course the following pieces were read in class: Lessing, *Minna von Barnhelm;* Schiller, *Wilhelm Tell;* C. F. Meyer, *Gustav Adolph's*

*Page* (part); Freytag, *Doktor Luther* (part); Heine, *Harzreise* (40 pp.). There was a weekly meeting for Prose Composition (von Jagemann, *Materials for German Prose Composition*). The class read Schiller's *Jungfrau von Orleans* and *Des Grafen Lamoral Egmont Leben und Tod*, as private reading.

Dr. B. J. Vos, Associate in German, gave a graduate course in Modern Dutch, twice weekly through the year. Hoogvliet-Ahn's *Grammar* was studied, and the following pieces were read: van Lennep, *Een vertelling van Mejuffrouw Stauffacher;* Hildebrand (Beets), *Camera Obscura* (in part); Selections from the Chrestomathy of Leopold, *Hoofdpersonen uit de geschiedenis der Nederlandsche letterkunde.*

Dr. Vos also gave the following undergraduate courses:

*Minor Course B:*

Otis, *Elementary German*, Lessons I–XXIV; Brandt, *German Reader*, pp. 1–9, 25–31, 57–68, 197–204; Storm, *Immensee;* Goethe, *Egmont;* E. S. Buchheim, *Elementary German Prose Composition*, Exercises 1–16; Whitney, *German Grammar* (180 pp.).

*Special Courses:*

Historical German. Twice weekly through the year. von Sybel, *Die Erhebung Europas gegen Napoleon I.* (pp. 1–65); Ribbeck, *Sophokles und seine Tragödien* (32 pp.).

Scientific German. Twice weekly through the year. Hodges, *Scientific German* (pp. 1–26, 53–57, 63–68, 71–76, 78–81); Kopp, *Sonst und Jetzt in der Chemie* (34 pp.); Häckel, *Über die Entstehung des Menschengeschlechts* (pp. 3–25).

Mr. Henry E. Ebeling conducted a class in German Conversation, twice weekly, up to the Christmas recess, when his promising career as student and teacher was cut short by sudden sickness and death. Dr. A. B. Faust continued the course from January 1 to the end of the year, and gave also a series of informal lectures, weekly, on subjects connected with German *Kulturgeschichte.*

HENRY WOOD,
*Professor of German.*

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## English.

1. Advanced Courses.

The English Seminary, under the direction of Professor James W. Bright, met twice a week (four hours) through the year. During the first half-year the Anglo-Saxon texts of the Grein-Wülker *Bibliothek der ags. Poesie*, Vols. I and II, were studied. The second half-year the Seminary studied the dramatic works of John Dryden.

The members of the Seminary met as a Journal Club (fortnightly, two hours) for reports on current periodicals, reviews of new books, and the reading and discussion of original papers.

Professor Bright gave a course of lectures (weekly, through the year) on recent results in the comparative study of Indo-European consonants, with special reference to the consonantal system of Old English. In the second half-year he gave twelve lectures on John Dryden.

A class was met once a week, by Professor Bright, for the critical study of Chaucer's *House of Fame* (first half-year), and the Cædmonian *Christ and Satan* (second half-year).

A series of conferences (once a week, through the year) on the Romanic elements in English, and on other topics, was conducted by Professor Bright. To these conferences Dr. Fred. H. Sykes contributed some twenty lectures on the Romanic elements in English.

This course was designed to give a general introduction to the study of Romanic influences on the language and literature of England to the end of the Middle-English period. The chief subjects of the lectures of Dr. Sykes were as follows:—The history of the Latin loan-words in Anglo-Saxon, with a discussion of the question of the romanization of Britain (Pogatscher, Loth); the Northmen, their settlement in France, their conquest of England (Depping, Freeman, etc.); the nature of the Norman language, its position in England relative to Anglo-Saxon, its subsequent history (Mall, Warncke, Suchier, Scheibner, etc.); the chief monuments of Anglo-Norman, especially referring to Philippe de Thaün, *St. Brandan*, Geoffrey Gaimar, Wace, Benoit de Ste. More, Béroul, Thomas, Marie de France, with allusions to the less prominent works down to Gower; the cyclic literature of Anglo-Norman and French (Arthur, Charlemagne, Alexander, Troy, Thebes) considered in its bearings on the history of Middle English literature (Hucher, Birch-Hirschfeld, Nutt, Paris, Constans, etc.); the problems of language and style involving the question of Romanic influence; the number, history, and character of French loan-words in Middle English (Payne, Morris, Fritzsche, Einenkel, Behrens, Nichol, Sturmfels, Holthaus); the influence on flexion (*s*-plurals, Wood, Napier, Earle, Jespersen); bilingualism; order of words; the development of substantival, verbal, prepositional, and negative phrases of Middle English under Romanic influence; the change of poetic style from Anglo-Saxon to Middle English (Heinzel and Koegel for A. S. period); versification (Sievers, Schipper, Dingeldein, Gautier, etc.). At each stage of the course brief bibliographical details were presented to facilitate the work of students intending to make researches in the field of Romanic influences.

Mr. James W. Tupper contributed three lectures on the personal and literary relations between Chaucer and Gower; and Mr. George Shipley, in three lectures, discussed the arrangement of the *Canterbury Tales*.

Professor Wm. Hand Browne delivered a course of lectures (weekly, throughout the year) on the dramatists of the eighteenth century, from

Southerne to Sheridan. The course illustrated the dying-out of the Jonsonian comedy, and the triumph of the comedy of polite life; the attempts to revive the pathetic drama of Otway; the rise of the vaudeville, the opera, the sentimental and domestic drama, the harlequinade and the mime. The history of the English stage was also incidentally treated.

Professor Herbert E. Greene gave a course of lectures (weekly, October to March) on the history of Rhetoric, beginning with the first conscious attempts at the use of artistic prose among the Greek sophists and orators, and tracing the theory of rhetoric as taught in the Greek and Roman schools, and as transmitted with additions and modifications to our own time. The course also included a discussion of present methods of teaching Rhetoric.

2. College Courses.

The English major class met Professor Bright (twice a week) for the study of Anglo-Saxon, using as a text-book Bright's *Anglo-Saxon Reader*.

This class also studied with Professor Browne the Scottish poets of the fourteenth, fifteenth, and sixteenth centuries (weekly, throughout the year), the Elizabethan poets (weekly, the first half-year), and the literature of the eighteenth century (weekly, the second half-year).

The English minor class was conducted by Professor Browne. The class studied Early and Middle English texts (two hours a week) using Morris and Skeat's *Specimens* as the text-book, and English Literature (two hours a week) using the Morley-Tyler *Manual of English Literature*.

A class in Rhetoric and English Composition met Professor Herbert E. Greene three times weekly, throughout the year. Theory was imparted by means of text-books (A. S. Hill's *Principles of Rhetoric* and Genung's *Practical Rhetoric*), lectures, and discussions; practice was obtained by the writing of about forty brief papers and of three formal essays. Of the short papers a few were read and criticised in the presence of the class from week to week; the greater part of them were corrected and returned to the writers. Of the formal essays about two-thirds were read and criticised privately with the writers, and returned to them for correction. Each member of the class made a careful study of the style of one prose author (usually of a nineteenth century author), and presented the results of his study in the form of a series of brief papers and (in some cases) one formal essay. The class-work included a study of the essays by Macaulay and Carlyle on Croker's edition of Boswell's *Life of Johnson*.

A class in English Literature met Professor Greene three times weekly, throughout the year. This class made a general survey of English Literature from the middle of the fourteenth century to the latter part of the seventeenth century. A detailed study was made of the writings of Chaucer, Spenser, Shakspere and Milton. Of the writings of these poets a considerable amount was critically studied in the class-room; and much more was read by the members of the class in their private reading. Each member of the class prepared two essays.

An elective course in English Literature was given by Professor Greene twice weekly, throughout the year. The writings of Chaucer, Spenser, and Shakspere were studied in the same manner as in the course described above. Each member of the class prepared one essay.

A short course in Elocution, given by Mr. John R. Scott, was prescribed for every member of the undergraduate class in Rhetoric; and further instruction was provided for all who desired it.

The following prizes for proficiency in English Composition have been offered by Mr. C. Morton Stewart, President of the Board of Trustees:—

I. For the best essay written by a Bachelor of Arts of the Johns Hopkins University,—a prize of one hundred dollars.

II. For the best essay written by any graduate student of the Johns Hopkins University (whether a Bachelor of Arts of this University, or not)—except a fellow by courtesy or a fellow,—a prize of one hundred dollars.

III. For the best essays written by matriculated students of the first year,—a prize of thirty dollars and a prize of twenty dollars.

IV. For the best essay written by any matriculated student of the second and third years,—a prize of fifty dollars.

A friend of the University, resident in Baltimore, has offered to the writer of the best essay upon a given scientific subject a prize of one hundred dollars.

A prize of fifty dollars is offered by a lady of Baltimore to that matriculated student who shall prepare and deliver in public the best address.

3. Lectures on Literature.

Professor C. T. Winchester, of Wesleyan University, Middletown, Conn., gave nine Donovan Lectures on English Literature (March and April), on some representative Victorian writers, as follows: 1. Introductory: The Victorian Period.—2. Thomas Carlyle: *Sartor Resartus* and Carlyle's philosophy of life.—3. Thomas Carlyle: The Histories; Political and Social Writings.—4. Arthur Hugh Clough: Poetry of Religious Question.—5. Matthew Arnold: Poetry of Religious Question (continued).—6 and 7. Alfred Tennyson: His Art; His Themes.—8 and 9. Robert Browning: General Characteristics; Special Themes. By special request, Professor Winchester gave also a lecture on the "Lake Poets."

JAMES W. BRIGHT,
*Professor of English Philology.*
WILLIAM HAND BROWNE,
*Professor of English Literature.*
HERBERT EVELETH GREENE,
*Collegiate Professor of English.*

## Romance Languages.

Professor Elliott conducted advanced courses as follows:

Romance Seminary. *Two hours a week, through the year.*

The work centered here on the *Fables of Marie de France*, of which it is proposed eventually to issue a critical edition based on the original manuscripts. The object of the course has been to acquire a working knowledge of the fable literature of antiquity and the middle ages; to become acquainted with the characteristics of the Norman and Anglo-Norman dialects in which some of the more important manuscripts are written; to present the fundamental principles of text-criticism and text-constitution, for which two fables were examined. These were based on five English and eight French manuscripts. A clear view of the morphology and phonetics of the language was obtained as contrasted with those of the Isle-de-France.

Spanish Philology. *Twice weekly.*

The subject of occurrence of *facer* (*hacer, far, fer*) and of the periphrastic futures (combined and non-combined) was examined for this literature down to the end of the thirteenth century. After recording the phenomena, the material was placed in the hands of a member of the Seminary who will work out the results for publication.

Popular Latin. *Weekly.*

The object here was to give the student an introduction to the phonetics and morphology of Folk- and Low-Latin as the common basis for a scientific study of the modern Romance idioms. Meyer-Lübke's treatment of the subject in Gröber's *Grundriss der Romanischen Philologie* was taken as the starting point for this work, in connection with which lectures were given, contrasting the popular forms with the historic development of the classical forms. The material in the *Probi Appendix* was classified and the popular forms worked out on the basis of Schuchardt's *Vocalismus des Vulgärlateins*. Budinsky's *Ausbreitung der Lateinischen Sprache*, D'Arbois de Jubainville's *Déclinaison latine en Gaule*, Bonnet's *Le Latin de Grégoire de Tours*, Wölfflin's *Archiv für lateinische Lexicographie*, and Seelmann's *Die Aussprache des Latein* were constantly used in connection with this course.

Romance Club. *Weekly.*

The object of this organization, to which all members of the Romance Language department belong, is to foster a common interest in everything that concerns the study of the Romance idioms. Reviews of important journal articles, papers on original investigations, discussions of literary and scientific subjects, reports of correspondence of a professional nature, represent the chief exercises that claim the attention of the club.

French Dialects. *Weekly.*

Five dialects were especially considered: Norman, Picard, Wallonian, Lorraine, and Burgundian. The method of work was to a great extent

practical, and had in view a sufficient acquaintance with dialect forms to enable the student to discriminate old French texts belonging to these different domains. To this end the leading characteristics of the old and modern dialect were presented in a few lectures; then through the use of early and later texts the student was required to recognize and name the dialect features as they occurred.

Rev. Frank Sewall, of Washington, D. C., gave two lectures on the Poet Carducci, entitled: 1. *Carducci as the Natural Poet of Italy*; 2. *Carducci and the Classic Realism.*

Associate Professor Rambeau gave the following courses for graduates:

Comparative Phonetics and French Pronunciation. *Twenty-five exercises.*

Short introduction upon the aims of the course, the phonetic literature, and the physiology of speech.—Different basis of articulation (*Indifferenzlage*) in speaking French and English.—1. *Analysis.* Formation and acoustic impression of the French vowels and consonants compared with the similar, more or less different, sounds of kindred languages: English, British and American (continually), Italian and Spanish (frequently), German and other languages (occasionally). French *patois* or dialectic pronunciation, Latin, Old French and other past stages of French were only incidentally touched upon, since the chief object of the course was not the history of French sounds in general, but a scientific and exact description of the actual sounds of the living speech according to the Parisian standard.—2. *Synthesis.* Phonetic phenomena in connected speech, assimilation, elision, contraction, *liaison*,—duration or length of sounds, stress (*accent de force*), pitch (*accent musical, intonation*), timbre,—syllable, word, sentence, stress-group, breath-group, *groupe d'énonciation*,—were studied along with, and by the aid of, phonetic texts: Franz Beyer and Paul Passy, *Elementarbuch des gesprochenen Französisch*, Nos. 5, 7, 11, 13, 18, 19, 20, 35; Paul Passy, *Le Français parlé*, Poems, Nos. 7 and 8; *Le Maître Phonétique, organe de l'Association Phonétique des professeurs de langues vivantes* (1895, January and February).

At the end of the course, the teacher explained the vocalic and consonantal system of the Italian tongue (standard language).

Study of Rabelais' Works. *Twelve exercises* (February–May).

The course was given in French. Its object was (1) to accustom students to understand and use the foreign language in connected speech, in treating a subject of French philology, (2) to introduce them into the literary and linguistic study of the works of one of the most original French writers in modern times, (3) to prepare them for a comprehensive study of the language and literature of the Renaissance period in France.

Lectures upon Rabelais and the Sixteenth Century; the five books of the *Roman de Gargantua et de Pantagruel;* the frivolous and coarse garb, and the hidden truth (*l'os médullaire*); commentators and critics; Rabelais' works and life in the light of modern criticism. Interpretation and trans-

lation into modern French: Book I, *Aux lecteurs, Prologue de l'auteur*, and Chapters 28–31. Rapid survey, with explanatory remarks: Chapters 1–27.

Dr. Rambeau conducted the following undergraduate courses in French:

Minor Course A. *Four hours weekly.*

1. *Conte; Novel; Drama.*

Alphonse Daudet, *Contes*, ed. Cameron, Nos. 4, 5, 6, 7, 8, 9; Paul Passy, *Le Français parlé*, Prose and Poetry; Corneille, *Polyeucte;* Victor Hugo, *Hernani*, A. I, II, III, IV, Sc. 1 (A. IV, V, contents and plot explained); Molière, *L'Avare*, A. I (A. II–V, contents and plot explained); George Sand, *La Mare au Diable* (recommended for private reading); Victor Hugo, *Les Misérables*, Episodes; Hector Malot, *Sans famille*, Episodes; Alexandre Dumas père, *Le Comte de Monte-Cristo*, Episodes (private reading and examinations).

Short lectures, frequently in French, on Corneille and *Polyeucte*; Victor Hugo and *Hernani;* the three unities of the Classical drama, and other subjects.

2. *Modern French Comedy.*

Labiche, *Le Voyage de M. Perrichon;* Sandeau, *Mademoiselle de la Seiglière;* Augier and Sandeau, *Le Gendre de M. Poirier*, A. I, II, III, IV, Sc. 1–2 (A. IV, end, contents).

Short lectures, frequently in French, on French society before and after the great Revolution; the Restoration of the Bourbons, and similar subjects. (3–6, in connection with 1 and 2, especially 1.)

3. *Short Outline of the History of French Literature, XVII-XIX Centuries.*

Fortier, *Histoire de la littérature française*, Parts III, IV, and V (with numerous omissions), the principal literary tendencies and movements, the most important writers, representative men, and all the authors of works read by the students (cf. Nos. 1, 2).

Short lectures, frequently in French, on monarchy and literature in France, *le Siècle de Louis XIV, le Siècle de Voltaire*, and other subjects.

4. *Exercises in Pronunciation.*

Sound-Tablets. Paul Passy, *Le Français parlé:* Poetry, Nos. 1–6; Prose, Nos. 12 and, partly, 4.

5. Elements of French *conversation; oral reports*, in French, upon authors and passages of works read by the students.

6. The Alexandrine verse: a few essential features of *French versification.*

7. *Syntax and Prose Composition.*

Whitney's *French Grammar*, Part II, and Grandgent's exercises based on Daudet's *Le siège de Berlin.* The students had to write a few short essays in French upon authors and subjects connected with the private reading and the class-work.

Major Course. *Four hours weekly.*

1. *Outline of the History of French Literature from the beginnings to the eighteenth century; special study of Classical Tragedy and Comedy.*

Corneille, *Le Cid; Horace* (private reading and examination). Racine, *Britannicus.* Molière, *L'Avare; Le Bourgeois gentilhomme; Les Précieuses ridicules; Les Femmes savantes; Le Tartuffe; Le Misanthrope.* Voltaire, *Zaïre.* Fortier, *Histoire de la littérature française,* Parts, I II, III, IV (with omissions, especially in Parts I and II).

Lectures, mostly in French, on the French drama in the middle ages and since 1552; the three unities; *comédie sérieuse* and *comédie burlesque; comédie de mœurs* and *comédie de caractère;* Euphuism, Marinismo, Gongorismo, and *style précieux;* Hôtel de Rambouillet; French society in the reign of Louis XIV; Voltaire and the eighteenth Century; Latin and the Romance languages; *langue d'oc* and *langue d'oïl;* mediæval poetry; *Renaissance;* and other topics.

2. *French Literature in the XIXth Century, especially the Romantic Movement.*

Victor Hugo, *Notre-Dame de Paris,* Tome I, Livres I, II, (contents of L. III), IV, V (Ch. I), VI; Tome II, Livre VII, Ch. I–III, (contents of L. VII, Ch. IV—L. XI); *Ruy Blas.* Paul Passy, *Le Français parlé,* Prose and Poetry. *Modern French Lyrics,* ed. Bowen.—Alfred de Vigny, *Cinq-Mars ou une conjuration sous Louis XIII,* and Alphonse Daudet, *Tartarin sur les Alpes* (private reading and examinations).—Fortier, *Histoire de la littérature française,* Part V.

Lectures, mostly in French, on the Romantic movement in England, Germany, and France; Classicism, Pseudo-Classicism, and Romanticism; Victor Hugo; his language, style and art; Shakespeare and the Romantic drama; the other poets of the Romantic school; *le mal du siècle* (*Weltschmerz*); Théophile Gautier and the *Parnassiens;* Béranger's *Chansons* and the national character; and other topics.

(3–5 in connection with 1 and 2.)

3. *Exercises in Pronunciation.*

Sound-Tablets. Paul Passy, *Le Français parlé:* Poetry, Nos. 1–8; Prose, Nos. 1 and, partly, 11.

4. Exercises in French *conversation; oral reports,* in French, upon authors and works, or passages of works, read by the students.

5. The Alexandrine verse, Classical and Romantic; principal laws of *French versification.*

6. *Study of Idioms, and Prose Composition.*

Storm, *French Dialogues,* Ch. I–XI and, partly, XII. Exercises on idioms and syntax, based on these dialogues, Ch. I–X and, partly, XI.—Original essays with reference to subjects and authors read by the students (cf. Nos. 1–2).

Dr. Menger conducted the following courses:

Origins of Italian Literature. *Weekly, first half-year.*

The lectures in this course, which is to be continued the coming session, included an outline of the political history of Italy from the time of Odoacer to the middle of the fourteenth century; a review of the literature under

the Goths and Lombards; the influence of Charlemagne; Middle-age Latin poetry; the influence of Provençal on early Italian; the Sicilian school.

Italian Philology. *Twice weekly, first half-year; three times weekly, second half-year.*

For a study of Italian phonology Meyer-Lübke's *Italienische Grammatik* was used as a basis. Different sections of this work were assigned to the students; each one of the latter, after having prepared in writing a report on his section and on all references to books and journals which treated of the point involved, read the same before the class, the other students taking notes from his paper. On Italian morphology lectures were given by the instructor in charge. The material for these was drawn for the most part from Caix, *Origini della lingua poetica italiana*, and from articles by Gröber in the *Zeitschrift für romanische philologie*, and by Ascoli and D'Ovidio in the *Archivio Glottologico Italiano*. For practical application of what was learned in both reports and lectures, a page and a half of the first *novella* of the *Decamerone* was studied critically in the course of the session.

Old French Philology. *Two hours weekly.*

This course consisted entirely of lectures on the Phonology and Morphology. The endeavor was made to present the laws which govern the transition of words from Popular Latin into Old French; incidentally their later development into Modern French was described. For an application of these laws the first few pages of the *Voyage de Charlemagne* were examined critically.

Undergraduate Italian. *Four hours weekly.*

In this course attention was devoted entirely to modern Italian. Exercises in grammar and composition occupied one hour per week. Grandgent's *Grammar* and *Composition* and Fornaciari's *Sintassi* were used for this hour. The main object of the course, however, was the reading of Italian texts, of which the following were completed during the session: Del Testa, *L'Oro e l'Orpello;* De Amicis, *Alberto, Camilla;* Barrili, *Una Notte Bizarra;* Verga, *Cavalleria Rusticana, Jeli il Pastore, Rosso Malpelo, Guerra di Santi, Il come, il quando ed il perchè;* Capuana, *Mostruosità, La Mula, Povero Dottore, Don Peppantonio, Evoluzione, Raffinatezza, Comparàtico.* In the last part of the course sight reading was done; for this Verga's *La Lupa* and Capuana's *Maestro Cosimo* were used.

Italian Elective. *Twice weekly.*

In this course the following texts were translated: Del Testa, *L'Oro e l'Orpello*, De Amicis, *Alberto, Camilla;* Barrili, *Una Notte Bizarra;* Goldoni, *Il Burbero Benefico;* Maffei, *Merope;* Dante, *Divina Commedia*, first five cantos of the *Inferno.*

Dr. Marden conducted the following courses:

Old French Readings. *Twice weekly.*

The aim of the course was to read as much as possible, and by such reading the student became familiar with various stages of the languages, together with the more important dialects. The class began by reading the oldest monuments contained in Constans, *Chrestomathie de l'ancien français*, after which the following texts were read entire: Paris' *Extraits de la Chanson de Roland;* Suchier, *Aucassin und Nicolete;* Koschwitz, *Karlsreise;* Warnke, *Die Lais der Marie de France;* also 2600 verses of Förster *Cligès.* A portion of the class completed the *Chanson de Roland* as private reading.

Spanish Epic. *Weekly, second half-year.*

This course consisted of seventeen lectures on the early heroic poetry of Spain. The popular ballads, together with the full-length epic poems, formed the basis for a systematic study of such old Spanish heroes as Rodrigo, Bernardo del Carpio, the Cid, the Infantes de Lara, Mudarra, and Fernan Gonzalez.

French Minor Course B.

This course was intended for graduate students and those undergraduates who had matriculated in Greek. The object of the course was to give the students a reading knowledge of French. During the first half-year the class used Grandgent's *Short French Grammar*, Super's *French Reader*, and Grandgent's *Prose Composition* based on Super's *French Reader*. Sand's *La Mare au Diable* was read entire. During the second half-year the work in prose composition was continued and Merimeé's *Colomba* was completed.

Mr. De Haan gave during the year a series of lectures on The History of the *Novela Picaresca* in Spain (once weekly). After giving a definition of this form of literature, as exemplified in its most characteristic specimens, the literary antecedents of the picaresque novel and the circumstances that gave rise to it were considered at length. The importance of picaresque literature and its influence upon the formation of the modern *roman de mœurs* was thereupon illustrated by a study of the movement in Spain and of the imitations in other literatures, more especially the French. Ultimately it was shown that modern political conditions have again given birth to works of a professedly picaresque nature.

The undergraduate course in Spanish has been enlarged from two to four hours weekly. It was this year attended only by the first year graduate students in the Romance Department. After studying the most important facts of Spanish grammar, the course was mainly devoted to the reading of graded texts (Quintana's *Vida del Gran Capitán; Lazarillo de Tormes; La Familia de Alvareda; El Sombrero de Tres Picos;* Hartzembusch's *Amantes de Teruel;* selected passages, amounting to about one-third, of Campoamor's *Pequeños Poemas;* Lope's *Esclava de su galán;* Calderon's *Alcalde de Zalamea*); while the study of grammar was continued in specially prepared exercises.

## History and Politics.

The associated departments of History, Politics, and Economics have enjoyed a year of continued prosperity and success. The removal of department work from its former contracted domain and its present establishment in a suite of seven spacious rooms, in the third story of McCoy Hall, have given better accommodations for both students and instructors. The facilities have been increased for original work by a more convenient grouping of department libraries, special collections of manuscripts, pamphlets, maps, and various historical and archæological materials.

The total attendance of students in the various classes of historical and political science has been one hundred and seven. Of this number forty-five were graduate students. The policy of giving special courses of lectures to advanced students has been continued with manifest success. Dr. Wm. T. Harris, U. S. Commissioner of Education, began in January, 1895, a course of Saturday morning lectures to students and teachers upon the Relation of Art to Education. A syllabus of each lecture was prepared in advance and copies were distributed to the audience from week to week. Professor James Schouler, of the Law School of Boston University, gave in February and March, 1895, a course of twenty-five lectures on State Constitutional History. Professor Woodrow Wilson, of Princeton College, gave about the same time a course of twenty-five lectures upon Comparative Politics and Methods of Administration in England, France, Prussia, and the United States. Dr. W. W. Willoughby, formerly Fellow in History in the Johns Hopkins University, gave twelve class lectures on the Theory of the State, lectures which he afterward expanded into a regular course of instruction in the Leland Stanford Junior University. Professor John B. Clark's lectures will be mentioned in connection with the class work in Economics.

Professor Herbert B. Adams has continued to guide the associated work of the department, and, in addition, has conducted the following courses:

(1) Historical Seminary. This is the oldest of the historical department organizations for special work, and continues to be a kind of Historical and Political Science Association where results of more general interest are communicated and criticized. The Seminary is attended by all the students and most of the instructors in the department. The Seminary has met on alternate Fridays, from 8 to 10 p. m., in its new and attractive library. The attendance, besides instructors, numbered thirty-eight graduate students. Among the original papers presented in abstract and discussed in the Seminary are the following: A Summer Visit to a Carmelite Monastery, by H. B. Adams; James Anthony Froude, by J. C. Ballagh; The Last Provisional Government of Maryland, by B. C. Steiner; History of Industrial Arbitration, by E. R. L. Gould; Historical Work of Herbert Tuttle (published in the Report of the American Historical Association, 1894),

by H. B. Adams; Progress of the Parkin Street Settlement, by B. C. Steiner; Genesis of California's First Constitution (published in the University Studies, August, 1895), by R. D. Hunt; The Indians of Colonial Virginia, by S. R. Hendren; Horne Tooke as a Publicist, by S. E. Forman; The Historical Work of Professor J. R. Seeley, by G. B. Lynes; Claudio Jannet's Historical and Economic Writings, by E. F. DuBrul; Catholic Views of Social Problems, by C. P. Neill; White Servitude in Virginia (published in the University Studies, June-July, 1895), by J. C. Ballagh; The City Government of Baltimore, by T. P. Thomas; The Labadists of Colonial Maryland, by B. B. James; Social and Economic Studies in Paris, by W. F. Willoughby, of the U. S. Department of Labor; Levasseur's Studies of American Economics, by F. R. Rutter; Christian Missions in China, by C. S. Estes; History of the Maryland and Virginia Boundary Line, by L. N. Whealton; The Provisional Government in Maryland from 1774 to 1777 (published in the University Studies, October, 1895), by J. A. Silver.

Four courses of class lectures:

(2) History of Civilization, two hours weekly through the year. This course was attended by fourteen graduates and sixteen undergraduates.

(3) Roman Politics, two hours weekly first half-year, with thirty-eight graduates.

(4) French Absolutism, two hours weekly second half-year, with thirty-eight graduates.

(5) History of the Nineteenth Century, one hour weekly throughout the year, with forty-two graduates.

Professor George H. Emmott lectured

(1) On the History and Principles of the Roman Law and the History of Roman Institutions, to thirty-eight graduate and advanced students, twice weekly through the year. The course opened with a description of the origin and nature of the primitive Roman State, and of the early legal institutions of the Roman people, and traced fully the history and gradual progress of the Roman Law through all its stages of development from the earliest times down to and including the codification of the law by Justinian, special attention being paid to the original sources of the Roman Law and to the gradual development and continuity of Roman legal and political institutions. The subsequent history of the Roman Law in the East and in the West after the time of Justinian will be fully treated of in the course on Comparative Jurisprudence to be given in 1896–97.

In the second part of the course the subject matter of the Institutes of Gaius and of the Institutes of Justinian was carefully analyzed, compared, and classified, and the fundamental principles of Roman Law were fully explained and illustrated. The topics treated of included: the law of the family; the law of things; the law of wills; the law of contract; forms of contract; the law of procedure. The instruction throughout was comparative and historical in its method. In connection with the lectures, frequent oral and two written examinations took place upon the various topics treated

of by the lecturer. A valuable paper prepared by Dr. J. Spencer Bassett, now Professor of History at Trinity College, Durham, N. C., whilst a member of this class during the session 1893–94, and entitled "Landholding in Colonial North Carolina," has been published in The Law Quarterly Review for April, 1895.

(2) On English Constitutional Law and History, to ten graduate and fourteen undergraduate students, twice weekly. The origin and development of the English Constitution and of the fundamental principles of English Constitutional Law were carefully and systematically traced in chronological order from the earliest period down to the present time. Taswell-Langmead's English Constitutional History was taken as containing an outline sketch of the ground covered, with references to the works of Freeman, Stubbs, Hallam, Erskine May, Dicey, Anson, Hearn, Bagehot, Traill, Spencer Walpole, and other writers. The instruction was given by means of lectures delivered by the instructor, by frequent recitations, and by lectures given and reports carefully prepared by the students themselves on the following amongst other topics: the political and social condition of England under the Anglo-Saxons; the political and constitutional effects of the Norman Conquest; the judicial and administrative reforms of Henry the Second; the Tudors and the Reformation, 1485–1603; the political relations of monarch and parliament from 1603 to 1642; the constitutional significance and political consequences of the revolution of 1688; the struggles of Whigs and Tories in the eighteenth century; the origin, development, prerequisites, and peculiar form of Cabinet Government in England; the Reform Bills of 1832, 1867 and 1884.

(3) On Sources of English History and the History and Literature of Historical Writing in England from the Norman Conquest to the accession of Henry VII. These lectures were given once weekly to sixteen graduate and advanced students throughout the year. They contained a careful presentation of the lives and works of the contemporary and modern writers on English History during the period under investigation.

Dr. J. M. Vincent has conducted the following courses:

1. Methods of Historical Research, with eight graduate students, two hours weekly throughout the year. The various classes of historical material were taken up in their order and defined, their relative values compared, and the method of use in each case indicated. The general rules of historical evidence, the principles which must govern the student in making up his conceptions of history, the composition of historical works, the appropriate literary style, and other kindred topics were discussed. The second part of the year was chiefly devoted to the history of modern historical writing. After briefly characterizing the prominent historians of the Middle Ages, Dr. Vincent traced the evolution of historical science from the Renaissance to the present time.

2. Historical Conference, with seven graduate students, two hours fortnightly throughout the year. The object was to give practical application

to the principles of historical science by encouraging the critical examination of sources and the weighing of evidence. Topics were assigned to the members of the conference for study and report in such a way that each one was able to criticise the work of the others. The solving of selected historical problems helped to develop the students' judgment for original work.

3. The Historical Journal Club met weekly during the greater part of the year, and fourteen graduate students coöperated in noting the progress of historical literature in periodicals and books.

4. The Reformation and the Puritan Revolution, with six graduates and fifteen undergraduates, two hours weekly throughout the year. A careful study of the Reformation Period in Germany, Switzerland, the Netherlands, and England was made. The text-books were supplemented by readings in contemporary sources, with a view of developing the political as well as the religious side of that movement. The Puritan Revolution was examined with the aid of Gardiner's collection of Constitutional Documents, and topical readings were assigned to the class in such a way as to show what political and social ideas of England were transmitted to the American colonies.

5. Ancient History, with twenty undergraduate students, two hours weekly throughout the year. In this course the history of the Orient and of Greece was carried down to the time of Alexander the Great, partly by means of lectures and partly by the aid of a text-book.

Dr. B. C. Steiner conducted a college class in American Political and Constitutional History, with five graduate and fourteen undergraduate students. Instruction was given by means of recitations from assigned portions of text-books, by reports on special topics from members of the class, and by lectures from the instructor. Beginning with the first English colony in North America, the history of the United States for the colonial and national periods was followed to the close of the reconstruction period in 1876. The chief emphasis was laid on the constitutional side of American history, and but little attention was given to economic and social features, except when necessary to explain the constitutional. American political history, as the groundwork of the course, received considerable attention. The text-books used in class were: Fisher's "Colonial Era," Hart's "Formation of the Union," Wilson's "Division and Reunion," and Johnston's "American Politics." For outside reading "The Federalist" and the first part of Bryce's "American Commonwealth" were recommended.

Dr. Sidney Sherwood conducted the following courses:

(1) The Economic Conference. Twenty-three graduate students specially interested in economics met one evening fortnightly throughout the year. The current economic periodicals were reviewed. The members who had been conducting original research along special lines presented results of their work for discussion and criticism. The following is a list of the

principal papers thus presented: Taxation in Maryland, J. W. Chapman; State Tax Commissions, J. W. Chapman; John Locke as an Economist, Dr. Sherwood; Units of Investigation in the Social Sciences, A. F. Bentley (published in the Annals of the American Academy of Political and Social Science, May, 1895); Adam Smith and the Physiocrats, W. A. Wetzel; Benjamin Franklin as an Economist, W. A. Wetzel (published in the University Studies, September, 1895); Condition of the Cotton Farmer in the South, E. H. Johnson; Drift of Population from Country to City, B. W. Arnold; Cotton Seed Industry, C. F. Zimmele; Carl Menger's Views on the Methodology of Economic Science, Dr. Seager, of the University of Pennsylvania; History of Japanese Paper Currency, M. Takaki; The American Tobacco Company, E. F. DuBrul; History of State Banks in Maryland, A. C. Bryan; Labor Legislation in Maryland, M. Reizenstein; Methods of Listing Securities in the Stock Exchange, F. H. McLean; Supervision of Life Insurance in the United States, G. E. Boynton; Development of the Street Railway System of Philadelphia, F. W. Speirs, of the Drexel Institute, Philadelphia.

(2) History of German Economic Theory. This class, numbering eight of the most advanced economic students, has held weekly meetings. Each member of the class was assigned a topic to be treated historically and critically, and the weekly meetings have had under discussion some assigned portion of Cohn's *Grundlegung*. A. F. Bentley read a paper on Development of Wage Theories in German Economics, and B. W. Arnold on the German Concept of Capital.

(3) Municipal and Private Corporations. This course was attended by twenty-seven graduates, two hours weekly, from November to June. The causes of the recent urban concentration of population were studied, and the relation of these large centres to the general economic structure was analyzed so as to bring out the economies in production, distribution and consumption effected by this city growth. The economic nature and problems of the corporate city were also treated. The second part of the course reviewed briefly the history of the mediæval corporations of artisans and merchants, the great commercial companies, and their work in the industrial conquest of the new world, and the early banking and financial corporations. The emphasis was, however, placed upon the development in this century of the corporate form of industrial organization, the facts in the industrial conditions of the time and in the internal organization of the corporation which have made it persist and crowd out older methods. The relation of the State to the corporation was also treated. Throughout this course the aim was kept constantly in view of showing, by means of a minute study of these two classes of corporations as structural types of economic society, the individualistic basis of social structure, and hence the necessity of studying economics by beginning with the individual and constructing the concept of society, instead of regarding social groups as primary unities.

(4) Current Economic Events and Literature. One hour weekly. Twenty-three graduates attended this course. Its object was to afford an opportunity for the free discussion of subjects of timely interest. Some of the topics treated were the "Baltimore Plan" for the reform of our paper currency and banking system, the "Wilson Bill," the "Income Tax Decisions," the Economic Status of the Negro, Lobbying by Industrial Organizations. The topic for discussion was in many instances introduced by one of the students.

(5) Industrial History of England and the United States. Two hours weekly, first half-year. Attended by twenty undergraduates and two graduates. Part of Minor Politics.

(6) Development of Economic Science. Two hours weekly, second half-year. Attended by eighteen undergraduates and two graduates. Part of Minor Politics.

Professor John B. Clark, of Amherst College, gave a course of twenty-five lectures in October and November, 1894, upon the Relation of the State to Industry. Thirty-two graduates attended these lectures. After an outline of the theory of normal distribution, the effects of certain dynamic influences were studied, such as the growth of population and capital, the consolidation of productive forces in corporations and trusts, new inventions, etc. The aim of the course was to discern the proper rule for State control or regulation in the light of the effect of these dynamic forces upon the law of normal distribution. The conclusion was reached that, in general, the true policy of the State was not control of industry nor active interference, but an active assertion of its power to secure the persistence of the field for free competition.

Dr. J. H. Hollander conducted the following courses:

(1) Development of Economic Theories. A series of eight lectures upon the history of certain fundamental concepts was given to a class of twenty-three graduate students. The endeavor was made to trace the historical development of the theories of Rent, Wages, Interest, and Value. The continuity of English thought from Adam Smith to Professor Marshall was particularly examined, attention being given to certain other writers whenever direct influence or analogy was discernible.

(2) Elements of Economics. A class course upon the Principles of Political Economy was attended by nineteen undergraduate and two graduate students, two hours weekly during the first half-year. Walker's Political Economy (advanced course) was used as a text-book, being supplemented by frequent references to other works. Lectures, discussions, recitations, and assigned reading formed the method of instruction. The purpose of the course was to present the essential elements of modern economic life.

(3) Applied Economics. A class course upon certain practical economic problems, attended by nineteen undergraduate and two graduate students, two hours weekly, formed the continuation of the preceding course during

the second half-year. The subjects treated were: (1) Money and Banking; (2) Socialism; (3) Taxation. Class lectures and discussions upon assigned reading were features of the work. Each member of the class was required to submit a carefully prepared essay upon some topic connected with or incidental to the work of the course.

Dr. Hollander also conducted a class course in Roman History, two hours weekly throughout the year, with nineteen undergraduate students. Pelham's "Outlines of Roman History" formed the basis of instruction. The formal use of the text-book was supplemented by class lectures, discussions, and collateral reading. Each member of the class was required to prepare during the year a written essay upon some topic connected with the course.

Dr. E. R. L. Gould gave to fourteen graduate students a course of twenty-five lectures on Statistics. Among the topics treated were the history of statistics, different conceptions of statistical theory, the relation of statistics to sociology, economics, and the natural sciences, the organization and technical methods of statistical bureaus. The last ten lectures were devoted to an analytical exposition of the social statistics of the United States, England, and France.

HERBERT B. ADAMS,
*Professor of American and Institutional History.*

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## Philosophy.

The following report of the work in Philosophy, during the academic year 1894–95, is respectfully submitted:

The undergraduate instruction in Logic, Psychology, and Ethics has been under the care of Professor Griffin. On account of the number and variety of the subjects to be covered in this course, five hours a week, instead of four, are assigned to it; and all candidates for the degree of Bachelor of Arts are required to follow it during their last year of residence. Forty-one students have been in attendance during the year. Logic was studied until shortly after the Christmas recess; the time was then given to Psychology until April 1; the remainder of the year was devoted to the study of Ethics. The effort has been to keep in view the needs of those to whom these subjects are new, and to make the treatment as simple and untechnical as possible,—at the same time calling attention to fundamental problems, so that the work may serve as an introduction to general philosophical study. Text-books have been used in each subject, as affording definite material of acquisition; but informal lectures, discussions in the class, and passages from various authors assigned for reading have been largely relied upon in the presentation. Each member of the class has been required to prepare two essays in the course of the year.

Jevons's *Elementary Lessons in Logic* and Fowler's *Elements of Inductive Logic* were made the basis of instruction in deductive and inductive logic, respectively, with frequent references to the works of Mill, Bain, Keynes, and other writers. The general theory of deduction and of induction was discussed, with the view of determining the nature and value of each of these processes, and their relations to each other in scientific investigation and proof. Facility in the use of logical forms and methods was sought through exercises in definition and division, in the opposition and conversion of propositions, in the application of the rules of the syllogism, and in the detection of fallacies.

The instruction in Psychology attempted to give a general view of the results of experimental methods of study, and also to emphasize the facts of conscious experience as known through introspection. The most important end to be secured being such an understanding of the facts and laws of mental life as shall fit one for wise self-government and effective influence, such powers and states of mind as attention, memory, association, habit, imagination, the feelings, the will, were treated in as concrete and practical a way as possible. Baldwin's *Elements of Psychology* and Ladd's *Outlines of Physiological Psychology* were used as text-books, supplemented by many references to the works of other authors. A series of lectures on the anatomy and physiology of the nervous system was given, as a part of the course, by Dr. L. F. Barker.

The work in Ethics was mainly confined to the theoretical and historical aspects of the subject; questions of applied ethics were, for lack of time, but slightly considered. The various forms of feeling native to our constitution and constituting the possible motives of conduct; the conditions and nature of the sense of obligation; the authority of conscience; the diversities of moral sentiment; the historic theories of morals—hedonism, utilitarianism, intuitionism, and the application to ethical theory of the doctrine of evolution,—these are some of the topics treated. While a more detailed application of the principles reached to personal and social conduct would have been desirable, the consideration of the speculative side of ethics is well adapted to produce a habit of moral thoughtfulness. Fowler's *Principles of Morals*, Part II, was employed as a text-book, but the instruction was largely given through lectures.

One hour each week was used, during the first half of the year, for a brief outline of the History of Philosophy, and the survey was brought down, in a summary way, to the modern period. During the latter part of the year a weekly lecture was given for the benefit of those who were able to attend it as a voluntary exercise.

A course in the History of Philosophy, for graduate students, was conducted during the year, consisting of the reading and discussion of representative works in modern philosophy from Descartes to Kant. The works read were as follows: Bacon's *Novum Organum*, book I and a part of book II; Descartes' *Method and Meditations;* Spinoza's *Ethics;* Leibnitz's *Mono-*

*dology;* Locke's *Essay on Human Understanding*, books I, II, IV; Berkeley's *Principles of Human Knowledge;* Hume's *Treatise on Human Nature*, book I; a portion of Kant's *Critique of Pure Reason.* The class met once a week for discussion and criticism.

EDWARD H. GRIFFIN,
*Professor of the History of Philosophy.*

## Drawing.

The Undergraduate Course in Drawing has included: (*a*) representative or free-hand drawing from natural forms and geometric models, in outline and in light and shade, with pencil, charcoal and crayon; studies of landscape contours; and large charts finished with crayon or ink brush, such as the student may be called upon to make later on, when teaching or in illustrating lectures; (*b*) constructive or mechanical drawing, with exercises in the use of instruments, and elements of descriptive geometry,—simple projections, sections and developments, isometric projections, and the elements of linear perspective.

The Special Instruction in Drawing has been adapted to the wants and abilities of those seeking it, and has been chiefly in the line of advanced free-hand drawing, in light and shade, from casts, and personal directions for individual improvement in some line of Drawing helpful to the student in his scientific work.

The Technical Instruction in Drawing has already been referred to under the head of Electrical Engineering.

S. EDWIN WHITEMAN,
*Instructor in Drawing.*

# TABULAR STATEMENT OF COURSES OF INSTRUCTION, 1894-95.

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | **Mathematics and Astronomy.** | | | |
| Craig. | Fuchsian Functions. (First half-year.) | 3 | 7 | |
| Craig. | Abelian Functions. (First half-year.) | 3 | 9 | |
| Craig. | Mathematical Seminary. (First half-year.) | 1 | 10 | |
| Craig. | Mathematical Seminary. (Second half-year.) | 2 | | 12 |
| Craig. | Lines traced on Surfaces. (Second half-year.) | 3 | | 5 |
| Craig. | Elliptic Functions. (Second half-year.) | 3 | | 10 |
| Franklin. | Theory of Functions. (Elementary Course.) | 2 | 17 | 15 |
| Franklin. | Calculus: Special Topics. (First half-year.) | 4 | 28 | |
| Franklin. | Theory of Invariants. | 2½ | 13 | 10 |
| Franklin. | Differential and Integral Calculus. (Second half-year.) | 4 | | 39 |
| Chessin. | Partial Differential Equations. | 3 | 7 | 8 |
| Hulburt. | Plane Algebraic Curves. (First half-year.) | 4 | 5 | |
| Hulburt. | Surfaces and Twisted Curves. (Second half-year.) | 3 | | 4 |
| Hulburt. | Theory of Equations; Analytic Geometry. (Second half-year.) | 4 | | 26 |
| Hulburt. | Differential Equations. | 2 | 29 | 27 |
| Hulburt, Duvall. | Analytic Geometry: Minor Course. (First half-year.) | 4 | 41 | |
| Landis. | Trigonometry. (First half-year.) | 3 | 12 | |
| Roszel. | Analytic Geometry: Elem. (Second half-year.) | 3 | | 12 |
| Poor. | Advanced Theoretical Astronomy. (Second half-year.) | 3 | | 3 |
| Poor. | Theoretical and Practical Astronomy. | 2 | 10 | 10 |
| Poor. | Theory of Instruments. (First half-year.) | 3 | 2 | |
| Poor. | Descriptive Astronomy. | 2 | 3 | 2 |
| Poor, Chessin. | Astronomical Seminary. | 1 | 5 | 10 |
| Poor. | Observatory Work. | | 16 | 16 |
| Chessin. | Celestial Mechanics. | 3 | 3 | 2 |
| | **Physics.** | | | |
| Rowland. | Electricity and Magnetism. | 4 | 31 | 24 |
| Rowland, Ames. | Journal Meeting. | 1 | 25 | 25 |
| Ames. | Physical Seminary. | 1 | 12 | 15 |
| Ames. | Theoretical Mechanics. (First half-year.) | 2 | 22 | |
| Ames. | Hydrodynamics and Sound. (Second half-year.) | 2 | | 21 |
| Ames. | General Physics: Major Course. | 4 | 47 | 44 |
| Ames. | General Physics: Minor Course. | 4 | 64 | 59 |
| Duncan. | Applied Electricity. (First Year's Course.) | 2 | 23 | 23 |
| Duncan. | Applied Electricity. (Second Year's Course.) | 2 | 14 | 14 |
| Hering, Geer. | Steam and Hydraulic Engineering. | 4 | 11 | 11 |
| Hering. | Electrical Measurements. | 1½ | 19 | 17 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Geer. | Machine Design. | 2 | 17 | 17 |
| Duncan, Hering, Geer. | Electrical Seminary. (Second half-year.) | 1 | | 30 |
| Rowland, Duncan, Ames, Hering, Geer. | Laboratory Work. | | 141 | 132 |
| Bliss. | Experimental Physics. (First half-year.) | 3 | 8 | |
| Jones. | Electro-Chemistry. (Twenty lectures, second half-year.) | | | 50 |
| | **CHEMISTRY.** | | | |
| Remsen. | Historical Lectures. (First half-year.) | 2 | 28 | |
| Remsen. | Compounds of Carbon: Advanced Course. (Second half-year.) | 4 | | 32 |
| Remsen. | Journal Meeting. | 1½ | 37 | 33 |
| Remsen. | General Chemistry: Minor Course. (First half-year.) | 3 | 66 | |
| Morse. | Analytical Chemistry. | 1 | 30 | 29 |
| Morse. | Compounds of Carbon: Major Course. (Second half-year.) | 4 | | 15 |
| Randall. | Physical Chemistry. (First half-year.) | 2 | 24 | |
| Renouf. | Inorganic Chemistry: Major Course. (First half-year.) | 4 | 26 | |
| Renouf, Randall. | General Chemistry: Minor Course. (Second half-year.) | 4 | | 64 |
| Randall, Gilpin. | Reviews in General Chemistry: Minor Course. (First half-year.) | 1 | 66 | |
| Remsen, Morse, Renouf, Randall, Gilpin. | Laboratory Work. | | 127 | 112 |
| | Historical Lectures. (Four lectures by advanced students, second half-year.) | | | |
| | **GEOLOGY AND MINERALOGY.** | | | |
| Clark, W.B., Mathews. | General Geology. | 3 | 21 | 22 |
| Clark, W. B. | Vertebrate Palæontology. | 2½ | 8 | 8 |
| Clark, W. B. | Palæontology: Laboratory Work. (Advanced.) | | 8 | 8 |
| Mathews. | Petrography. | 3 | 8 | 8 |
| Mathews. | Petrography: Laboratory Work. | | 9 | 8 |
| Clark, W.B., Mathews. | Journal Club. | 1 | 8 | 8 |
| Gilbert. | Physiographic Geology. (Second half-year.) | 2 | | 25 |
| Willis. | Stratigraphic and Structural Geology. (Second half-year.) | 2 | | 25 |
| | **BIOLOGY.** | | | |
| Brooks. | Zoölogy: Advanced Course. | 3 | 13 | 13 |
| Brooks. | Zoölogical Seminary. | 1 | 14 | 14 |
| Brooks. | Zoölogical Journal Club. | 1 | 16 | 16 |
| Brooks. | Elements of Zoölogy. (Second half-year.) | 4 | | 18 |
| Howell. | Physiological Journal Club. | 1 | 11 | 11 |
| Howell. | Physiological Seminary. | 1 | 10 | 10 |
| Howell. | Animal Physiology. (Second half-year.) | 2½ | | 10 |
| Andrews. | Osteology. | 2 | 25 | 24 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Andrews. | General Biology. | 2 | 24 | 25 |
| Andrews. | Embryology. (During April and May.) | 4 | | 18 |
| Dreyer. | Physiology and Histology. (First half-year.) | 4 | 16 | |
| Dreyer. | Normal Histology. (First half-year.) | 6 | 13 | |
| Barton. | Systematic Botany. (During April and May.) | 2 | | 24 |
| Lotsy. | Morphology of Reproduction. | 3 | 6 | 6 |
| Lotsy. | Vegetable Histology and Cryptogamic Botany. | 6 | 3 | 5 |
| Brooks, Howell, Andrews, Dreyer, Barton, Lotsy. | Laboratory Work. | | 60 | 48 |
| | **Greek.** | | | |
| Gildersleeve. | Greek Seminary: Aristophanes. | 2 | 28 | 21 |
| Gildersleeve. | Greek Syntax. | 1 | 32 | 31 |
| Gildersleeve. | Greek Tragedy. (Second half-year.) | 1 | | 27 |
| Gildersleeve. | Greek Comedy. (Second half-year.) | 1 | | 23 |
| Gildersleeve. | Practical Exercises. (First half-year.) | 2 | 25 | |
| Spieker. | Plato, Protagoras. (First half-year.) | 3 | 7 | |
| Spieker. | Andokides. (First half-year.) | 3 | 10 | |
| Spieker. | Plato, Apology; Euripides. (Second half-year.) | 3 | | 10 |
| Spieker. | Aischylos; Sophokles. (Second half-year.) | 3 | | 8 |
| Spieker. | Aristophanes. (First half-year.) | 2 | 6 | |
| Spieker. | Prose Composition. (Two classes.) | 2 | 17 | 18 |
| Miller. | Greek Rhythms and Metres. | 1 | 21 | 16 |
| | **Latin.** | | | |
| Warren. | Latin Seminary: Roman Satire. | 2 | 28 | 27 |
| Warren. | Roman Satire: Lectures. (First half-year.) | 1 | 27 | |
| Warren. | Historical Latin Grammar. | 1 | 27 | 27 |
| Warren. | Journal Club. (Alternate weeks.) | 1 | 20 | 19 |
| Warren. | Ennius; Lucilius; Varro. (First half-year.) | 1 | 28 | |
| Warren. | Petronius; Seneca; Persius. (Second half-year.) | 1 | | 25 |
| Warren. | Terence; Plautus. (Second half-year.) | 3 | | 8 |
| Smith. | Tibullus; Catullus. (First half-year.) | 3 | 5 | |
| Smith. | Tacitus. (Second half-year.) | 2 | | 10 |
| Smith. | Livy. (First half-year.) | 3 | 24 | |
| Smith. | Horace. (Second half-year.) | 3 | | 24 |
| Smith. | Prose Composition. (Two classes.) | 2 | 29 | 29 |
| | **Sanskrit, etc.** | | | |
| Bloomfield. | Vedic Seminary: Brâhmaṇas. | 1 | 7 | 6 |
| Bloomfield. | Advanced Sanskrit: Hitopadeça; Manu. (First half-year.) | 2 | 8 | |
| Bloomfield. | Zend and the Zend-Avesta. | 1 | 4 | 3 |
| Bloomfield. | Comparative Philology. | 1 | 32 | 31 |
| Bloomfield. | Comparative Grammar of Latin, Greek, German, etc. | 1 | 21 | 21 |
| Bloomfield, Stratton. | Elementary Sanskrit. | 2 | 14 | 9 |
| Stratton. | Introduction to the Vedas. (Second half-year.) | 1 | | 3 |
| | **Semitic Languages.** | | | |
| Haupt. | Assyrian Seminary. (Second half-year.) | 2 | | 10 |
| Haupt. | Hebrew Prose Composition. (Alternate weeks.) | 1 | 11 | 9 |
| Haupt. | Assyrian: Haupt's Texts. (First half-year.) | 1 | 10 | |
| Haupt. | Hebrew: Samuel. (First half-year.) | 1 | 12 | |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Haupt. | Hebrew: Ecclesiastes. | 2 | 15 | 15 |
| Haupt. | Arabic Geographers. (Second half-year.) | 1 | | 12 |
| Haupt. | Arabic Prose Composition. (Alternate weeks.) | 1 | 11 | 13 |
| Haupt. | Assyrian Grammar. (Second half-year.) | 1 | | 10 |
| Haupt. | Hexateuch: Lectures. (First half-year.) | 1 | 48 | |
| Haupt, Johnston. | Hebrew: Elementary. | 2 | 16 | 7 |
| Haupt, Johnston. | Arabic: Elementary. | 1 | 12 | 11 |
| Johnston. | Assyrian: Elementary. (Second half-year.) | 1 | | 5 |
| Johnston. | Arabic: Sight Reading. (Second half-year.) | 1 | | 2 |
| Johnston. | Palestine: Lectures. (Second half-year.) | 1 | | 20 |
| Johnston. | Assyrian Exercises. (Second half-year.) | 1 | | 1 |
| Johnston, Levias. | Hebrew Exercises. | 1 | 9 | 6 |
| Levias. | Hebrew Conversation. | 1 | 9 | 4 |
| Levias. | Post-Biblical Hebrew. | 1 | 8 | 8 |
| Levias. | Arabic Exercises. (Second half-year.) | 2 | | 7 |
| | **German.** | | | |
| | *Advanced Work.* | | | |
| Wood. | German Seminary. | 3 | 8 | 12 |
| Wood. | Germanic Society. (Alternate weeks.) | | 13 | 12 |
| Wood. | Old Norse. | 2 | 13 | 11 |
| Wood. | Historical German Grammar. | 1 | 5 | 5 |
| Wood. | Gothic. | 2 | 12 | 12 |
| Learned. | Heliand. (First half-year.) | 2 | 5 | |
| Learned. | Old High German. (Second half-year.) | 2 | | 6 |
| Learned. | Middle High German. | 1 | 9 | 9 |
| Vos. | Modern Dutch. | 2 | 8 | 8 |
| | *Major Course.* | | | |
| Wood, Learned. | Wallenstein; Faust. | 2 | 10 | 15 |
| Learned. | Prose Composition. | 1 | 10 | 15 |
| Vos. | History of German Literature. | 1 | 10 | 15 |
| | *Minor Course: Class A.* | | | |
| Wood, Learned. | Prose Composition. | 1 | 26 | 26 |
| Learned. | Selected Prose Readings. | 1 | 26 | 26 |
| Learned. | Minna von Barnhelm; Wilhelm Tell. | 2 | 26 | 26 |
| | *Minor Course: Class B.* | | | |
| Vos. | Otis (Elementary German); Goethe (Egmont); Storm (Immensee). | 3 | 22 | 20 |
| Vos. | Prose Composition. | 1 | 22 | 20 |
| | *Supplementary Courses.* | | | |
| Vos. | Historical Readings: Ribbeck, etc. | 2 | 23 | 24 |
| Vos. | Scientific Readings: Kopp, Haeckel, etc. | 2 | 29 | 24 |
| Faust, Ebeling. | German Conversation. | 2 | 19 | 17 |
| | **Romance Languages.** | | | |
| Elliott. | French Seminary: Marie de France. | 2 | 5 | 4 |
| Elliott. | French Dialects. | 1 | 12 | 14 |

| 2d half-year. | Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|---|
| 15 | Elliott. | Romance Club. | 1 | 20 | 19 |
| 12 | Elliott. | Spanish Seminary. | 2 | 5 | 8 |
| 13 | Elliott. | Popular Latin. | 1 | 14 | 16 |
| 10 | Rambeau. | Comparative Phonetics, etc. | 1 | 22 | 18 |
| 7 | Rambeau. | Robert Garnier and XVI C. Drama. (First half-year.) | 1 | 7 | |
| | Rambeau. | Rabelais. (Second half-year.) | 1 | | 7 |
| 11 | Rambeau. | French: Major Course. | 4 | 6 | 5 |
| | Rambeau. | French: Minor Course (Class A). | 4 | 21 | 18 |
| 5 | Menger. | Old French Philology. | 2 | 19 | 18 |
| 2 | Menger. | Italian Literature. (First half-year.) | 1 | 18 | |
| 20 | Menger. | Italian: Minor Course. | 4 | 15 | 13 |
| 1 | Menger. | Italian Philology. | 2½ | 10 | 9 |
| 6 | Menger. | Italian. (Undergraduate Elective.) | 2 | 4 | 4 |
| | Marden. | Old French Texts. | 2 | 22 | 19 |
| 4 | Marden. | Spanish Epic. | 1 | 16 | 18 |
| 8 | Marden. | French: Minor Course (Class B). | 4 | 20 | 19 |
| 7 | De Haan. | Spanish Literature. | 1 | 16 | 13 |
| | De Haan. | Spanish: Minor Course. | 4 | 8 | 10 |
| | Keidel. | Fable Literature. | 1 | 16 | 16 |
| | Bonnotte. | French Conversation. (Second half-year.) | 2 | | 20 |
| | | **ENGLISH.** | | | |
| 12 | Bright. | English Seminary: Anglo-Saxon Poetic Literature. | 4 | 21 | 21 |
| 12 | Bright. | History of English Philology. (Lectures.) | 1 | 22 | 22 |
| 11 | Bright, Sykes. | Romanic Elements in English. | 1 | 18 | 18 |
| 5 | | | | | |
| 12 | Bright. | Interpretation of Texts. | 1 | 18 | 18 |
| | Bright. | Anglo-Saxon. | 2 | 6 | 6 |
| 6 | Bright. | Journal Meeting. (Alternate weeks.) | 2 | 22 | 22 |
| 9 | Browne. | XVIII C. Drama. | 1 | 8 | 8 |
| 3 | Browne. | Early Scottish Poets. | 1 | 6 | 5 |
| | Browne. | Elizabethan Literature. | 1 | 6 | 5 |
| 15 | Browne. | English Literature; Early English: Minor Course. | 4 | 8 | 7 |
| | Greene. | History and Theory of Rhetoric. (First half-year.) | 1 | 8 | |
| 15 | Greene. | English Literature. | 2 | 10 | 13 |
| 15 | Greene. | English Literature. | 3 | 39 | 33 |
| | Greene. | Rhetoric and Composition. | 3 | 66 | 61 |
| 26 | | **HISTORICAL AND POLITICAL SCIENCE.** | | | |
| 26 | Adams. | Seminary of History and Politics. (Alternate weeks.) | 2 | 36 | 38 |
| 26 | Adams. | Roman Politics. | 2 | 38 | 38 |
| | Adams. | History of Civilization. | 2 | 28 | 30 |
| | Adams. | Nineteenth Century. | 1 | 40 | 42 |
| | Emmott. | Historical Jurisprudence: Roman Law. | 2 | 36 | 38 |
| 20 | Emmott. | English Constitutional Law and History. | 2 | 23 | 24 |
| 20 | Emmott. | Sources of English History. | 1 | 15 | 16 |
| | Vincent. | Historical Conference. (Second half-year,—alternate weeks.) | 2 | | 7 |
| | Vincent. | Reformation and Puritan Revolution. | 2 | 21 | 21 |
| 24 | Vincent. | Historical Journal Club. | 1 | 13 | 13 |
| 24 | Vincent. | Historical Research. | 2 | 7 | 8 |
| 17 | Vincent, Hollander. | Greek and Roman History. | 4 | 19 | 19 |
| | Sherwood. | History of German Economic Theory. | 1 | 8 | 8 |
| | Sherwood. | Municipal and Private Corporations. | 2 | 27 | 28 |
| | Sherwood. | Current Economic Literature. | 1 | 23 | 24 |
| | Sherwood. | Economic Conference. (Alternate weeks.) | 2 | 22 | 24 |
| 4 | Sherwood, Hollander. | Economic Science; Industrial History: Minor Course. | 4 | 23 | 22 |
| 14 | | | | | |

| INSTRUCTOR. | COURSES. | *No. of hours per week.* | *No. of students, 1st half-year.* | *No. of students, 2d half-year.* |
|---|---|---|---|---|
| Hollander. | Economic Theories. (Eight lectures.) | 2 | 23 | |
| Steiner. | American Institutional History. | 2 | 19 | 18 |
| Schouler. | State Constitutional History. (Second half-year.) | 3 | | 23 |
| Clark, J. B. | Economics. (First half-year—five weeks.) | 5 | 32 | |
| Wilson. | Politics. (Second half-year—five weeks.) | 5 | | 24 |
| Gould. | Statistics. (Second half-year—five weeks.) | 2 | | 22 |
| | **PHILOSOPHY.** | | | |
| Griffin. | History of Philosophy. | 1 | 11 | 11 |
| Griffin. | Logic. (Until Christmas.) | 5 | 41 | |
| Griffin. | Psychology. (January to April.) | 5 | | 41 |
| Griffin. | Ethics. (April and May.) | 5 | | 41 |
| | **DRAWING.** | | | |
| Whiteman. | Freehand, Constructive, and Perspective Drawing. | 6 | 64 | 63 |
| Whiteman. | Special Instruction. | 6 | 3 | 2 |
| Geer. | Mechanical Drawing. | 6 | 28 | 28 |

# DEGREES CONFERRED, 1895.

## Doctors of Philosophy.

Rufus Mather Bagg, of Massachusetts, A. B., Amherst College, 1891. *Subjects:* Organic Geology, Inorganic Geology, and Biology. *Thesis:* The Cretaceous Foraminifera of New Jersey.

*Referees on thesis:* Professor Clark and Mr. Bailey Willis.

Thomas Stockham Baker, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* German, Romance Languages, and History. *Thesis:* America as the Poetical Utopia of Lenau and the Politico-Literary Ideal of Kürnberger and Young Germany.

*Referees on thesis:* Professors Wood and Learned.

James Curtis Ballagh, of Virginia, A. B. (*extra ordinem*), Johns Hopkins University, 1894. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* White Servitude in the Colony of Virginia.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Daniel Base, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Chemistry, Physics, and Mathematics. *Thesis:* Some Double Halides of Zinc.

*Referees on thesis:* Professors Remsen and Morse.

Henry Marvin Belden, of Connecticut, A. B., Trinity College (Conn.), 1888. *Subjects:* English, German, and Philosophy. *Thesis:* The Prepositions *in, on, to, for, fore,* and *æt* in Anglo-Saxon: A Study of Case Values in Old English.

*Referees on thesis:* Professors Bright and Browne.

Arthur Fisher Bentley, of Nebraska, A. B., Johns Hopkins University, 1892. *Subjects:* Economics, Philosophy, and Jurisprudence. *Thesis:* The Units of Investigation in the Social Sciences.

*Referees on thesis:* Professor Adams and Dr. Sherwood.

Samuel Walker Beyer, of Iowa, S. B., Iowa Agricultural College, 1889. *Subjects:* Inorganic Geology, Organic Geology, and Chemistry. *Thesis:* The Sioux Quartzite near Sioux Falls in South Dakota, with especial reference to an Intrusive Diabase.

*Referees on thesis:* Professor Clark and Mr. Bailey Willis.

William Bromwell, of Maryland, A. B., Johns Hopkins University, 1888. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* A Study of the Nitrate and Sulphate of Orthodiazotoluene and the Action of the Sulphate on Methyl Alcohol.

*Referees on thesis:* Professors Remsen and Morse.

Clarence Griffin Child, A. B., Trinity College (Conn.), 1886. *Subjects:* English, German, and French. *Thesis:* Palatalization in English: I. Anglo-Saxon Dialects.

*Referees on thesis:* Professors Bright and Browne.

Fonger De Haan, of Baltimore. *Subjects:* Spanish, French, and Arabic. *Thesis:* An Outline of the History of the Novela Picaresca in Spain.

*Referees on thesis:* Professor Elliott and Dr. Marden.

Charles Sumner Estes, of Maine, A. B., Colby University, 1884. *Subjects:* History, Latin, and Roman Law. *Thesis:* Christian Missions in China.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Henry Fay, of Pennsylvania, A. B., Lafayette College, 1889. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* The Action of Light on some Organic Acids in the Presence of Uranium Salts.

*Referees on thesis:* Professors Remsen and Morse.

Henry Stewart Gane, of Illinois, A. B., Amherst College, 1891. *Subjects:* Organic Geology, Inorganic Geology, and Biology. *Thesis:* The Neocene Corals of the United States.

*Referees on thesis:* Professor Clark and Mr. Bailey Willis.

George William Gray, A. B., Johns Hopkins University, 1890. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* The Chlorides of Paranitroorthosulphobenzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

John Joseph Griffin, of Massachusetts, A. B., Ottawa University (Ont.), 1881. *Subjects:* Chemistry, Physics, and Mathematics. *Thesis:* On the Reaction of Ethyl and Methyl Alcohols with Paradiazometatoluenesulphonic Acid in the presence of certain substances; and on Metatoluenesulphonic Acid.

*Referees on thesis:* Professors Remsen and Morse.

William August Haussmann, of Pennsylvania, A. B., Johns Hopkins University, 1892. *Subjects:* German, English, and Philosophy. *Thesis:* German-American Hymnology.

*Referees on thesis:* Professors Wood and Learned.

John Haynes, of Massachuetts, A. B., Williams College, 1888. *Subjects:* Economics, History, and Social Science. *Thesis:* Risk as an Economic Factor.

*Referees on thesis:* Doctors Sherwood and Hollander.

Samuel Rivers Hendren, of Virginia, A. B., Washington and Lee University, 1892. *Subjects:* History, Jurisprudence, and Philosophy. *Thesis:* The Indians of Colonial Virginia: A Study of their Institutions and Social Culture.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Howard Haines Higbee, of Ohio, A. B., Yale University, 1884. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* The Double Halides of Antimony, with Aniline and the Toluidines.

*Referees on thesis:* Professors Remsen and Morse.

Rockwell Dennis Hunt, of California, Ph. B., Napa College, 1890. *Subjects:* History, Economics, and Philosophy. *Thesis:* The Genesis of California's First Constitution, 1846–49.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Joseph Rufus Hunter, of North Carolina, A. B., Wake Forest College, 1885. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* The Relation of the Anilides of Orthosulphobenzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

George Wesley Johnston, of Canada, A. B., University of Toronto, 1886. *Subjects:* Latin, Greek, and Sanskrit. *Thesis:* A Syntactical Study of the Querolus: A late Latin Comedy of unknown authorship attributed in the MSS. to Plautus.

*Referees on thesis:* Professors Warren and Smith.

Thomas Franklin Kane, of Indiana, A. B., De Pauw University, 1888. *Subjects:* Latin, Greek, and Sanskrit. *Thesis:* Case Forms with or without Prepositions used by Plautus and Terence to express Time.

*Referees on thesis:* Professors Warren and Smith.

William Jay Karslake, of New York, S. B., Lafayette College, 1891. *Subjects:* Chemistry, Mineralogy, and Mathematics. *Thesis:* I. Orthocyanbenzenesulphonic Acid; II. The Action of Alcohols upon the High-melting Chloride of Orthosulphobenzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

George Charles Keidel, of Maryland, A. B., Johns Hopkins University, 1889. *Subjects:* French, Italian, and Latin. *Thesis:* The *Évangile aux Femmes*, an Old-French Satire on Women, edited with Notes.

*Referees on thesis:* Professor Elliott and Dr. Menger.

William Hamilton Kirk, of Pennsylvania, A. B. (*extra ordinem*), Johns Hopkins University, 1893. *Subjects:* Greek, Latin, and Sanskrit. *Thesis:* Demosthenic Style in the Private Orations.

*Referees on thesis:* Professors Gildersleeve and Spieker.

John Holladay Latane, of Baltimore, A. B., Johns Hopkins University, 1892. *Subjects:* History, Jurisprudence, and Economics. *Thesis:* The Early Relations between Maryland and Virginia.

*Referees on thesis:* Professors Adams and Browne.

Exum Percival Lewis, of the District of Columbia, S. B., Columbian University, 1888. *Subjects:* Physics, Mathematics, and Astronomy. *Thesis:* The Measurement of some Standard Wave-Lengths in the Infra-Red Spectra of the Elements.

*Referees on thesis:* Professors Rowland and Ames.

William Henry Maltbie, of Baltimore, A. B., Ohio Wesleyan University, 1890. *Subjects:* Mathematics, Astronomy, and Physics. *Thesis:* On the Curve $y^m - G(x) = 0$, and its Associated Abelian Integral.

*Referees on thesis:* Professors Craig and Franklin.

Edward Bennett Mathews, of Massachusetts, A. B., Colby University, 1891. *Subjects:* Inorganic Geology, Organic Geology, and Chemistry. *Thesis:* The Granites of the Pike's Peak Region.

*Referees on thesis:* Professor Clark and Dr. Whitman Cross.

Solomon Reid McKee, of North Carolina, A. B., Davidson College, 1888. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* A further Investigation of the Chlorides of Orthosulphobenzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

Thomas Francis Moran, of Michigan, A. B., University of Michigan, 1887. *Subjects:* History, Economics, and Social Science. *Thesis:* The Rise and Development of the Bicameral System in America.

*Referees on thesis:* Professor Adams and Dr. Vincent.

Louis Trenchard More, of Missouri, Ph. B., Washington University, 1892. *Subjects:* Physics, Mathematics, and Electricity. *Thesis:* On the Changes in Length Produced in Iron Wires by Magnetization.

*Referees on thesis:* Professors Rowland, Ames, and Duncan.

Anthony Moultrie Muckenfuss, of South Carolina, A. B., Wofford College, 1889. *Subjects:* Chemistry, Mineralogy, and German. *Thesis:* Some Transformations of Parasulphaminebenzoic Acid.

*Referees on thesis:* Professors Remsen and Morse.

Lyman Churchill Newell, of Rhode Island, Ph. B., Brown University, 1890. *Subjects:* Chemistry, Mineralogy, and German. *Thesis:* Parabenzoyldiphenylsulphone and Related Compounds.

*Referees on thesis:* Professors Remsen and Morse.

James Flack Norris, of Baltimore, A. B., Johns Hopkins University, 1892. *Subjects:* Chemistry, Mineralogy, and Physics. *Thesis:* Some Double Salts containing Selenium.

*Referees on thesis:* Professors Remsen and Morse.

Edwin Fitch Northrup, of New York, A. B., Amherst College, 1891. *Subjects:* Physics, Mathematics, and Electricity. *Thesis:* A Method for comparing the Values of the Specific Inductive Capacity of a Substance under slowly and rapidly changing Fields: Results for Paraffin and Glass.

*Referees on thesis:* Professors Rowland, Ames, and Duncan.

Robert Somerville Radford, of Virginia, B. Ph., University of Virginia, 1889. *Subjects:* Greek, Latin, and Sanskrit. *Thesis:* On the Thing as the Subject of the Verb in the Attic Orators and Thucydides.

*Referees on thesis:* Professors Gildersleeve and Spieker.

René de Saussure, of France, École Polytechnique, Paris. *Subjects:* Mathematics, Physics, and Philosophy. *Thesis:* Sur la Génération des Courbes par Roulement.

*Referees on thesis:* Professors Craig and Franklin.

Thomas Edward Shields, of Minnesota, A. M., St. Mary's Seminary, 1892. *Subjects:* Physiology, Zoölogy, and Chemistry. *Thesis:* The Effect upon the Blood Flow of Olfactory Sensations, of Mental Work, and of Stimulation of the Terminations of the Trigeminal Nerve in the Mucous Membrane of the Nose by Irritant Vapors, studied by means of a Plethysmograph on the Arm.

*Referees on thesis:* Professor Howell and Dr. Dreyer.

John Archer Silver, of Baltimore, A. B., Princeton University, 1886. *Subjects:* History, Philosophy, and Jurisprudence. *Thesis:* The Provisional Government of Maryland.

*Referees on thesis:* Professor Adams and Dr. Steiner.

Alfred William Stratton, of Canada, A. B., University of Toronto, 1887. *Subjects:* Sanskrit, Greek, and English. *Thesis:* Chapters in the History of Greek Noun-formation.

*Referees on thesis:* Professors Bloomfield and Gildersleeve.

William Stuart Symington, Jr., of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* French, Spanish, and History. *Thesis:* The Folk-lore of May-day in France.

*Referees on thesis:* Professor Elliott and Dr. Menger.

Masayoshi Takaki, of Japan, S. B., Syracuse University, 1891. *Subjects:* Economics, History, and Social Science. *Thesis:* The History of Japanese Paper Currency, 1868–1890.

*Referees on thesis:* Doctors Sherwood and Hollander.

Robert Richardson Tatnall, of Delaware, S. B., Haverford College, 1890. *Subjects:* Physics, Mathematics, and Chemistry. *Thesis:* The Arc-Spectra of the Elements.

*Referees on thesis:* Professors Rowland and Ames.

Thaddeus Peter Thomas, of Baltimore, B. P., University of Tennessee, 1885. *Subjects:* History, Economics, and Philosophy. *Thesis:* The City Government of Baltimore.

*Referees on thesis:* Professor Adams and Dr. Hollander.

James Waddell Tupper, of Nova Scotia, A. B., Dalhousie University, 1891. *Subjects:* English, German, and French. *Thesis:* Tropes and Figures in Anglo-Saxon Prose.

*Referees on thesis:* Professors Bright and Browne.

William Achenbach Wetzel, of Pennsylvania, A. B., Lafayette College, 1891. *Subjects:* Economics, History, and Social Science. *Thesis:* Benjamin Franklin as an Economist.

*Referees on thesis:* Doctors Sherwood and Hollander.

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## Bachelors of Arts.

Wilbur Withrow Ballagh, of New Jersey.

William Sherman Bansemer, of Baltimore.

Harry Bissing, of Baltimore.

Hanson Briscoe Black, of West Virginia.

Charles Henry Hardin Branch, of Ellicott City, Md.

George Dobbin Brown, of Howard County, Md.

Lawrason Brown, of Baltimore.

Humphrey Warren Buckler, of Baltimore.

William Mack Chowning, of Illinois.

Charles Bevan Clark, of Baltimore.

Gilbert Abraham Coblens, of Baltimore.

Reuben Carll Foster, of Baltimore.
Frank Taylor Fulton, of Illinois.
James Daton Gallagher, of Ohio.
George Herbert Gray, of Baltimore.
Milton Daniel Greenbaum, of Baltimore.
Roland Bridendall Harvey, of Baltimore.
George Oscar James, of Virginia.
Stuart Symington Janney, of Baltimore.
Marcus Kaufman, of Baltimore.
Charles Alexander Kilvert, of Baltimore.
Ernest Pendleton Magruder, of Upper Marlboro, Md.
Edward Spiller Oliver, of Baltimore.
John Donaldson Parker, of Howard County, Md.
David Sterrett Pindell, of Cockeysville, Md.
Jacob Hall Pleasants, Jr., of Baltimore.
Gustav Rudolph Poetter, of Baltimore.
John Andrew Robinson, of Baltimore.
Sylvan Rosenheim, of Baltimore.
Charles Albert Savage, of Baltimore.
Edgar Randolph Strobel, of Baltimore.
Robert McIlvaine Torrence, of Pennsylvania.
Campbell Easter Waters, of Baltimore.
Arthur Charles Watkins, of Baltimore.
Henry Abel Whitaker, of Forest Hill, Md.
William Whitridge Williams, of Baltimore.
William Wingert, of Hagerstown, Md. (37)

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## Proficients in Applied Electricity.

Certificates of Proficiency were given, June 13, 1895, to the following persons who had completed the two years' course in Applied Electricity:

Harry Bissing, of Baltimore.
Byron Briggs Brackett, of New York.
Benjamin Harrison Branch, of Ellicott City, Md.
Edson Fessenden Gallaudet, of the District of Columbia.
George Henry Hill, of Pennsylvania.
Alexander McIver, Jr., of North Carolina.
Joseph Mullen, Jr., of Baltimore.
Charles Reutlinger, of Pennsylvania.
John Jacob Rothermel, of Pennsylvania.
Frank Semple Wilcox, of North Carolina. (10)

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# REPORT OF THE DEAN OF THE COLLEGE FACULTY.

To the President of the Johns Hopkins University:

*Dear Sir:*—As Dean of the College Faculty, I have the honor to submit to you the following report of the undergraduate work of the Johns Hopkins University, for the academic year, 1894–95.

The number of students enrolled is one hundred and seventy-seven, of whom one hundred and twenty-six are matriculates and candidates for matriculation, and fifty-one are special students. This number is almost precisely the same as that of last year.

The distribution among the several "groups" is as follows:—Classical group, eighteen; Mathematical-Physical, twenty-seven; Chemical-Biological, twenty-nine; Physical-Chemical, six; Latin-Mathematical, five; Historical-Political, thirty-nine; Modern Language, seven. Comparison with previous years shows that the groups do not vary materially, in relative numbers, from year to year. The only noticeable exception is the Mathematical-Physical, which enrolled eleven students in 1891–92, thirteen in 1892–93, twenty-four in 1893–94, twenty-seven in 1894–95.

At the close of the last academic year, a number of changes were made in the programme of instruction, which went into effect at the beginning of the present year. The most important of these changes had reference to instruction in English. The provision made for this subject in our scheme of studies has long been felt to be inadequate, but it has seemed impossible to obtain additional time. By reducing, however, most of the courses of study from five hours a week to four, room has been made for a course in Rhetoric and English Composition, occupying three hours a week—instead of two, as heretofore—throughout the first year, and for a course in English Literature, occupying three hours a week throughout the second year,—both of these being obligatory upon all candidates for graduation. It is a matter of no little consequence to have secured, in the case of all candidates for the degree of Bachelor of Arts, this increased amount of training in the use of English, and an opportunity—not afforded before, except to students following Group VII—for the study of English Literature.

The time set free by the shortening of the courses made possible also the introduction of History and Economics in the last year of students not

enrolled in the Historical-Political group—the half-year formerly assigned to history in the first year being otherwise employed,—and the introduction of a number of two hour "electives" in the last year, which serve several useful purposes. A full year of Latin, instead of a half-year as before, has been introduced into the sixth (Historical) group.

It may be added that, in the general opinion of the instructors, the efficiency of our work has been increased, rather than diminished, by lessening the number of hours per week assigned to the several subjects. The greater variety of interest secured under the present plan is believed fully to compensate for the diminution of time.

The regulations governing the choice of studies by the students have been somewhat modified this year. Heretofore, every student has been obliged to complete two "major" courses, that is, to follow each of the two subjects characteristic of his group for two years. It was determined, at the close of the last academic year, to require only one "major" subject. The present regulations, as stated in the Register, enable those who desire to do so to deviate, to a considerable extent, from the scheme of studies laid down in the groups. This increase of liberty is desirable in some cases. Those who prefer to accept the groups as they stand, may continue to do so; and those who wish to modify them may do this, within certain clearly defined limits.

We have made more satisfactory provision this year than for several years past for instruction in elocution. The great difficulty is to find a place for this in our overcrowded curriculum, but this difficulty can be overcome if our students can be brought to a due appreciation of the importance of this form of training. A friend of the University—a lady of this city—has offered a prize, to be continued for three years, for excellence in public speaking. The first contest for this prize occurred on March 14th, and awakened a gratifying degree of interest.

Mr. C. Morton Stewart, in addition to the prizes for the encouragement of literary excellence which he has offered to graduate students, has also offered certain prizes to undergraduates, namely, a prize of thirty dollars, and a prize of twenty dollars, to matriculated students of the first year, and a prize of fifty dollars to matriculated students of the second and third years, for the best essays upon subjects chosen out of prescribed lists of subjects. The purpose of these prizes is to encourage, among undergraduate students, proficiency in English Composition. The need of greater attention, on the part of students, to the art of expression, both oral and written, is so apparent that the usefulness of these incentives to effort will be readily perceived.

A Baltimore citizen has offered the sum of one hundred dollars, to be awarded as a prize to the writer of the best essay on "The Relations of Chemistry and the Useful Arts." Independent thought, such as may result from acquaintance with, or study of, one or more of the useful arts that are dependent upon Chemistry, and literary skill in the presentation of thought, will be required of competitors for this prize. The competition is restricted

to those who have been students, graduate or undergraduate, in the Johns Hopkins University during the academic year 1894–95.

It may be well to call attention to the fact that the conditions attached to these prizes are such as to ensure that the work done in competition for them will fall mainly within the summer vacation. The subjects are announced in May, and the essays are required to be handed in to the Registrar on or before the fifth of the following October. It is not, as a rule, desirable to divert the attention of a student from his ordinary and regular duties by suggesting to him other modes of expending his energies. It would be of no little advantage to our students if the excellent example which has been set should be followed by other generous friends, in the form of prizes for various kinds of intellectual work to be accomplished during the vacation. In common with all other universities and colleges, we have a long summer interregnum. This is very useful to young men who are dependent for support, wholly or in part, upon their own exertions; it gives opportunity for travel, and, in the case of instructors and advanced students, it gives opportunity for special studies which could not otherwise be pursued; students who have deficiencies can make them up during the vacation. But some of the younger members of our colleges use the entire time for mere diversion. This is a distinct loss of opportunity, and tends seriously to interfere with the formation of good mental habits. It would not be difficult to secure the performance of a considerable amount of profitable intellectual work during the vacation—without impairing its value as a period of recreation—if a little inducement were offered. A few prizes for readings in history and literature, for studies in ancient and modern languages, for observations upon the habits of animals, and for collections of interesting natural objects, would, by suggesting definite things to be attempted, and by providing a special motive, make the vacation more profitable to some of our undergraduates than it is at present.

In this connection, it may not be improper to say that one of the needs of the University is a suitable number of scholarships, yielding the amount of the tuition fee, to be bestowed, not as a gratuity, but in recognition of proved merit. No aid rendered to young men is more helpful, and more free from objection, than that given through scholarships which are awarded as honors and are intended for the encouragement and reward of good work.

About two years since Mrs. William E. Woodyear, of Baltimore, offered to the Trustees the sum of ten thousand dollars, in order to provide for the annual bestowal of five scholarships, of one hundred dollars each, upon five young men, to be selected under such conditions as may be prescribed by the authorities. These have been awarded to young men known to be in need of pecuniary assistance, who have at the same time given evidence of character and ability. The usefulness of this gift, as observed by those who have administered it, shows how desirable it is that the means at the disposal of the University for rendering aid to students who need and who deserve it, should be increased.

At the close of the last academic year, it was determined to develop more fully the instruction heretofore provided for "candidates for matriculation" (*i. e.*, students unable to meet, in full, the requirements for matriculation), and to organize it into an additional, or preliminary, year. The effect of this will be to establish, for those who may desire it, a four years' course, such as is ordinarily found in our American colleges, without interfering with the three years' course hitherto maintained. The way will still be open for those who can fulfil the requirements for matriculation, at entrance, to complete their studies in three years, but those who are seriously deficient will be required to remain in residence an additional year, and will be taught, during this year, by the University, in regularly organized classes. This will be a great improvement upon our previous methods of dealing with imperfectly prepared applicants. A still more important advantage secured by this change is that the University will be brought into better relations with the schools of the region of country in which it is placed. The fact that the Johns Hopkins University has had no Freshman year, but has prescribed conditions of matriculation approximating the standard of the Sophomore year at other colleges, has made it difficult for young men trained elsewhere than in Baltimore to obtain entrance here. It is believed that the proposed change will bring the University into much closer relation than hitherto with the young men of Maryland and the adjoining States, who are looking forward to a collegiate education. As was announced a year ago, this plan will go into effect in October of the present year. No pains will be spared to make the instruction as helpful and effective as possible; in respect to the opportunities offered, and the quality of work done, the new courses will be on a full parity with those already in existence.

This academic year has been signalized by the completion of McCoy Hall, and its occupancy by the various departments of language, literature, and history. It is not easy to exaggerate the value to the University of this addition to its resources; the new building not only provides conditions of physical comfort and a dignified environment, but augments, in many ways, the efficiency of the work done. It is pleasant to be able to record the fact that the students have shown their appreciation of the accommodations provided for them by maintaining, without special admonition on the subject, quiet and good order in the building, and refraining from all acts of wanton or careless injury.

This report is respectfully submitted.

EDWARD H. GRIFFIN,
*Dean of the College Faculty.*

June 1, 1895.

# REPORT OF THE MARYLAND STATE WEATHER SERVICE.

I submit, in accordance with your request, the following report on the Maryland State Weather Service for the year ending September 1, 1895.

The Maryland State Weather Service, which was organized in May, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College, and the United States Weather Bureau, has been carried on since the Spring of 1892, by the same institutions, under authority granted by the Legislature of the State, which at the same time appropriated a sum of two thousand dollars annually for the expenses of the work. This amount, which is intended primarily to defray the cost of printing, admits of the publication of a large amount of data relating to the climate and physical features of the State.

Monthly Meteorological Reports, extending throughout the year, and Weekly Crop Bulletins, covering the growing and harvesting seasons, have been published. That these publications are appreciated by the people of the State is evidenced by the hearty support they have given in rendering information in regard to the weather and the crops, and by the general and complete publication of reports by the newspapers of the State.

Two thousand copies of each of the Meteorological Reports and Weekly Crop Bulletins have been printed and distributed.

In addition to the regular publications, a series of ten large Climatic Charts, with explanatory notes, has been prepared, which represent the seasonal and annual temperature and rainfall of the State. To these have been added recently hypsometric and drainage maps, while others are in course of preparation. The presentation in this graphic manner of the typical features of Maryland climate will be much more readily comprehended than the tabulated statements, and it is intended to distribute them largely to the public schools and other educational institutions, as well as to the public generally.

The Biennial Report to the last Legislature, entitled "The Climatology and Physical Features of Maryland," contains a general review of the climate of the State. It is illustrated by maps, diagrams, and tables, which show at a glance its leading climatic features. This publication, which is distributed free, has been in much demand by those seeking information in regard to the climatic features of the State.

The Maryland State Weather Service is similar in its organization and methods to like services in other States. The personnel consists of voluntary observers, who have been selected at favorable points throughout the State, and of a corps of permanent observers who have been assigned from the National Bureau to take charge of the work at the central office.

The stations connected with the service are of three classes: 1st. Those which report meteorological facts. 2d. Those which send crop notices. 3d. Those which display signals. In a few instances the same person fulfils the duties of all three offices. Connected with the first class there have been 68 observers during the past year, with the second class 333 correspondents, and with the third class 50 displaymen—making 451 persons connected with the Maryland State Weather Service, besides the officers at the central office. To all of these the fullest praise is due for the important aid they have rendered in the preparation of the weekly and monthly forms and publications since the organization of the service. Nearly all parts of the State are represented, and it is hoped that the number of observers will steadily increase until every section is provided for.

Professor Milton Whitney continues, as Secretary and Treasurer, to represent the Maryland Agricultural College, and Dr. C. P. Cronk, as Meteorologist in charge, the U. S. Weather Bureau, upon the commission of which the Director is the other member.

The results of the past year, as above set forth, indicate a steady growth in the efficiency of the service, as well as an appreciation of its work among the citizens of the State.

WILLIAM B. CLARK,
*Director of the Maryland State Weather Service.*

October 1, 1895.

# REPORT OF THE MARINE LABORATORY, SESSION OF 1895.

To the President of the Johns Hopkins University:

The work of the Marine Laboratory in 1895 was conducted as follows:

A house was rented by graduate students, for research in Marine Zoology, at Beaufort, N. C., and was supplied with books, microscopes and apparatus by the University. Mr. C. P. Sigerfoos was appointed assistant in charge.

It was occupied from June 6 to August 13, by Mr. C. P. Sigerfoos, Assistant in Zoölogy in this University, Mr. F. S. Conant, Fellow of the University, Mr. George Lefevre, Bruce Fellow of the University, and Professor E. B. Wilson, of Columbia College.

Mr. Sigerfoos studied the structure, development and habits of economic molluscs, especially those which are injurious to vessels. He determined the rate of growth of the shipworm, its method of boring, and other data which are needed before intelligent methods of protection can be employed.

Mr. Lefevre studied the development and budding of Perophora, and he also collected material for the study of the embryology of Thalassema and Pedicellina.

Mr. Conant continued his researches on the Chaetognaths.

W. K. Brooks,
*Director.*

October 1, 1895.

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W. K. Brooks,
*Director.*

October 1, 1895.

# THE ADAM T. BRUCE FELLOWSHIP.

The Adam T. Bruce Fellowship was founded in 1887 by a gift of ten thousand dollars, received from Mrs. Adam T. Bruce, of New York, as a memorial of her son, Adam T. Bruce, Ph. D., a Graduate Student, a Fellow, and an Instructor in this University from 1883 to 1887. As an illustration of the gratifying results that have come from this encouragement of meritorious students, the following statement has been prepared.

## ELECTORS.

The President of the University, the Professor of Animal Physiology, and the Professor of Animal Morphology.

The Non-Resident Electors named below:—In 1891, Professor H. F. OSBORN, of Princeton College. In 1892, Professor C. OTIS WHITMAN, of Clark University. In 1893, Professor HENRY V. WILSON, of the University of North Carolina. In 1894, Professor THOMAS H. MORGAN, of Bryn Mawr College. In 1895, Professor MAYNARD M. METCALF, of the Woman's College of Baltimore.

## HOLDERS OF THE FELLOWSHIP.

### 1888-89.

HENRY VAN PETERS WILSON, A. B., Johns Hopkins University, 1883, University Scholar, 1885–87, Fellow, 1887–88, Ph. D., 1888, Bruce Fellow, 1888–89; U. S. Fish Commission, 1889–91; Professor in the University of North Carolina, 1891–.

#### PUBLICATIONS AS BRUCE FELLOW.

On the Development of Manicina Areolata. (*Journ. Morphol.*, II, 1, 1888.)
On the presence of a Mouth and Anus in Actinozoa. (*J. H. U. Circulars*, 1889.)
On a new Actinia, Hoplophoria corralligens. (*Studies Biol. Lab., J. H. U.*, IV, 6, 1890.)
Breeding Times of Bahama Animals. (*J. H. U. Circulars*, 1889.)

#### LATER PUBLICATIONS.

On the Development of the Sea Bass. (*J. H. U. Circulars*, 1890.)
The Embryology of the Sea Bass (—— Serranus Atratus.) (*Bull. U. S. Fish Com.*, IX, 1891.)
Notes on the Development of some Sponges. (*Journ. Morphol.*, V, 3, 1891.)
Remarks on the General Morphology of Sponges. (*Journ. Elisha Mitchell Soc.*, IX, 1892.)

Primitive Streak and Blastopore of the Bird Embryo. (*Journ. Elisha Mitchell Soc.*, Vol. X, 1893.)

Observations on the Gemmule and Egg Development of Marine Sponges. (*Journ. Morphol.*, Vol. IX, 1894.)

## 1889-90.

SHOZABURO WATASE, S. B., Sapporo Agricultural College, 1884; University Scholar, Johns Hopkins University, 1887–88, Fellow, 1888–89, Bruce Fellow, 1889–90, Ph. D., 1890; Lecturer and Assistant in Clark University, 1890–92; Reader in Cellular Biology, University of Chicago, 1892–94, and Assistant Professor, 1894–.

PUBLICATIONS AS BRUCE FELLOW.

On the Morphology of the Compound Eyes of Arthropods. (*Studies Biol. Lab., J. H. U.*, IV, 1890.)

Karyokinesis and the Cleavage of the Ovum. (*J. H. U. Circulars*, Vol. IX, 1890.)

On the Migration of the Retinal Area, and its Relation to the Morphology of the Simple Ocelli and the Compound Eyes of Arthropods. (*J. H. U. Circulars*, Vol. IX, 1890.)

LATER PUBLICATIONS.

Studies on Cephalopods, I. Cleavage of the Ovum. (*Journ. Morphol.*, Vol. IV, 1891.)

On the Phenomena of Sex Differentiation. (*Journ. Morphol.*, Vol. VI, 1892.)

Homology of the Centrosome. (*Journ. Morphol.*, Vol. VIII, 1893.)

On the Nature of Cell Organization. (*Woods' Holl Biological Lectures*, 1893.)

Origin of the Centrosome. (*Woods' Holl Biological Lectures*, 1894.)

## 1890-91.

THOMAS HUNT MORGAN, S. B., Kentucky State College, 1886; University Scholar, Johns Hopkins University, 1888–89, Fellow, 1889–90, Ph. D., 1890, Bruce Fellow, 1890–91; Associate Professor of Biology, Bryn Mawr College, 1891–.

PUBLICATIONS AS BRUCE FELLOW.

The Origin of the Test Cells of Ascidians. (*Journ. Morph.*, Vol. IV, 1890.)

A Contribution to the Embryology and Phylogeny of the Pycnogonids. (*Studies Biol. Lab., J. H. U.*, Vol. V, 1891.)

The Growth and Metamorphosis of Tornaria. (*Journ. Morphol.*, Vol. V, 1891.)

LATER PUBLICATIONS.

Spiral Modification of Metamerism. (*Journ. Morphol.*, Vol. VII, 1892.)

Experimental Studies on Teleost Eggs. (*Anat. Anz.*, Vol. VIII, 1893.)

Experimental Studies on Echinoderm Eggs. (*Anat. Anz.*, Vol. IX, 1894.)

The Development of Balanoglossus. (*Journ. Morphol.*, Vol. IX, 1894.)

The Orientation of the Frog's Egg. (With Umé Tsuda.) (*Quart. Journ. Micr. Sci.*, Vol. 35, 1894.)

The Formation of the Embryo of the Frog. (*Anat. Anz.*, Vol. IX, 1894.)

The Formation of the Fish Embryo. (*Journ. Morphol.*, Vol. X, 1895.)

A Study of Metamerism. (*Quart. Journ. Micr. Sci.*, Vol. 37, 1895.)

The Formation of one Embryo from two Blastulae. (*Arch. f. Entw. Mech. d. Organismen*, Bd. II, Heft 1, 1895.)

A Study of a Variation in Cleavage. (*Ib.*)

Studies of the 'Partial' Larvae of Sphaerechinus. (*Ib.*)

Zur Analysis der Ersten Entwicklungsstadien des Ctenophoreneies (with Hans Dnisch). (*Arch. f. Entw. Mech. d. Organismen*, Bd. II, Heft 2, 1895.)

Experimental Studies of the Blastula- and Gastrula-Stages of Echinus. (*Ib.*)
The Fertilization of non-nucleated Fragments of Echinoderm Eggs. (*Ib.*)

## 1891-93.

ROBERT PAYNE BIGELOW, S. B., Harvard University, 1887; University Scholar, Johns Hopkins University, 1889–90, Fellow 1890–91, Bruce Fellow, 1891–93, Ph. D., 1892; Instructor in Biology, Massachusetts Institute of Technology, 1893–.

PUBLICATIONS AS BRUCE FELLOW.

On a New Species of Cassiopea from Jamaica. (*Zool. Anz.*, 1891.)
On Reproduction by Budding in the Discomedusae. (*J. H. U. Circulars*, Vol. XI, 1892.)
On the Development of the Marginal Sense Organs of a Rhizostomatous Medusa. (*J. H. U. Circulars*, Vol. XI, 1892.)
The Stomatopoda of Bimini. (*J. H. U. Circulars*, Vol. XII, 1893.)
Some Observations on Polyclonia Frondosa. (*J. H. U. Circulars*, Vol. XII, 1893.)
Preliminary Notes on the Stomatopoda of the Albatross collections and other Specimens in the National Museum. (*J. H. U. Circulars*, Vol. XII, 1893.)
A Jelly-fish from the Great Salt Pond. (*Journal of the Jamaica Institute*, Vol. I, 1893.)
Report upon the Crustacea of the Order Stomatopoda, collected by the Steamer Albatross between 1885 and 1891, and on other Specimens in the U. S. National Museum. (*Proc. U. S. National Museum*, Vol. XVII, 1894.)

## 1893.

MAYNARD MAYO METCALF, A. B., Oberlin College, 1889; University Scholar, Johns Hopkins University, 1891–92, Fellow, 1892–93, Bruce Fellow, 1893; Associate Professor of Biology, Woman's College of Baltimore, 1893–.

PUBLICATIONS AS BRUCE FELLOW.

The Eyes and Subneural Gland of Salpa. Part IV of a Memoir on the Genus Salpa by W. K. BROOKS. (*Selected Morphological Monographs*, II, Johns Hopkins University, Baltimore, 1893.)
Notes upon an apparently new Species of Octacnemus, a deep-sea, Salpa-like Tunicate. (*J. H. U. Circulars*, Vol. XII, 1893.)
Contributions to the Embryology of Chiton. (*Stud. Biol. Lab. Johns Hopkins Univ.*, Vol. V, 1893.)

## 1894.

ROSS GRANVILLE HARRISON, A. B., Johns Hopkins University, 1889, University Scholar, 1890–91, Fellow, 1893–94, Ph. D., 1894, Bruce Fellow, 1894; Lecturer in Morphology, Bryn Mawr College, 1894–95.

PUBLICATIONS AS BRUCE FELLOW.

The Development of the Fins of Teleosts. (*J. H. U. Circulars*, Vol. XIII, 1894.)
The Metamerism of the Dorsal and the Ventral Longitudinal Muscles of the Teleosts. (*Ib.*)

LATER PUBLICATIONS.

Ectodermal or Mesodermal Origin of the Bones of Teleosts? (*Anat. Anz.*, Bd. X, No. 3 and 4, 1894.)

## 1894-95.

SEITARO GOTO, M. S., Imperial University, Tokyo, 1890; Bruce Fellow, 1894–95.

PUBLICATIONS AS BRUCE FELLOW.

On the Protoplasmic Connection of Lasso-cells in Physalia. (*J. H. U. Circulars*, Vol. XIV, 1895.)

Observations on the Development of the Gonophores in Physalia. (*Ib.*)

## 1895-96.

PRESENT INCUMBENTS.

HENRY MCELDERRY KNOWER, A. B., Johns Hopkins University, 1890, University Scholar, 1893–94, Fellow, 1894–95.

GEORGE LEFEVRE, A. B., Johns Hopkins University, 1891, University Scholar, 1892–93, Fellow, 1894–95.

# ABSTRACT OF THE REPORT OF THE LIBRARIAN.

The number of bound volumes now belonging to the library is 70,445. The recorded increase in the number of bound volumes during the year is 3,861. Of this number 1,657 were purchased, 1,013 were presented, 1,191 were volumes now bound for the first time. The number of pamphlets and unbound volumes added during the year was about 2,000. The serials regularly received exceed one thousand.

The most important gift of the year is the Dillmann collection of Semitic books presented to the University by Mr. G. W. Gail of Baltimore. It consists of about 2300 bound volumes and about 2000 pamphlets. It is now being catalogued and arranged. This collection is not included in the enumeration above.

Recognition of gifts to the Library should be specially made to the persons and institutions named below:—

President Low, of Columbia College—the sum of $100, with which a copy of La Grande Encyclopédie has been purchased.

Mr. S. P. Avery, of New York—the Macklin Bible and four other volumes of bibliographical interest.

Mr. D. Sulzberger, of Philadelphia—a set of the Talmud in twelve volumes.

Hon. E. L. Pierce, of Massachusetts—the works and life of Charles Sumner, in twenty volumes.

The King of Siam—The Tripitaka (the Sacred Books of the Southern Buddhists), in thirty-nine volumes.

The Government of Italy—several volumes of the works of Galileo, of the publications of the Italian Columbian Commission, and of the descriptive account of the Italian Libraries.

The Government of France—the publications issued by the Ministry of Public Instruction in 1895.

The Prince of Monaco—his works on Marine Zoology.

Sir Archibald Geikie—a number of geological memoirs and maps.

The Grolier Club of New York—four volumes of their publications.

Rev. Dr. E. W. Gilman, of New York—a palimpsest from Japan, and several works of typographical interest.

Henry Holt & Co., of New York—their publications for the year.

Hon. A. P. Gorman—a large number of official publications.

The Argentine Minister at Washington—a number of works on the Argentine Republic.

A large number of geological works and maps have also been given to the library through the intermediation of Professor Clark.

Mention should also be made of gifts from Professor H. B. Adams, Professor Alexander Agassiz, Dr. A. B. Arnold, the American Catholic Historical Society, the Bodleian Library, Mr. R. A. Brock, Dr. R. N. Cust, Mr. F. L. Eames, Mrs. C. L. Franklin, Mr. Justice Field, Professor Gildersleeve, President Gilman, Mr. A. S. Gatschet, Messrs. J. M. and W. L. Glenn, Dr. S. A. Greene, German Astronomical Society, University of Ghent, Mr. G. A. Hearn, Professor H. A. Kelly, Professor Charles Janet, Mr. G. A. Lucas, Mayor Latrobe, University of Louvain, Pennsylvania Railroad, Professor Remsen, Dr. James Schouler, Professor A. F. W. Schimper, and Trinity College (Dublin.)

The general library and reading room has been open daily from 9 a. m. to 6 p. m. Mr. M. Brandow and Mr. H. C. F. Miller have been in charge.

The several departmental libraries have been open daily from 9 a. m. to 5 p. m., as follows: the Historical under the charge of Dr. J. M. Vincent; the Classical under the charge of Dr. C. W. E. Miller; the Modern Language under the charge of Mr. W. A. Haussmann; the Chemical under the charge of Dr. J. E. Gilpin; the Biological under the charge of Mr. Reid Hunt; the Geological under the supervision of Professor Clark; the Medical under the charge of Miss E. S. Thies.

Detailed statements of expenditures for the library and classified lists of accessions have been separately submitted.

During the year the New Book Department has received 5,000 volumes of the estimated value of $7,000. Since the opening of this department 81,500 volumes, of the invoiced value of $125,000, have been exhibited on its shelves.

N. MURRAY.

1895, September 2.

# ABSTRACT OF THE REPORT OF THE JOHNS HOPKINS PRESS.

The several journals published by The Johns Hopkins Press have been issued at regular intervals during the year.

Volume sixteen of the American Journal of Mathematics, edited by Professor Craig, with the coöperation of Professor Newcomb, has been completed, and three numbers of volume seventeen have appeared. The series of portraits of mathematicians was continued in this volume with the portrait of Professor Picard.

Of the American Chemical Journal, under the editorial direction of Professor Remsen, volume sixteen has been completed and seven numbers of volume seventeen have been issued. This journal is now issued ten times yearly.

Of the American Journal of Philology, of which Professor Gildersleeve is the editor, volume fifteen has been completed and one number of volume sixteen has appeared.

Of the Studies in Historical and Political Science, edited by Professor Adams, six numbers of the twelfth series and eight numbers of the thirteenth series have been published.

Numbers 115–120 of the University Circulars have appeared during the year.

Part one of the third volume of the Beiträge zur Assyriologie, of which Professor Haupt is one of the editors, was issued.

The Nineteenth Annual Report of the President of the University was issued in November, 1894, and the Annual Register in May, 1895.

The Press has continued in charge of the publications of the Johns Hopkins Hospital, viz: The Hospital Bulletin, appearing nine times yearly; The Hospital Reports, appearing irregularly.

Five parts (Job, Leviticus, Samuel, Joshua, and Jeremiah) of the Critical Text of the Old Testament, published under the editorial direction of Professor Haupt, have been issued.

The Physiological Papers of Professor Martin will soon be issued as the third volume of the Memoirs from the Biological Laboratory.

There have been received, in accordance with the regulations, one hundred and fifty copies of the theses accepted for the degree of Doctor of Philosophy from the graduates named below:

Ballagh, J. C.—White Servitude in the Colony of Virginia.

Base, D.—Some Double Halides of Zinc.

Bentley, A. F.—The Units of Investigation in the Social Sciences.

Bliss, W. J. A.—The Apparent Forces between Fine Solid Particles totally Immersed in Liquids.

Bromwell, Wm.—A Study of the Nitrate and Sulphate of Orthodiazotoluene and the Action of the Sulphate on Methyl Alcohol.

Bruner, J. D.—The Phonology of the Pistojese Dialect.

Bucher, J. E.—An Examination of Some Methods employed in Determining the Atomic Weight of Cadmium.

Carroll, M.—Aristotle's Poetics C. XXV, in the Light of the Homeric Scholia.

Cutting, S. W.—Der Conjunktiv bei Hartman von Aue.

Fay, H.—The Action of Light on Some Organic Acids in the Presence of Uranium Salts.

Franklin, E. C.—On the Action of Ortho- and Meta-diazo-benzine-sulphonic Acids.

Harris, W. A.—Plato as a Narrator: A Study in the Myths.

Haynes, J.—Risk as an Economic Factor.

Holmes, D. H.—Die mit Präpositionen zusammengesetzten Verben bei Thukydides.

Hunt, R. D.—The Genesis of California's First Constitution (1846–49.)

Hunter, J. R.—The Relation of the Anilides of Orthosulphobenzoic Acid.

Jenkins, T. A.—L'Espurgatoire Seint Patriz of Marie de France.

Karslake, W. J.—I. Orthocyanbenzenesulphonic Acid. II. The Action of Alcohols on the High-melting Chlorides of Orthosulphobenzoic Acid.

Keidel, G. C.—Évangile aux Femmes.

Kirk, W. H.—Demosthenic Style in the Private Orations.

Latané, J. H.—Early Relations between Maryland and Virginia.

Lease, E. B.—A Syntactic, Stylistic and Metrical Study of Prudentius.

Lewis, E. P.—The Measurement of Some Standard Wave-Lengths in the Infra-Red Spectra of the Elements.

Lewis, E. S.—Guernsey: Its People and Dialect.

Moran, T. F.—The Rise and Development of the Bicameral System in America.

Newell, L. C. Parabenzoyldiphenylsulphone and related compounds.

Northrop, E. F.—A Method for Comparing the Values of the Specific Inductive Capacity of a Substance under Slowly and Rapidly Changing Fields: Results for Paraffin and Glass.

Reeves, J. S.—The International Beginnings of the Congo Free State.

Silver, J. A.—The Provisional Government of Maryland (1774–1777.)

Tolman, W. H.—The History of Higher Education in Rhode Island.

Tupper, F.—Anglo-Saxon Daeg-Mael.

Wetzel, W. A.—Benjamin Franklin as an Economist.

Wolff, F. A.—On the Influence of Magnetism on Chemical Action.

The system of exchanges has been conducted as in previous years.

N. MURRAY.

1895, September 2.

# GIFTS TO THE LIBRARY.

The following list enumerates the gifts to the Library since the last annual report. The list does not include many exchanges received from the correspondents of the University, nor a large number of official reports and catalogues.

ADAMS, PROF. H. B. Ruperto-Carola: V. Säcular-feier der Universität Heidelberg. Heidelberg, 1886. F.

Stephens, W. R. W. Life and Letters of Edward A. Freeman. London, 1895. 2 vols. O.

Irving, W. Life of Washington. 5 vols. New York, 1856. D.

(Author). Life and Writings of Jared Sparks. 2 vols. Boston, 1893. O.

Five miscellaneous volumes.

ALABAMA GEOLOGICAL SURVEY. Report on the Geology of the Coastal Plain of Alabama. Montgomery, 1894. O.

ALVORD, HON. WILLIAM. San Francisco Municipal Reports for the fiscal year, 1893–4. San Francisco, 1894. O.

AMERICAN ANTIQUARIAN SOCIETY. A collection of about one hundred pamphlets.

AMERICAN CATHOLIC HISTORICAL SOCIETY. Six volumes of its Records. Philadelphia. O.

AMERICAN SWEDENBORG PUBLISHING COMPANY. Twenty-three volumes of the Writings of Emmanuel Swedenborg. New York. O.

AMES, J. G. (Author). Comprehensive Index of the Publications of the U. S. Government, 1889–93. Washington, 1894. O.

ANDREWS, DR. E. A. Pfeffer, W. Osmotische Untersuchungen. Leipzig, 1877. O.

ANGELL, G. T. Black Beauty [in Modern Greek]. Athens, 1894. D.

ANNERSTEDT, PROF. C. (Author). Upsala Universitetsbiblioteks Historia intill år 1702. Stockholm, 1894. O.

ARKWRIGHT CLUB, BOSTON. North, S. N. D. Factory Legislation in New England. Boston, 1895.

ARNOLD, DR. A. B. Colerus, J. La vie de B. de Spinosa. La Haye, 1706. T.

AUSTRIAN COMMISSION TO THE COLUMBIAN EXPOSITION. Four volumes of its Official Reports. Vienna, 1895. Q.

AVERY, S. P. Macklin edition of the Holy Bible. London, 1800. 7 vols., royal folio.

Virgilii Opera per J. Ogilvie edita et sculpturis aeneis adornata. London, 1658. F.

Goltzius, H. Icones Imperatorum Romanorum. Antverpiae, 1645. F.

Parnell, T. Poetical Works. Glasgow, 1786. F.

BAHL, L. La géométrie analytique d'Auguste Comte. Paris, 1894. O.

BAKHUYZEN, H. G. VAN DE S. (Author). Verslag van den staat der sterrenwacht te Leiden, 1893–4. Leiden, 1894. O.

BALCH, E. S. (Trans). Balch, T. The French in America, 1777–83. Vol. 2. Philadelphia, 1895. O.

BALDWIN, PROF. J. M. Princeton Contributions to Psychology. Princeton, 1895. O.

BARTON, MISS C. The Red Cross. Washington, 1895. D.

BASLE, UNIVERSITY OF. Seventy-five Academic Publications.
BAYLEY, PROF. W. S. (Author). Basic Massive Rocks of the Lake Superior Region. Chicago, 1893. O.
Summary of Progress in Mineralogy and Petrography in 1894. Waterville, 1895. O.
BEDELL, DR. F. (Author). On Magnetic Potential. O.
BERLIN: ROYAL LIBRARY. Forty-one volumes of its catalogues and lists of manuscripts.
BERLIN, UNIVERSITY OF. Four hundred and seventy-four Academic Publications.
BETTMAN, DR. B. Civil Service in State Institutions. Chicago, 1895. O.
BICKERTON, PROF. A. W. (Author). Copy of Letters sent to "Nature" on Partial Impact. Wellington, 1879. O.
Some Recent Evidence in Favour of Impact. Wellington, 1894. O.
BLATCHFORD, E. W. Memorial Sketches of Dr. William F. Poole. Chicago, 1895. D.
BODLEIAN LIBRARY. Anecdota Oxoniensia. 4 vols. Oxford. O.
Eight Oxford Prize Essays.
BOLTON, C. (Ed.). Books for the People: First and Third Series. Cleveland, O., 1882–84. D.
BOLTON, DR. M. Effects of Various Metals on the Growth of Certain Bacteria. 1894. O.
BONALDE, J. A. P. (Trans.) Poe, E. A. El Kuerbo. Valparaiso, 1895. O.
BONN, UNIVERSITY OF. One hundred and fifty-seven Academic Publications.
BORDEAUX, UNIVERSITY OF. One hundred and two Academic Publications.
BOSTON: CITY AUDITOR. Reports, 1874–90. 7 vols.
BOURINOT, HON. J. G. (Author). Elected or Appointed Officials. Philadelphia, 1895. O.
BOURKE, CAPT. J. G. (Author). Folk-foods of the Rio Grande Valley and of Northern Mexico. O.
BRIOSCHI, F. (Author). Notizie sulla vita e sulle opere di Arturo Cayley. Rome, 1895. Q.
BROCK, R. A. Southern Historical Papers. 5 vols. Richmond. O.
BROWN, E. M. (Author). Language of the Rushworth Gloss to the Gospel of Matthew and the Mercian Dialect, Pts. 1–2. Göttingen, 1891–92. O.
BROWN, H. Y. L. (Government Geologist, S. Australia). Seven Geological Publications. Adelaide, 1887–94. F.
BROWN UNIVERSITY. Historical Catalogue of University, 1764–1894. Providence, 1895. O.
Memorial Address on E. G. Robinson by T. D. Anderson. Q.
BRYANT, W. M. American Scheme of State Education. St. Louis. S.
BRYMNER, DOUGLAS. Report on Canadian Archives. Ottawa, 1895. Q.
BYARS, W. V. (Author). Homeric Memory Verses. South Orange, 1895. D.
CADBURY, R. Pumphrey, S. Indian Civilization. Philadelphia, 1877. O.
CALIFORNIA STATE MINING BUREAU. Twelfth Report of the State Mineralogist.
CALIFORNIA, UNIVERSITY OF. Illustrated History of the University. San Francisco, 1895. F.
Three Academic Publications.
CAMBRIDGE UNIVERSITY PRESS. Harker, A. Petrology for Students. Cambridge, 1895. O.
CAMPBELL, F. (Author). Bibliography of the Future. London, 1895. O.
CANADA: GEOLOGICAL SURVEY. Three volumes of its publications.
CARLETON COLLEGE. Addresses at the Quarter-Centennial of the College. Northfield, 1895. O.
CARROLL, MITCHELL. Aristotle's Poetics, C. XXV. Baltimore, 1895. O.
CAYLEY, PROF. A. Collected Mathematical Papers, Vol. 8. Cambridge, 1895. Q.
CAYUGA COUNTY HISTORICAL SOCIETY. Collections, Vol. XI, 1894. Auburn. O.
CHAPIN, G. L. (Author). Chapin's System of Planet Movement. Chicago, 1894. O.
CHICAGO LAW INSTITUTE. (Hon. J. Rosenthal.) Laws of Illinois. 7 vols. O.
CHRISTHILF, G. S. Benham, A. Federal Harmony, Collection of Church Music. New Haven, 1790. T.

CINCINNATI SOCIETY OF NATURAL HISTORY. Journal. Cincinnati, 1895. O.
CLAPP & CO. Weekly Market Letters. N. Y., 1895.
COLUMBIA COLLEGE. General Catalogue, 1754–1894.
The Medal Struck and the Minute Adopted in Honor of the Jubilee of Professor Drisler.
CONNOR, DR. L. (Author.) The Technique of Tenotomy of the Ocular Muscles. Chicago, 1895. D.
COPE, PROF. E. D. (Author). Four of his recent publications.
COPENHAGEN OBSERVATORY. Three volumes of its publications.
CORNELL UNIVERSITY. Fifteen Academic Publications.
COURTENAY, HON. W. A. Daniel Ravenel. In Memoriam. Charleston, 1895. O.
CRAIG, PROF. T. Jubilé de M. Hermite. Paris, 1893. O.
CRIVETZ, T. (Author). Essai sur le postulat d'Euclide. Bucarest, 1895. O.
CRISP, W. B. Carroll, E., Jr. Principles and Practice of Finance. N. Y., 1895. O.
CROCKER, G. G. (Author). Principles of Procedure in Deliberative Bodies. 2nd ed. New York, 1894. S.
CURRY, HON. J. L. M. Peabody Education Fund. Proceedings of Trustees. Cambridge, 1894. O.
CUST, DR. R. N. (Author.) Linguistic and Oriental Essays, 1861–95. 4th series. London, 1895. O.
Common features which appear in all forms of religious belief. London, 1895. O.
CUTTING, PROF. S. W. (Author). Should the elementary study of grammar be chiefly inductive? 1893. O.
DAVIS, N. S. (Author). Lectures on the Principles and Practice of Medicine. Chicago, 1886. O.
DEDHAM (MASS.) HISTORICAL SOCIETY. Seven volumes of its publications.
DENISON, DR. CHARLES. Two of his recent publications.
DEUTSCHE ASTRONOMISCHE GESELLSCHAFT. Catalog der Astronomischen Gesellschaft. Leipzig, 1894. F.
DODGE, W. C. The District of Columbia and its Relations to the General Government. Washington, 1894. O.
DONALDSON, DR. F. U. S. Surgeon General's Library Catalogue. 14 vols.
Medical and Surgical History of the Rebellion. 8 vols.
Eight volumes of medical works.
DOTTERER, H. S. (Editor.) The Perkiomen Region, Past and Present. Vol. I. Philadelphia, 1895. O.
DOYLE, REV. A. P. Catholic Total Abstinence Union of America, Proceedings. New York, 1894. O.
DUBUY, J. (Author). Two Aspects of the German Constitution. New Haven, 1894. O.
DULLES, REV. J. H. (Compiler). McCosh Bibliography. Q.
DWIGHT, PRESIDENT T. Report of the President of Yale University, 1894. O.
EAMES, F. L. (Author). (President N. Y. Stock Exchange). New York Stock Exchange. New York, 1894. Q.
EASTMAN, C. R. (Author). Beiträge zur Kenntniss der Gattung Oxyrhina. Stuttgart, 1894. F.
EASTMAN, DR. J. (Author). Chairman's Address at the Annual Meeting of the American Medical Association. Chicago, 1894. O.
EDINBURGH: ROYAL COLLEGE OF PHYSICIANS. Reports from the Laboratory, Vol. 5. Edinburgh, 1894. O.
EGLESTON, G. W. (Author). Plea for More Parks, etc. 1895. O.
EMERSON, JAMES. (Author). Treatise relative to the Testing of Water-wheels and Machinery. Williamsett, 1894. D.
ERLANGEN, UNIVERSITY OF. One hundred and eighty-six Academic Publications.
FABER, REV. ERNST. (Author). Confucianism. Shanghai, 1895. O.
FAIRBAIRN, REV. DR. Potter, E. N. Washington a Model in his Library and Life. New York, 1895. D.

FARLOW, PROF. W. G. (Author). Notes for Mushroom-eaters. New York, 1894. O.
FAUNCE, REV. W. H. P. (Author). Ezekiel Gilman Robinson. A Memorial Address. Boston, 1895. O.
FAUST, DR. A. B. (Ed.) Zschokke, H. Das Abenteuer der Neujahrsnacht, etc. New York, 1895. S.
FEWKES, PROF. J. W. (Author). The Walpi Flute Observance. 1895. O.
A Comparison of Sia and Tusayan Snake Ceremonials. Washington, 1895. O.
The Nā-ác-nai-ya. A Tusayan initiative ceremony. 1895. O.
FICKEN, HON. J. F. (Mayor of Charleston, S. C.) Year Book of Charleston. 1891 and 1894. O.
FIELD COLUMBIAN MUSEUM. Guide to the Field Columbian Museum. 2nd ed. Chicago, 1894. D.
An Historical and Descriptive Account of the Field Columbian Museum. Chicago, 1894. O.
FIELD, HON. S. J. (Author). Some Opinions and Papers. 6 vols. O.
Legislative and Judicial Work of Justice Field. 1895. O.
FISK, DR. S. A. (Author). Some Meteorological Data. Boston, 1894. S.
FRANKLIN, MRS. C. L. Ramon y Cajal. Die Retina der Wirbelthiere. Wiesbaden, 1894. F.
Moll, A. Der Rapport in der Hypnose. Berlin, 1892. O.
Müller, G. E. Theorie der Muskelcontraktion. Leipzig, 1891. O.
Nineteen pamphlets upon subjects relating to optics.
FREIBURG, UNIVERSITY OF. Eighty-four Academic Publications, 1893–4.
FUERTES, PROF. E. A. Fifth report of the Meteorological Bureau of New York. Albany, 1894. O.
FUNK & WAGNALLS COMPANY. Standard Dictionary of the English Language. Vol. 2. New York, 1895. F.
GABB, W. M. (Author). Informe sobre la Exploracion de Talamanca. Costa Rica, 1894. D.
GAIL, G. W. The Dillmann Library of about 2300 bound volumes and 2000 pamphlets. (This collection is referred to elsewhere in this Report).
GATSCHET, DR. A. S. (Author). A Migration Legend of the Creek Indians. Vol. 1. Philadelphia, 1884. O.
A Mythic Tale of the Isleta Indians. Philadelphia, 1884. O.
The Karankawa Indians. Cambridge, 1891. O.
Six other of his publications.
Hewitt, J. N. B. Era of the Formation of the Historic League of the Iroquois. Washington, 1894. O.
Pittier & Gagini. Ensayo lexicográfico sobre la lengua de Térraba. San José, 1892. O.
GEIKIE, SIR ARCHIBALD. (Director-General Geological Survey of Great Britain). Eleven volumes of works on the geology of Great Britain.
Ten Maps (Solid and Drift) London; England and Wales; Scotland, Ireland.
GHENT, UNIVERSITY OF. Bibliotheca Erasmiana. Ghent, 1893. Q.
GIESSEN, UNIVERSITY OF. Sixty-five Academic Publications.
GILDERSLEEVE, PROF. B. L. Twenty miscellaneous volumes.
GILMAN, PRES. D. C. Eighteen miscellaneous volumes.
GILMAN, REV. E. W., D. D. La Santa Biblia (The Bible in Spanish). New York, 1894. O.
Catalogue of the American Bible Society's Library. New York, 1863. O.
Samples of Laos Typography. Specimen of the first printing ever done in the language of the Laos people—The Lord's Prayer.
The Koran. Printed at Lucknow in the Arabic language.
"A Palimpsest from Japan."
Annual reports of the American Bible Society and the British and Foreign Bible Society. 1894. O.
GLASS, D. W. Copies of the National Intelligencer and other newspapers of the years 1860–65.

GLENN, J. M. & W. L. Twenty volumes of illustrated journals.
Le Palais de Cristal. O.
L'Exposition Universelle, 1867. O.
GORMAN, HON. A. P. A large number of official publications.
GOTO, SEITARO. (Author). Studies on the Ectoparasitic Trematodes of Japan. Tokyo, 1894. Q.
GÖTTINGEN: K. GESELLSCHAFT D. WISSENSCHAFTEN. Astronomische Mittheilungen. 1895. Q.
GÖTTINGEN, UNIVERSITY OF. Eighty-eight Academic Publications.
GRANT, U. S. (Author). (Asst. State Geologist, Minnesota). The Name of the Copper-bearing Rocks of Lake Superior, 1895. O.
Winchell and Grant. Preliminary Report on the Rainy Lake Gold Region. Minneapolis, 1895. O.
Two other of his publications.
GRAY, DR. L. C. (Author). Albuminuria in Nervous Diseases. 1894. O.
GREEN, DR. SAMUEL A. Michael Wigglesworth. 1895. O.
Suffolk Deeds, Liber 7. Boston, 1894. O.
Nineteen miscellaneous pamphlets.
GREIFSWALD, UNIVERSITY OF. Ninety-eight Academic Publications, 1893–4.
GRIFFITH, BRIG.-GEN. J. D. (Author). Experiments with the New U. S. Army Rifle. O.
Protection of the Soldier. O.
GRIFFITH, W. (Author). The Sabbath. London. O.
GROLIER CLUB. Engraved Works of A. B. Durand, exhibited at the Grolier Club, 1895. D.
Transactions of the Grolier Club, parts 1 and 2. O.
GROSART, REV. A. B. (Author). Songs of the Day and Night. S.
GROSSMANN, RABBI L. Two of his recent publications.
GRUSON, HERMAN. (Author). Im Reiche des Lichtes. Braunschweig, 1895. O.
HALL, DR. W. S. (Author). Ueber die Resorption des Carniferrins. 1894. O.
HALLE, UNIVERSITY OF. One hundred and ninety-six Academic Publications.
Das zweihundertjährige Jubiläum der Universität Halle-Wittenberg. Halle, 1895. Q.
HANBURY, T. Hanbury, D. Science Papers, chiefly pharmacological and botanical. London, 1876. O.
HARLEM: SOCIÉTÉ DES SCIENCES. Oeuvres de Christiaan Huygens, Vol. 6. Q.
HARRINGTON, PROF. M. W. Rainfall and Snow of the United States, compiled to the end of 1891. Washington, 1894. Q.
HARVARD COLLEGE, ASTRONOMICAL OBSERVATORY. Annals. 3 vols. Q.
Forty-ninth Annual Report of the Director. Cambridge, 1894. O.
HARVARD COLLEGE, MUSEUM OF COMPARATIVE ZOOLOGY. (Prof. Agassiz). Memoirs, Vols. 17, 18 and 19; Bulletins, Vols. 25 and 27. Cambridge, 1894. Q. and O.
Annual Report of the Curator. Cambridge, 1894. O.
HARVARD UNIVERSITY. Quinquennial Catalogue, 1636–1895. Cambridge, 1895. O.
Official Reports and Catalogues.
HASSAM, J. T. (Author). The Confiscated Estates of Boston Loyalists. Cambridge, 1895. O.
HATFIELD, PROF. J. T. (Author). Poetry of Wilhelm Müller. 1895. O.
HEARN, G. A. Ancient Chinese Porcelains and other curios belonging to Mr. G. A. Hearn. 1894. S.
HEIDELBERG, UNIVERSITY OF. Eighty-six Academic Publications.
HEIMWEH, JEAN. (Author). La guerre et la frontière du Rhin. Paris, 1895. S.
HELSINGFORS, ASTRONOMICAL OBSERVATORY. Acta Societatis Scientiarum Fennicae. 2 vols. Helsingfors, 1893–4. Q.
HERTZOG, W. F. Purcell, F. Ueber den Bau der Phalangidenaugen. Leipzig, 1894. O.
HOADLEY, C. J. (Editor). (State Librarian of Connecticut). Public Record of Connecticut, 1778–1780. Hartford, 1895. O.
HOLDEN, W. (Author). Many Moods. Philadelphia, 1895. D.
HOLT, HENRY & CO. (Publishers). Forty-nine of their publications, 1894–5.

HOWARD ASSOCIATION. Render, W. H. Through Prison Bars. London. D.
ILLINOIS STATE HISTORICAL SOCIETY. Trustee's Report, 1894. Springfield, 1895. O.
ILLINOIS STATE MUSEUM OF NATURAL HISTORY. Bulletin No. 5. Springfield, 1892. O.
Ornithology of Illinois. Vol. II, part 1. Springfield, 1895. Q.
INDIAN RIGHTS ASSOCIATION. Eleventh and Twelfth Annual Reports, 1893–1894. Philadelphia, 1894–5. O.
INDIANA, BUREAU OF STATISTICS. Fifth Biennial Report, 1893–4. Indianapolis, 1894. O.
IOWA ACADEMY OF SCIENCES. Proceedings for 1894. Des Moines, 1895. O.
IOWA GEOLOGICAL SURVEY. Third Annual Report, 1894. Des Moines, 1895. Q.
IOWA HISTORICAL SOCIETY. Historical lecture upon Early Leaders in the Professions in the Territory of Iowa. Iowa City, 1894. O.
ITALY: MINISTER OF AGRICULTURE, INDUSTRY AND COMMERCE. Statistica delle biblioteche. Parts 1-2. Roma, 1893–4. Q.
Popolazione. Movimento dello stato civile, Anno 1893. Roma, 1895. Q.
ITALY: MINISTER OF PUBLIC INSTRUCTION. Le Opere di Galileo Galilei. Vol 4. Firenze, 1894. Q.
Raccolta di documenti e studi publicati dalla R. Commissione Colombiana. Parte V, vol. 2. Rome, 1893. F.
Volumi publicati della raccolta Indici e Cataloghi. 43 vols.
JANET, CHARLES. (Author). Thirteen of his recent publications. Paris, 1894. O. and Q.
JONES, CHARLES E. Address delivered before the Confederate Survivors Association. Augusta, 1895. O.
KARLSRUHE: TECHNISCHE HOCHSCHULE. Six Academic Publications.
KEELER, PROF. J. E. Two of his recent publications.
KELLY, PROF. H. A. A large Map of Palestine in relief.
KIEL, UNIVERSITY OF. One hundred and seventy Academic Publications.
KÖNIGSBERG, UNIVERSITY OF. Die Silberbibliothek Albrechts von Preussen und seiner Gemahlin Anna Maria. Leipzig, 1894. F.
Prutz, H. Die K. Albertus-Universität zu Königsburg im 19ten Jahrhundert. Q.
Sixty Academic Publications.
KUNTZE, DR. OTTO. (Author). Geogenetische Beiträge. Leipzig, 1895. O.
LANGLEY, PROF. S. P. (Author). Le travail intérieur du vent. 1893.
LATCH, E. B. (Author). Application of the Mosaic System of Chronology. Philadelphia, 1895. O.
LATROBE, HON. F. C. Official Publications of the City of Baltimore.
LE SOUDIER, H. (Author). Rapport sur l'Exposition Internationale de Chicago. Paris, 1894. Q.
LEIPZIG, UNIVERSITY OF. Three hundred Academic Publications.
LEMOINE, E. (Author). Étude sur le triangle et sur certains points de géométrographie. Paris, 1894. O.
LEVASSEUR, E. (Author). Discours prononcés à la séance générale: Congrès des Sociétés Savantes. Paris, 1894. Q.
L'Agriculture aux États-Unis. Paris, 1894. O.
L'Exposition de Chicago—Coup d'oeil sur l'ensemble de l'Exposition. Paris, 1894. O.
L'Instruction primaire aux États-Unis. Paris, 1894. O.
Le Salaire aux États-Unis. Paris, 1894. O.
LEVIAS, C. Bowne, B. P. Principles of Ethics. New York, 1893. O.
LEYDEN, UNIVERSITY OF. Academic Publications for 1895.
LICK OBSERVATORY. Schaeberle. Eclipse of the Sun, 1893. Sacramento, 1895. O.
LIEGE, UNIVERSITY OF. Four Academic Publications.
LILLE, UNIVERSITY OF. Fifty-three Academic Publications.
LONDON, CLINICAL SOCIETY OF. Transactions, Vol. 27. London, 1894. O.
LOUVAIN, UNIVERSITY OF. Mémoires de la Société littéraire. 10 vols. O.
Eighteen Academic Publications.
LOW, HON. SETH. La Grande Encyclopédie, vols. 1-20. Paris. F.
LUCAS, GEORGE A. Calvert, F. (Lord Baltimore). Coelestes et Inferi. Venetiis, 1771. O.

LUND, UNIVERSITY OF. Twenty-two Academic Publications.

LYONS, UNIVERSITY OF. One hundred and thirty Academic Publications.

LYMAN, B. S. (Author). Report on the New Red of Bucks and Montgomery Counties. Philadelphia, 1895. O.

MADRAS, GOVERNMENT OBSERVATORY. Meridian Circle Observations. 1894. Q.

MADRID, ASTRONOMICAL OBSERVATORY. Observaciones Meteorologicas. 1894. O.

MAHARAJA OF JAMMU AND KASHMIR. Catalogue of the Sanskrit MSS. in the Raghunatha Temple Library. Prepared by Prof. M. A. Stein. Bombay, 1894. Q.

MANILLA, METEOROLOGICAL OBSERVATORY. La Seismologia en Filipinas. 1895. F.

La Meteorologia en la Exposición Colombiana de Chicago. 1894. F.

MANLEY, DR. T. H. Five of his recent publications. D. and O.

MARYLAND HISTORICAL SOCIETY. Archives of Maryland: Proceedings and Acts of the General Assembly, 1684–1692. Baltimore, 1894. Q.

Fund Publications: Calvert Papers, No. 2. Baltimore, 1894. O.

MASSACHUSETTS COMMISSIONERS OF PUBLIC RECORDS. Reports on the Custody of the Public Records. Boston. 3 vols. O.

MASSACHUSETTS HISTORICAL SOCIETY. Tribute to the memory of Robert C. Winthrop. Boston, 1894. O.

MECKLENBURG, GEOLOGICAL SURVEY OF. Four reports.

MEREDITH, GILMOR. N. Clenardi Graecae linguae institutiones. Francofurdi, 1587. D,

MICHIGAN GEOLOGICAL SURVEY. Geological Survey of Michigan. Vol. 5. Lansing. 1895. O.

MICHIGAN STATE LIBRARY. Michigan Pioneer and Historical Society Collections. Vols. 21, 22 and 23. Lansing, 1894. O.

MINNESOTA ACADEMY OF NATURAL SCIENCES. Occasional Papers. Minneapolis, 1894. Q.

MINNESOTA HISTORICAL SOCIETY. Baker. Sources of the Mississippi. O.

Collections, vol. 6, part 3, and Biennial Report. St. Paul, 1894, 1895.

MISSOURI GEOLOGICAL SURVEY. Keyes, C. R. Paleontology of Missouri. 2 vols. Jefferson City, 1894. O.

Third Biennial Report of the State Geologist. Jefferson City, 1895. O.

MONACO, S. A. LE PRINCE ALBERT I DE. Résultats des campagnes scientifiques, Fasc. 7. Monaco, 1894. F.

Sur les premières campagnes scientifiques de la "Princesse Alice." Q.

Buchanan, J. Y. La densité et l'alcalinité des eaux de l'Atlantique et de la Méditerranée. O.

MONTPELLIER, UNIVERSITY OF. Eighty-six Academic Publications.

MOSSO, PROF. U. Olio di Strofanto ed acido strofantico, ricerche del F. Ottolenghi. Genoa, 1894. Q.

Revue des travaux de pharmacologie, de toxicologie, etc. Turin, 1895. O.

MULLINS, DR. G. L. (Author). Notes on Hydatid Disease in New South Wales. Sydney, 1895. O.

MÜNSTER, UNIVERSITY OF. Eighteen Academic Publications.

MYER, ISAAC. (Author). The proper time for the Celebration of Washington's Birthday. New York, 1895. O.

NEWCOMB, PROF. SIMON. (Author). The Elements of the Four Inner Planets and the Fundamental Constants of Astronomy. Washington, 1895. O.

NEWFOUNDLAND, GEOLOGICAL SURVEY OF. Reports and Maps.

NEW JERSEY GEOLOGICAL SURVEY. Annual Report, 1893, with Maps. Trenton, 1894. O.

Report on Water-supply, by C. C. Vermeule. Trenton, 1894. O.

NEW JERSEY STATE LIBRARY. New Jersey Archives. Vols. 11 and 12. 1894–95. O.

NEW SOUTH WALES: GEOLOGICAL SURVEY. Liversedge, A. Minerals of New South Wales. London, 1888. Q.

Twenty numbers of their Memoirs and Records.

NEW YORK ACADEMY OF SCIENCES. Transactions. Vols. II and XII. Annals. Vol. 4. Nos. 1–2. O.

NEW YORK CHAMBER OF COMMERCE. Reports for 1877–81 and 1888–89.

NEW YORK STATE LIBRARY. The official publications of the State for the year.

NOBLE, DR. C. P. (Author). Three of his recent publications. Philadelphia. O.

OLIVER, DR. C. A. (Author.) Text-book of Ophthalmology. [Chinese translation.] Chunan-fu, China, 1894. O.

ONTARIO, MINISTER OF EDUCATION., Documentary History of Education in Upper Canada. 2 vols. (1790–1836). Toronto, 1894. O.

Report for 1894. Toronto, 1895. O.

OSLER, DR. W. (Author). On Chorea and Choreiform Affections. Philadelphia, 1894. O.

Lectures on the Diagnosis of Abdominal Tumors. New York, 1894. O.

The Principles and Practice of Medicine, 2d ed. New York, 1895. O.

OTT, PROF. ISAAC. (Author). Contributions to the Physiology and Pathology of the Nervous System, Part 12. Philadelphia, 1892–4. O.

PARIS, FACULTY OF LAW. Sixty-three Academic Publications.

PARIS, FACULTY OF MEDICINE. Five hundred and forty-seven Academic Publications.

PARIS, UNIVERSITY OF. One hundred and fifteen Academic Publications.

PEABODY INSTITUTE. (Peabody, Mass.) Report of the Centennial Celebration of the Birth of George Peabody, 1795–1895. Cambridge, 1895. O.

PEARSON (H. G.) MEMORIAL COMMITTEE. Godkin, E. L. Henry G. Pearson. Memorial Address. New York, 1894. O.

PENNSYLVANIA MEDICAL SOCIETY. Transactions. Vol. XXV. Philadelphia, 1894. O.

PENNSYLVANIA RAILROAD COMPANY. Catalogue of the Exhibit of the Pennsylvania R. R. Co. at the World's Columbian Exposition. Chicago, 1893. O.

PENNSYLVANIA, UNIVERSITY OF. Seven Academic Publications.

PÉRIÈS, PROF. G. (Author). Code de procédure canonique dans les causes matrimoniales. Paris, 1894. O.

La Faculté de droit dans l'ancienne université de Paris. (1160–1793). Paris, 1890. O.

PEYTON, COL. J. L. Memoir of John Howe Peyton. Staunton, 1894. O.

PHILADELPHIA, COLLEGE OF PHYSICIANS. Transactions. 3d series. Vol. 16. Philadelphia, 1894. O.

PIERCE, HON. E. L. (Author). Memoirs and Letters of Charles Sumner. 4 vols. O.

Works of Charles Sumner. 15 vols. O.

Eulogy on Charles Sumner, by Carl Schurz. D.

PIERCE, G. W. (Author). My Soundspeed Discovery. Boston, 1895. O.

PORTUGAL, COMMISSÃO DOS TRABALHOS GEOLOGICOS. Communicações da secção dos trabalhos geologicos de Portugal. Tome $1^1$ and $2^1$ $^2$. Lisboa, 1889–92. O.

PROVIDENCE RECORD COMMISSIONERS. Third report relative to Early Town Records. Providence, 1893. O.

Early Records of the Town of Providence, vols. 7, 8, 9. Providence, 1894, 1895. O.

QUEENSLAND, GEOLOGICAL SURVEY OF. Reports and Maps.

QUISENBERRY, A. C. (Author). Life and Times of Hon. Humphrey Marshall. Winchester, Ky., 1892. O.

QUITO, UNIVERSITY OF. Anales de la Universidad de Quito. Serie XI, No. 72–75. Quito, 1894. O.

RADCLIFFE OBSERVATORY. Radcliffe Catalogue of 6424 Stars for the epoch 1890. Oxford, 1894. Q.

RAVUT, L. E. (Author). Resolutions des équations. Paris, 1894. O.

RAYMOND, REV. A. V. V. The Inauguration of Rev. Andrew V. V. Raymond as ninth President of Union College. 1894. O.

REMSEN, PROF. IRA. Schorlemmer, C. Rise and Development of Organic Chemistry. London, 1894. D.

RICKETTS, DR. B. M. Thirty-one of his publications.

RIEFLER, S. (Author). Die Präcisions-Uhren mit volkommenfreiem Echappement und neuem Quicksilber-Compensationspendel, etc. München, 1894. Q.

RITTER, PROF. C. W. Der Brückenbau in den Vereinigten Staaten Amerikas. Bern, 1894. O.

RIO DE JANEIRO, OBSERVATORY OF. Cruls, L. O clima de Rio de Janeiro, 1892. F.

Cruls, L. Determinação das posições geographicas. Rio de Janeiro, 1894. F.

Cruls, L. Éclipses du soleil et occultations. Rio de Janeiro, 1894. O.

ROBB, HON. JOHN A. Official Publications of the City of Baltimore.

ROTH, SANTIAGO. (Author). Embrollos Cientificos. Buenos Ayres, 1894. O.

ROME, ISTITUTO STORICO ITALIANO. Fonti per la Storia d'Italia. 13 vols. Roma, 1890. Q.
Bulletino dell' Istituto Storico Italiano. 13 vols. Q.

ROME, OBSERVATORY OF THE VATICAN. Pubblicazioni della Specola Vaticana. Vol. 4. Torino, 1894. Q.

ROWLAND, REV. A. J. (Author.) The Pentateuch. Philadelphia, 1895. S.

ROYAL INSTITUTION OF GREAT BRITAIN. Proceedings. Vols. 1–5. London. 5 vols. 1854–69. O.

RUSSIA, GEOLOGICAL SURVEY OF. Mémoires and Bulletins.

SACCO, PROF. F. Essai sur l'orogénie de la terre. Turin, 1895. O.

SAIGO, COUNT YORIMICHI. (Minister of the Navy, Japan). Annual Report of the Health of the Japanese Navy. Tokyo, 1893. O.

SAUSSURE, RENÉ DE. *Revue de l'aéronautique. 6 année, 3. Paris, 1893.* Q.
Saussure, H. B. de. Observations météorologiques faites au Col du Géant, 1788. Genève, 1891. F.
Saussure, H. de and Zehntner L. Notice morphologique sur les Gryllotalpiens. Genève, 1894. O.

SAVAGE, J. Y. (Publisher). Sweeny, P. B. On the "Ring Frauds" and other Public Questions. New York, 1894. O.

SCHAEFFLER, J. B. (Publisher). Crook, A. R. The Lithographic Stone Quarries of Bavaria. Chicago. O.

SCHIMPER, PROF. A. F. W. (Author). Lehrbuch der Botanik für Hochschulen. Jena, 1894. Q.

SCHOULER, DR. JAMES. (Author). A Treatise on the Law of Personal Property. 2d ed. 2 vols. Boston, 1884. O.

SCHWATT, L. J. (Author). A Geometrical Treatment of Curves. Boston, 1895. O.

SCOTLAND, FISHERY BOARD OF. Twelfth Annual Report. Edinburgh, 1894. O.

SHAW, JAMES B. (Author). Mathematics the Science of Algorithms. Jacksonville (Ill.), 1895. O.

SHERWOOD, DR. SIDNEY. (Author). History and Theory of Money. Philadelphia, 1893. O.
Malthus, T. R. The Principle of Population (1798–1803). New York, 1895. D.
Ricardo, D. Principles of Political Economy and Taxation (1817). New York, 1895. D.

SHUFELDT, DR. R. W. (Author). Lectures on Biology. 1892. O.

SIAM, HIS MAJESTY, THE KING OF. The Siamese edition of the Sacred Writings of the Southern Buddhists, the Tripitaka. [This edition was published to commemorate the twenty-fifth anniversary of the king's ascension to the throne].

SIERRA CLUB. Publications. 7 nos. San Francisco, 1892–4. D. and O.
Two maps of the Sierra Nevada Region.

SINGLETON, M. T. (Author). Gravitation and Cosmological Law. Atlanta (Ga.), 1895. O.

SLATER (J. F.) FUND, TRUSTEES OF. Howe, S. H. Memoir of the Life of J. F. Slater. Baltimore, 1894. Q.

SMITH, EUGENE A. (State Geologist). Geological Map of Alabama, with explanatory chart. Montgomery, 1894.

SMITH, G. H. (Author). Elements of Right and of the Law. Chicago, 1887. D.

SMITH, CAPT. J. DONNELL. (Author.) Enumeratio Plantarum Guatemalensium, part 4. Oquawkae, 1895. O.

SOLIS-COHEN, DR. S. (Author). The Moral Purport of the Single Tax. New York, 1895. D.

SQUIER, LT. GEORGE O. (Author). Paper on Gun Steel. Fort Monroe, 1894. O.

STABLER, EDWARD, JR. Proceedings of Friends Union for Philanthropic Labor. Philadelphia, 1894. O.
Minutes of Baltimore Yearly Meeting of Friends. Baltimore, 1894. O.

STEPHENSON, MRS. R. (Through the Author). Foster, J. M. Christ the King. Boston, 1894. D.

STEVENSON, ROBERT. (Author). Elasticity a Mode of Motion. O.
STOKVIS, PROF. B. J. Three of his recent publications. San Francisco, 1895. O.
STRASSBURG, UNIVERSITY OF. One hundred and fifty-two Academic Publications.
STRONG, OLIVER S. (Author). The Cranial Nerves of Amphibia. Boston, 1895. O.
SULZBERGER, DAVID. The Babylonian Talmud, printed at Berlin and Frankfort am Oder, 1734–39, in twelve volumes, folio.
SUTRO LIBRARY. Hopkins, R. C. Roses and Thistles. San Francisco, 1894. O.
SWAIN, PRESIDENT J. Report as President of Indiana University. Indianapolis, 1894. O.
TAYLOR, PRESIDENT C. E. (Author). How far should a State Undertake to Educate? Raleigh, 1894. O.
TENNESSEE, UNIVERSITY OF. Blount College and the University of Tennessee; an Historical Address by E. T. Sanford, 1894. O.
TOOKER, W. W. (Author). Discovery of Chaunis Temoatan of 1586. Reprint, 1895. O.
TORONTO, UNIVERSITY OF. Examination Papers, 1894. Toronto, 1894. O.
TOULOUSE, UNIVERSITY OF. Sixty Academic Publications.
TOWNSEND, M. I. (Author). Prehistoric Structure of Central America. Troy, 1895. O.
TRINITY COLLEGE, (DUBLIN). Graves, R. P. Life of Sir William Rowan Hamilton, Vols. 2 and 3. Dublin, 1885–1889. O.
TÜBINGEN, UNIVERSITY OF. Fifty-two Academic Publications.
TURIN, ROYAL ACADEMY OF. Mémoires, 1st series, Vols. 36–40; 2nd series, Vols. 21–35. Plana, Théorie du mouvement de la lune. 8 vols. Turin, 1832. Q.
TYLER, PRES. LYON G. (Author). Bruton Church. Richmond, 1895. O.
UNION OF AMERICAN HEBREW CONGREGATIONS. Judaism at the World's Parliament of Religions. Cincinnati, 1894. O.
UPSALA, UNIVERSITY OF. Forty Academic Publications.
UTRECHT, UNIVERSITY OF. Thirty-eight Academic Publications.
VACHER, LÉON. (Author). Le Homestead aux États-Unis. Paris, 1895. O.
VERMONT STATE LIBRARY. Twenty-five volumes of State Publications.
VICTORIA, GEOLOGICAL SURVEY OF. Reports and Maps.
VIENNA, UNIVERSITY OF. Five Academic Publications.
VOS, DR. BERT J. Kontopoulos. Modern Greek Lexicon. Athens, 1880. O.
WALKER, JOSEPH B. (Author). An Account of John Burbeen. Concord, 1892. O.
WHIPPLE, BISHOP. Perry, W. S. (Bishop of Iowa). Four Centuries of Conflict for the Continent of North America, 1497–1897. S.
WHITE, REV. E. (Ed.) Journal of William Dowsing. Ipswich, 1885. O.
WHITING, HAROLD. (Author). A Course of Exercises in Elementary Physics. San Francisco, 1894. O.
WILDE, HENRY. Two of his recent publications.
WINCHELL, PROF. N. H. Geological and Natural History Survey of Minnesota: Reports for 1893 and 1894, and vol. 3, No. 1, of the final report. O and F.
WOODYEAR, MRS. W. E. (Author). In Camphor. New York, 1895. O.
YONKERS, HISTORICAL LIBRARY ASSOCIATION. Bulletin, vol. 1. Yonkers, 1895. O.
ZEBALLOS, DR. ESTANISLAO S. (On behalf of the Argentine Government.) (Author). Limites entre Argentina y Brazil. Buenos Aires, 1892. Q.
(Author). Arbitration on Missions. Buenos Aires, 1893. D.
Conquest of River Plata, Schmidt & Cabeza de Vaca. London, 1891. O.
Reciprocidad Comercial. 1892. O.
Meron, M. G. Literary Sketches of Argentine Writers.
Message of the President. Buenos Aires, 1894. Q.

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Reports and other current publications of the year have also been received from the societies and institutions named below. This does not include many reports, etc., received in regular exchange.

American Association for the Advancement of Science; American Bar Association; American Board of Commissioners for Foreign Missions; American Colonization Society; American Dermatological Association; American Forestry Association; American Humanitarian League; American Orthopaedic Association; Astor Library; Atlanta Board of Education; Australasian Association for the Advancement of Science; Baltimore City Library; Baltimore Corn and Flour Exchange; Baltimore Health Department; Baltimore United Bohemian Association; Baltimore Young Men's Christian Association; Boston Children's Hospital; Boston Museum of Fine Arts; Boston Public Library; Boston Public School Committee; Boston Record Commissioners; Brooklyn Library; Brooklyn Superintendent of Public Instruction; Buffalo Historical Library; Carnegie Free Library; Chicago Commissioner of Health; Chicago Public Library; Cincinnati Chamber of Commerce; Cincinnati Public Library; Cincinnati Museum Association; Colorado Scientific Society; Columbia (S. C.) City Schools; Congress of American Physicians and Surgeons; *Connecticut Agricultural Experiment Station*; *Connecticut* Bureau of Labor Statistics; Covington (Ky.) Public Schools; Dartmouth College Library; District of Columbia Health Department; Enoch Pratt Free Library; Friends' Free Library (Germantown); Harlem Library; Illinois Bureau of Labor Statistics; Illinois, University of; Jersey City Free Public Library; Jewish Hospital Association of Philadelphia; Jewish Theological Seminary (N. Y.); Kansas Board of R. R. Commissioners; Leland Stanford Jr. University Library; Lenox Library; Los Angeles Public Library; Maimonides Free Library; Maryland Hospital for the Insane; Maryland Institute; Maryland Land Office; Maryland Sunday School Union; Massachusetts Agricultural College; Massachusetts Board of Education; Massachusetts Board of Railroad Commissioners; Massachusetts Board on the Unemployed; Massachusetts Gas and Electric Light Commissioners; Massachusetts School for the Feeble-minded; Massachusetts State Board of Health; Massachusetts State Board of Lunacy and Charity; Melbourne, University of; Michigan Department of State; Milwaukee Public Library; Missouri Botanical Garden; National Association of Manufacturers; Nebraska Bureau of Labor; Nevada Surveyor General's Office; Newark Free Public Library; New Bedford Free Public Library; Newberry Library; New England Society in the City of New York; New Hampshire State Library; New Jersey Bureau of Labor and Industries; Newton Free Library; New York Free Circulating Library; New York Mercantile Library: New York Meteorological Observatory; New York Society of Mechanics and Tradesmen; New York State Charities Aid Association; New York State Commission in Lunacy; Ohio Historical and Philosophical Society; Ohio Mechanics Institute; Ohio State Board of Charities; Omaha City Engineer; Ontario Department of Agriculture; Panjab University; Pennsylvania State College; Perkins Institution; Philadelphia Mercantile Library; Portland (Oregon) Library; Providence Public Library; Rhode Island Commissioners of Industrial Statistics; St. Andrews University Library; St. Louis Mercantile Library; St. Louis Public Library; Salem Public Library; San Francisco Free Public Library; San Francisco Mercantile Library; Springfield City Library; Sydney, University of; Tokyo Library; U. S. Military Academy; Utica State Hospital; Victoria Public Library (Melbourne); Wilmington (Del.) Associated Charities; Wisconsin Bureau of Labor; Wisconsin State Treasurer; Worcester (Mass.) Free Public Library.

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The University is indebted, as in previous years, for many and valuable gifts from the several Governmental Departments in Washington.

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[Issued December 24, 1895.]

TWENTY-FIRST

# ANNUAL REPORT

OF THE PRESIDENT OF THE

# Johns Hopkins University

Baltimore, Maryland

1896

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BALTIMORE
THE JOHNS HOPKINS PRESS
1896

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## 1896.

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C. MORTON STEWART, *ex officio.*

*Arranged in the order of their accession to office.

# REPORT.

To the Trustees of the Johns Hopkins University:—

*Gentlemen:*

I have the honor to present my twenty-first Annual Report as President of the Johns Hopkins University. In addition to the usual appendix, including reports from all the departments of instruction, I propose to add a supplement which will show the condition of the University at the close of twenty years of instruction.

The academic staff numbered during the year one hundred and six teachers, including twenty-three professors and instructors in the Johns Hopkins Medical School. The number of students enrolled was five hundred and ninety-six, of whom two hundred and seventy-two were residents of Maryland, three hundred and five came here from thirty-nine other States of the Union, and nineteen from foreign countries. Among the students were four hundred and six already graduated, coming from one hundred and fifty-two colleges and universities; there were one hundred and forty-nine matriculates (or candidates for the degree of Bachelor of Arts); and there were forty-one admitted as special students, to pursue courses of study for which they seemed fitted, without reference to graduation. The degree of Bachelor of Arts was conferred

upon thirty-seven candidates, and thirty-six were promoted to the degree of Doctor of Philosophy.*

The following table indicates the enrolment of students in each year since the University was opened in the autumn of 1876 :—

| | Total Enrolled. | Graduates, (incl. Fellows.) | Matriculates. | Non-Matriculates. |
|---|---|---|---|---|
| 1876–77 | 89 | 54 | 12 | 23 |
| 1877–78 | 104 | 58 | 24 | 22 |
| 1878–79 | 123 | 63 | 25 | 35 |
| 1879–80 | 159 | 79 | 32 | 48 |
| 1880–81 | 176 | 102 | 37 | 37 |
| 1881–82 | 175 | 99 | 45 | 31 |
| 1882–83 | 204 | 125 | 49 | 30 |
| 1883–84 | 249 | 159 | 53 | 37 |
| 1884–85 | 290 | 174 | 69 | 47 |
| 1885–86 | 314 | 184 | 96 | 34 |
| 1886–87 | 378 | 228 | 108 | 42 |
| 1887–88 | 420 | 231 | 127 | 62 |
| 1888–89 | 394 | 216 | 129 | 49 |
| 1889–90 | 404 | 229 | 130 | 45 |
| 1890–91 | 468 | 276 | 141 | 51 |
| 1891–92 | 547 | 337 | 140 | 70 |
| 1892–93 | 551 | 347 | 133 | 71 |
| 1893–94 | 522 | 344 | 123 | 55 |
| 1894–95 | 589 | 412 | 126 | 51 |
| 1895–96 | 596 | 406 | 149 | 41 |

During twenty years, two thousand nine hundred and eighty-one individuals have been enrolled as students, of whom twelve hundred and thirty-nine are registered as from Maryland (including ten hundred and five from Baltimore) and seventeen hundred and forty-two from sixty-one other States and countries. Eighteen hundred and ten persons entered as graduate students, and eleven hundred and seventy-

*The statistics have been prepared, as in former years, by the Registrar, Mr. T. R. Ball.

one entered as undergraduates. Of the undergraduates, two hundred and seventy-six have continued as graduate students, many of them proceeding to the degree of Doctor of Philosophy. It thus appears that two thousand and eighty-six persons have followed graduate studies here.

The following table indicates the geographical distribution of the students each year since the opening, as shown by the Annual Registers:—

| | *Of Md.* | *Not of Md.* | | *Of Md.* | *Not of Md.* |
|---|---|---|---|---|---|
| 1876–77 | 59 | 30 | 1886–87 | 162 | 216 |
| 1877–78 | 71 | 33 | 1887–88 | 199 | 221 |
| 1878–79 | 76 | 47 | 1888–89 | 183 | 211 |
| 1879–80 | 97 | 62 | 1889–90 | 215 | 189 |
| 1880–81 | 95 | 81 | 1890–91 | 235 | 233 |
| 1881–82 | 97 | 78 | 1891–92 | 273 | 274 |
| 1882–83 | 106 | 98 | 1892–93 | 266 | 285 |
| 1883–84 | 123 | 126 | 1893–94 | 260 | 262 |
| 1884–85 | 130 | 160 | 1894–95 | 260 | 329 |
| 1885–86 | 130 | 184 | 1895–96 | 272 | 324 |

The attendance upon the courses given in some of the principal subjects has been as follows during the last five years:—

| | 1891–92. | 1892–93. | 1893–94. | 1894–95. | 1895–96. |
|---|---|---|---|---|---|
| Mathematics and Astronomy, | 98 | 118 | 115 | 132 | 126 |
| Physics, | 138 | 145 | 123 | 156 | 132 |
| Chemistry, | 135 | 127 | 119 | 130 | 123 |
| Mineralogy and Geology, | 27 | 28 | 32 | 26 | 37 |
| Biology, | 72 | 58 | 60 | 65 | 92 |
| Pathology and Bacteriology, | 44 | 57 | 35 | 66 | 49 |
| Greek, | 59 | 49 | 45 | 49 | 56 |
| Latin, | 73 | 77 | 67 | 68 | 84 |
| Sanskrit, etc., | 46 | 41 | 46 | 60 | 46 |
| Semitic Languages, | 22 | 18 | 18 | 24 | 18 |
| German, | 121 | 110 | 103 | 152 | 167 |
| French, Italian, etc., | 91 | 80 | 83 | 83 | 92 |
| English, etc., | 94 | 84 | 85 | 140 | 148 |
| History and Political Science, | 165 | 192 | 154 | 107 | 104 |
| Philosophy, | 61 | 58 | 63 | 51 | 49 |

Since degrees were first conferred, in 1878, four hundred and ninety-six persons have attained the Baccalaureate degree, and three hundred and ninety-four have been advanced to the degree of Doctor of Philosophy, as appears from the following table,—the whole number of individuals graduated being eight hundred and thirteen:—

| | *B. A.* | *Ph. D.* | | *B. A.* | *Ph. D.* |
|---|---|---|---|---|---|
| 1877–78 | 0 | 4 | 1887–88 | 34 | 27 |
| 1878–79 | 3 | 6 | 1888–89 | 36 | 20 |
| 1879–80 | 16 | 5 | 1889–90 | 37 | 33 |
| 1880–81 | 12 | 9 | 1890–91 | 50 | 28 |
| 1881–82 | 15 | 9 | 1891–92 | 41 | 37 |
| 1882–83 | 10 | 6 | 1892–93 | 40 | 28 |
| 1883–84 | 23 | 15 | 1893–94 | 41 | 33 |
| 1884–85 | 9 | 13 | 1894–95 | 37 | 48 |
| 1885–86 | 31 | 17 | 1895–96 | 37 | 36 |
| 1886–87 | 24 | 20 | | 496 | 394 |

The following table indicates the enrolment of students in the Medical School since its opening in October, 1893:—

| | *Candidates for the Degree of M. D.* | *Doctors of Medicine.* | *Total Enrolment.* |
|---|---|---|---|
| 1893–94 | 18 | 65 | 83 |
| 1894–95 | 51 | 76 | 127 |
| 1895–96 | 84 | 69 | 153 |
| 1896–97* | 124 | | |

The following promotions and appointments have been made during the year, the tenure of office being fixed, in each case, by the action of the Trustees:

*In the Philosophical Department:*

To be Associate Professor of Geological Physics:

HARRY F. REID, Ph. D.

*The Special Courses offered to Doctors of Medicine begin hereafter in May.

To be Associates:

FONGER DE HAAN, Ph. D., *Romance Languages.*
JACOB H. HOLLANDER, Ph. D., *Economics.*
WESTEL W. WILLOUGHBY, Ph. D., *Political Science.*

To be Instructor in Economics:

HENRY L. MOORE, Ph. D.

*In the Johns Hopkins Medical School:*

To be Clinical Professors:

WILLIAM D. BOOKER, M. D., *Diseases of Children.*
JOHN N. MACKENZIE, M. D., *Laryngology.*
SAMUEL THEOBALD, M. D., *Ophthalmology and Otology.*
HENRY M. THOMAS, M. D., *Diseases of the Nervous System.*

To be Associate Professors:

*LEWELLYS F. BARKER, M. B., *Anatomy.*
*WILLIAM S. THAYER, M. D., *Medicine.*
J. WHITRIDGE WILLIAMS, M. D., *Obstetrics.*

To be Associates:

THOMAS B. ALDRICH, Ph. D., *Physiological Chemistry.*
HENRY J. BERKLEY, M. D., *Neuro-Pathology.*
THOMAS C. GILCHRIST, M. B., *Dermatology.*
J. WILLIAMS LORD, M. D., *Dermatology.*
ROBERT L. RANDOLPH, M. D., *Ophthalmology and Otology.*

To be Lecturer on Medical Zoölogy:

*CH. WARDELL STILES, Ph. D.

To be Instructors and Assistants:

*SIDNEY M. CONE, M. D., *Surgical Pathology.*
*ROSS G. HARRISON, Ph. D., *Anatomy.*
WALTER JONES, Ph. D., *Physiological Chemistry.*
*LOUIS E. LIVINGOOD, M. D., *Pathology.*

The death of Mr. Robert Garrett, a member of the Board of Trustees, occurred, after years of ill health, July 29, 1896. He was elected to the Board in December, 1886, to fill the

*Appointed since September 1, 1896.

vacancy which had been made by the death of his father, Mr. John W. Garrett.

The death of Professor Martin, who was at the head of the Biological Laboratory from 1876 to 1893, occurred in Burley, England, on the twenty-ninth day of October, 1896. Reference was made in a former report to the importance of his services to the University in the early years of its history. A collection of his papers upon physiology was published in 1895 by his friends and pupils, "in recognition of the value of his work, and as a token of their affection and esteem for him."

Professor Emmott, who became a member of the Faculty in 1886, received a call, in the Summer of 1896, to the Victoria Professorship of Law in University College, Liverpool, England (affiliated with Victoria University), and consequently he resigned his professorship in Baltimore at the beginning of the present academic year. He was at first Associate Professor of Logic and Ethics and Lecturer on Roman Law, and was subsequently promoted to a Professorship of Roman Law and Comparative Jurisprudence. Upon receiving his resignation, the Trustees and the Faculty expressed to him their appreciation of his character and attainments and their hearty good wishes for his success in the honorable station in his native land to which he was called.

Among the special lectures delivered within the past year the following are noteworthy:

The fifth series of lectures on the Percy Turnbull Memorial Foundation was given April 13–29, by the Rev. Professor George Adam Smith, of Glasgow, his subject being Hebrew Poetry and the lectures numbering eight. Our largest hall

was not large enough to hold the company that desired to follow the discourses of this brilliant speaker. For the coming year the lectures on this foundation will be devoted to French Poetry, and the lecturer will be M. Brunetière, Member of the French Academy and Editor of the Revue des Deux Mondes.

The lectures provided by the liberality of Mr. Eugene Levering, to be given before the Young Men's Christian Association, were delivered March 25, 26, and 27, by the Rev. Bishop John H. Vincent, Chancellor of the Chautauqua Assembly. His subject was "The Inner Life," and the course was followed with interest and profit.

Three lectures on the History of Architecture were delivered in McCoy Hall, before public assemblies, by Henry Van Brunt, Esq., of Kansas City, C. Howard Walker, Esq., of Boston, and Professor William R. Ware, of Columbia University. This acceptable course was due to the liberality of Mr. J. B. Noel Wyatt, of Baltimore.

A course of six lectures on "Social Problems" was given by Hon. F. H. Wines, of Springfield, Ill., before large audiences composed of members of the University and others interested.

Two illustrated lectures on "Greek Art in the Age of Pericles" and the "Hermes of Praxiteles" were given by Professor H. N. Fowler, of Western Reserve University.

An illustrated lecture on "Volcanoes" was delivered by Professor N. S. Shaler, of Harvard University.

Hon. G. G. Hubbard, of Washington, gave an exhibition (with the aid of the stereopticon) of engravings illustrative of the life of Napoleon Bonaparte.

It is expected that the Williams Lectureship, founded by Mrs. George H. Williams as a memorial of her husband, will

be inaugurated in the Spring of 1897 by a course of lectures on the "Principles of Geology," by Sir Archibald Geikie, Director General of the Geological Survey of the United Kingdom.

The additions to the library have been numerous and important. The philological books of Professor Dillmann, of Berlin, were received in the early part of the year and arranged in a room by themselves, where they are accessible to the students of the Semitic languages. The collection is of great value to this department of study, and the thanks of the University are perpetually due to Mr. G. W. Gail for his valuable gift. The family of Professor Dillmann have presented his portrait to the University and also views of his birth-place, and residence, with an interior view of the study in which he carried on his learned work. The Semitic library has been still further augmented by a large number of books in Rabbinical literature, presented by Mr. Leopold Strouse, of Baltimore, who gave the sum of six hundred dollars for their purchase. Judge Sulzberger has also made valuable additions to the collection, and the Dillmann Room is now one of the most attractive places for study in the University.

Another manifestation of interest in the study of Hebrew and the Semitic languages was shown by a contribution of three thousand dollars, made by a number of gentlemen, citizens of Baltimore, who desired to show their appreciation of the ability and learning of Professor Haupt and to encourage him in the publication of an edition, in Hebrew, of the Old Testament Scriptures. This gift was received by the treasurer of the University, and was at once directed to the particular object which the donors had in mind.

Mr. William W. Spence, in addition to many other tokens of his good will, has subscribed for the library to a reprint of the Relations of the Jesuit Fathers respecting the early discovery of this country. The work is to appear in sixty large volumes, and is a most welcome addition to our historical archives.

Mrs. E. M. Greenway, Jr., of Baltimore, has given to the library a valuable collection of autographs, including those of signers of the declaration of independence, presidents of the United States, European sovereigns, and men of letters.

By the bequest of Mr. Henry Phillips, Jr., of Philadelphia, late Secretary of the American Philosophical Society, the University has received a large number of books chiefly pertaining to numismatics, archaeology, and Spanish and Italian literature. They number seven hundred and forty-five bound volumes, besides many pamphlets.

Other important gifts to the library are mentioned in the annual report of the librarian, which is printed in the Appendix.

Mr. J. B. Noel Wyatt, of Baltimore, has signified his intention to give to the Trustees a fund of five thousand dollars, in commemoration of his deceased friend, William H. Wehrhane. The income of this fund is to be annually devoted to the delivery of a course of lectures upon a subject pertaining to German history, literature, or art. The early fulfilment of the plans of Mr. Wyatt may be expected by the public.

Dr. G. H. F. Nuttall, recently connected with the Johns Hopkins Medical School, and now resident in Berlin, has presented to the Medical School an osteological collection, in the formation of which he has been engaged for many years. Though the collection is small, it contains some good speci-

mens, especially of human skulls. He likewise gave several cases of old-fashioned surgical instruments, which were presented in order that they may be the nucleus of an historical cabinet. Arrangements have been made by the Medical Faculty for the care and preservation of these acceptable gifts.

Dr. Charles L. Poor, Associate Professor of Astronomy, has given to the University an interesting collection of photographs of celestial phenomena, taken at many of the most important universities of the world.

Commemoration Day, February 22, 1896, was observed by an assembly of the officers, students, and friends of this University in the large room of McCoy Hall. The principal address was delivered by the Honorable Andrew D. White, LL. D., lately President of Cornell University. His theme was "The Diplomatic Service of the United States," a subject which his long service as a student of history and as the diplomatic representative of the United States Government in various countries enabled him to discuss with ability and learning. On this occasion five young men were promoted to the degree of Doctor of Philosophy.

The exercises of Commencement were held June 11 in the Lyceum Theatre. The principal addresses were delivered by the President of the Board of Trustees, Mr. C. Morton Stewart, and by the President of the University.

Thirty-one bachelors were promoted to the degree of Doctor of Philosophy, and thirty-seven undergraduates were admitted to the degree of Bachelor of Arts. There were thirteen proficients in Applied Electricity who received formal certificates of their attainments.

The University has participated in two academic celebrations of more than usual note. The Jubilee of Lord Kelvin, who has been for fifty years Professor of Natural Philosophy in the University of Glasgow, was commemorated June 15 and 16. He was a lecturer in this University on Molecular Dynamics in the Autumn of 1884. A letter of congratulation was addressed to him, in behalf of the Trustees and Faculty, and the University was represented at the Jubilee by two delegates, Dr. James Carey Thomas, of the Board of Trustees, and Dr. Joseph S. Ames, Associate Professor of Physics.

In October, 1896, the one hundred and fiftieth anniversary of the foundation of the College of New Jersey was marked by a brilliant assembly of its graduates and friends, and by the presence of a distinguished company of delegates from American and foreign institutions of learning. On this occasion the name of Princeton University was adopted and proclaimed. A noteworthy feature of the proceedings was the delivery of courses of lectures, during the weeks immediately preceding the jubilee days, by illustrious European scholars. The address of the President of the United States, on the final day, gave special interest to the occasion. The historical discourse was delivered by Professor Woodrow Wilson, who had received in this University his degree of Doctor of Philosophy and is still one of our most honored lecturers. In a formal diploma, the Johns Hopkins University congratulated its elder sister upon the auspicious commencement of a new era.

The prizes offered for the encouragement of the arts of literary expression have been awarded as follows:

The John Marshall Prize, for 1896,—to W. W. Willoughby, Ph. D., for his book entitled "The Theory of the State."

The prize of one hundred dollars for the best essay by a Bachelor of Arts of this University of not more than five years' standing,—to J. C. Ballagh (A. B., 1894), his subject being "Gustavus Adolphus and his Relation to the Thirty Years' War."

The prize of one hundred dollars for the best essay by any graduate student,—to G. C. Lee, A. B., his subject being "The Reign of Frederick Barbarossa."

The first of the two prizes of thirty and twenty dollars respectively, offered for the best essays by members of the class of 1897,—to C. K. Edmunds, for his essay on "The Character of Benjamin Franklin." The second prize was not awarded.

The prize of one hundred dollars for the best essay on "The Relation of Chemistry to the Useful Arts,"—to E. E. Reid, A. M., for his essay entitled "The Relations of Chemistry and Photography."

The publications of the University have been carried forward upon the same plans as in former years.

The various journals have been thoroughly sustained. The American Journal of Mathematics has completed its seventeenth volume; the American Journal of Philology, its sixteenth volume; the American Chemical Journal, its seventeenth volume; the Journal of Experimental Medicine, its first volume; the Historical Studies now number fourteen volumes of the regular series and fourteen extra volumes; the Johns Hopkins University Circulars have reached the conclusion of the fifteenth volume.

The Chesapeake Marine Laboratory continued its work during the Summer of 1896, at Port Henderson, Jamaica.

The report of the Director, Dr. Brooks, will be found in the appendix.

The Legislature of Maryland, at its session in the Winter of 1896, established a State Geological Survey, and provided for its maintenance. The Bill became a law March 19, 1896, and is printed in the appendix. The University placed at the disposal of the Survey a suite of rooms and the use of its library and collections, and consented to the appointment of Professor William B. Clark, to be the Director of the Survey. The field work began as soon as the weather permitted, and was carried on until the late Autumn. Dr. Clark has furnished for this report a sketch of what the Survey has undertaken, and a perusal of what he has said will show that the work will be prosecuted with spirit and skill, in coöperation with the United States Geological Survey, Professor Walcott, Director.

The Maryland Weather Service is established in rooms adjacent to those of the Geological Survey. Further information is given in the appendix to this report.

This summary of the principal occurrences of the year has, by design, been made more succinct than usual, in order that ample space might be reserved for the review which follows of the progress of twenty years.

There is, however, one other event to which reference must be made, although at the time of writing it is not possible to tell the whole story. In view of serious losses of income from one of the chief resources of the University, there has been shown a most generous spirit on the part of the citizens of Baltimore. A public meeting of business men was called at

the Merchants' Club, May 26, 1896, to decide upon some plan of action, and it was there determined to make an effort to raise the sum of $250,000 for immediate relief. A subscription was at once begun, an efficient committee was appointed, and at the present date it is known that more than two hundred and thirty thousand dollars have been subscribed. This prompt action has renewed the confidence and vigor of all who are connected with the University. It has received the heartiest acknowledgments of the Trustees and Faculty, and also of the President.

Respectfully submitted,

DANIEL C. GILMAN,
*President.*

Presented to the Trustees,
Baltimore, December 1, 1896.

# APPENDIX.

# REPORTS ON THE INSTRUCTION IN THE CHIEF BRANCHES OF STUDY.

Prepared by the Principal Instructors in the several departments.

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## Mathematics.

### I.—Graduate Mathematics.

Professor Craig gave the following courses:

1. Theory of Surfaces and Lines Traced on Surfaces. *Three times weekly, through the year.*

This course began with a general outline of the metrical theory of surfaces which was followed by a fairly full account of conjugate lines, asymptotic lines, lines of curvature, and geodesic lines.

It was found desirable to introduce a supplementary course on Linear Partial Differential Equations of the first and second orders.

The authors principally referred to were Salmon, Darboux, Knoblauch, Cayley, and Liouville.

2. Algebraic Integrals. *Three hours a week, through the year.*

This course included the theory of the Abelian Integrals, of Riemann's Surfaces, and of the Theory of Inversion, and ended by a brief account of the theory of transformation of the Elliptic Functions.

Authors consulted were Appell and Goursat, Picard, Clebsch and Gordan, Weber, d'Esclaibes, and Humbert.

3. Conferences on the preceding courses of lectures were held weekly on Friday from 9 a. m. to 12 m.

4. The Mathematical Seminary met weekly.

Its principal work was in the Theory of Line Congruences and Darboux's Kinematical Methods in Geometry.

Dr. Chessin gave the following courses:

1. Elementary Theory of Functions. *Twice weekly and weekly exercises, through the year.*

This course had the character of an introduction to the modern theory of functions. The theory of functions of a real variable was given at some length after the ideas of Weierstrass, Cantor, and others. In the theory of

functions of a complex variable the course had in view mainly the general properties of analytic functions. The ideas of Cauchy, Riemann, and Weierstrass were equally developed within the limits of an introductory course, which concluded with an exposition of the general properties of simply and doubly periodic functions. The lectures were mimeographed for the use of the students.

2. Lie's Theory of Transformation Groups. *Twice weekly, through the year.* In this course Lie's *Vorlesungen über Continuierliche Gruppen* was followed rather closely. More attention was given to the general theory than to its applications, as these constituted the subject of another course, given by Dr. Page. However, the theory was illustrated by a number of examples, treated completely.

Dr. Hulburt gave the following courses:

1. Theory of Plane Curves. *Three times weekly, first half-year.* The Projective Properties of Curves were studied, the course being based upon the treatises of Clebsch-Lindemann and Salmon.

2. The Projective Theory of Surfaces and Twisted Curves. *Three times weekly, second half-year.* In this course were presented the elements of the General Theory of Surfaces and Twisted Curves, and of Line Complexes and Congruences. Quadric and Cubic Surfaces and the Twisted Cubic were studied in some detail. The authors chiefly followed were Clebsch-Lindemann, Salmon, Plücker, and Cremona.

Dr. Page gave the following course:

Applications of Lie's Theory of Transformation Groups. *Once a week, second half-year.* In this course were given general methods for solving certain classes of Ordinary and Partial Differential Equations afforded by Lie's Theory. Reference was made to Lie's papers on the subject in the *Verhandlungen der Gesellschaft der Wissenschaften zu Christiania* and in the *Mathematische Annalen*, and to his published lectures on the *Theorie der Transformationsgruppen*, on *Continuierliche Gruppen*, and on *Differentialgleichungen*.

## II.—Undergraduate Courses in Mathematics.

These courses are the same from year to year. During the year 1895–96 they were given as follows:

*For Candidates for Matriculation:*

Algebra (Practice and Review). *Four times weekly, till November* 1. Dr. Cohen.

Solid Geometry. *Four times weekly, from November* 1 *to January* 10. Dr. Cohen.

Trigonometry. *Four times weekly, from January* 10 *to April* 1. Dr. Cohen.

Analytic Geometry. *Four times weekly, from April* 9 *to end of year.* Dr. Cohen.

*First Year Course:*

Analytic Geometry. *Four times weekly, till Christmas.* Dr. Hulburt.

Differential and Integral Calculus. *Four times weekly, from January* 1 *to end of year.* Dr. Hulburt.

*Second Year Course:*

Differential and Integral Calculus (Special Topics) and Determinants. *Four times weekly, till Christmas.* Dr. Cohen.

Theory of Equations. *Four times weekly, January* 1 *to February* 1. Dr. Cohen.

Modern Plane Analytic Geometry. *Four times weekly, February* 1 *to April* 1. Dr. Cohen.

Solid Analytic Geometry. *Four times weekly, April* 1 *to end of year.* Dr. Cohen.

*Third Year Course (Elective):*

Differential Equations. *Twice weekly, through the year.* Dr. Hulburt.

THOMAS CRAIG,
*Professor of Pure Mathematics.*

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## Astronomy.

During the year 1895–96, the following courses of instruction were given:

By Associate Professor C. L. Poor:

1. General Course in Theoretical and Practical Astronomy. *Twice weekly, through the year.*

This course includes a general outline of the principal problems of Spherical Astronomy, the first principles of the method of Least Squares, and a discussion of the fundamental laws and equations of Gravitational Astronomy. Among the books consulted and referred to in this connection were: Chauvenet, *Spherical and Practical Astronomy;* Delambre, *Histoire de l'Astronomie;* Tisserand, *Mécanique Céleste.*

2. Theory and Use of Astronomical Instruments. *Three times weekly, first half-year.*

This course includes a general outline of the theories of astronomical measuring instruments. The theory of the objective was first taken up and treated by the Gaussian as well as by the analytic method; then followed a discussion of the division errors of graduated circles, and of the errors incident to the use of special instruments. The best methods of observation were pointed out.

3. Advanced Theoretical Astronomy. *Three times weekly, second half-year.*

In this course was developed the Theory of Rotation of the Earth, including a complete numerical development of the theories of Precession

and Nutation. The memoirs of J. A. Serret and F. Tisserand were made the basis of the course.

4. General Astronomy. *Twice weekly, through the year.*

This was an elective course for third-year undergraduate students.

By Associate Professor Chessin:

1. Celestial Mechanics. *Three times weekly, through the year.*

This was a course in the General Theory of Perturbations. The method of the variation of the elements was developed rather fully. In connection with this theory was given the method of integrating the differential equations of Mechanics in general, after Hamilton and Jacobi. Laplace's and Hansen's methods were also treated. For the development of the perturbative function, Professor Newcomb's was chosen, with some modifications. In connection with this development was treated the problem of developing functions into series in general, and by means of Bessel's functions especially.

The following investigations were carried on during the year:

By Dr. Poor:

The design and construction of an equatorial mounting; The preparation of tables, ephemerides, etc., for the expected return of Comet 1889 V.

By Mr. B. M. Roszel:

Determination of the mass of the asteroids and of their secular effect upon the orbit of Mars. This has been offered as a dissertation for the degree of Doctor of Philosophy.

By Mr. F. H. Clutz:

Determination of the perturbations of the asteroid, 115, Thyra.

By Mr. J. F. Mohler:

Tests of a photographic doublet, especially constructed for photographing star clusters and nebulæ; Determination of the exact period of the seconds pendulum of the Physical Laboratory.

By Mr. S. V. Hoffman:

The use of cylinder oils for reflecting surfaces.

The observatory has been open for work on sixty-six nights, under the care of Mr. J. F. Mohler, Student Assistant. Seventeen students have had practice with the instruments.

Seminary work was carried on during the second half-year. The papers were mostly of an historical character.

CHAS. LANE POOR,
*Associate Professor of Astronomy.*

## Physics.

The Physical Laboratory has been open daily during the year for the work of advanced and undergraduate students. The Physical Seminary, to which only the most advanced students have been admitted, has met weekly through the year. The basis of study has been the consideration of the fundamental experiments and theories of Physics, a series of papers being presented by Dr. Ames and the members of the Seminary. A list of these papers appears below.

Regular courses of lectures and instruction have been given as follows:

By Professor Rowland:

1. Mathematical Physics, treating the subjects of Thermodynamics, Heat Conduction, and Physical Optics. *Four times weekly, through the year.*
2. Meetings for the discussion of the current physical journals. *Weekly, through the year.*

By Associate Professor J. S. Ames:

1. Applications of Thermodynamics to Physical Chemistry. *Twice weekly, first half-year.*
2. Selected Topics in Spectroscopy. *Twice weekly, second half-year.*
3. Advanced General Physics. *Four times weekly, through the year.*
4. General Physics (Minor Course). *Four times weekly, through the year.*
5. Meetings of the Physical Seminary. *Weekly, through the year.*

By Associate Professor Louis Duncan:

1. Applied Electricity (First Year). *Twice weekly, through the year.*
2. Applied Electricity (Second Year). *Twice weekly, through the year.*
3. Electrical Laboratory. *Daily, through the year.*

By Mr. H. S. Hering:

1. Electrical Measurements. *Twice weekly, through the year.*
2. Central Station Equipments. *Four times weekly, spring term.*
3. Electrical Laboratory. *Daily, through the year.*

By Mr. H. G. Geer:

1. Mechanics of Engineering. *Twice weekly, first half-year.*
2. Kinematics of Machinery and Machine Design. *Twice weekly, second half-year.*
3. Steam and Hydraulic Engineering. *Three times weekly, through the year.*
4. Experimental Steam Engineering. *Weekly, first half-year.*
5. Mechanical Drawing (First and Second Year). *Two afternoons weekly, through the year.*

In the Physical Seminary carefully prepared essays were read on the following subjects by the members named:

Conservation of Matter, W. S. Day.

Conservation of Energy, N. E. Dorsey.

The Nature of the Ether, N. R. Carmichael.
Second Law of Thermodynamics, Dr. J. S. Ames.
Combination and Beat Tones, F. Mallory.
Physical Astronomy, J. F. Mohler.
Physical Chemistry, W. J. Humphreys.
Laws of Electricity, Dr. W. J. A. Bliss.
Sensations of Color and Tone, W. T. Mather.
Laws of Radiation, C. E. Mendenhall.

These essays were designed to present in a clear, concise manner the fundamental experiments and theories of each subject.

In the laboratory the following work has been done:

Under the immediate guidance of the Director, Mr. T. D. Penniman has been engaged in an elaborate study of certain new methods for the comparison of capacity, inductance, and resistance, by means of an instrument specially designed by the Director. Under the same direction, Mr. N. R. Carmichael and Mr. L. J. Briggs carried on a most interesting series of experiments on the nature of the X rays. Some of the results of this research have been published in the American Journal of Science.

The final reduction and publication of the tables of solar spectrum wave-lengths have been continued. The measurements of the photographic plates have been made by Mr. L. E. Jewell, and the wave-lengths of some 6000 have been published during the year in The Astrophysical Journal.

Measurements of the wave-lengths of certain elements have been made. Dr. R. R. Tatnall has completed the reduction of his measurements of the wave-lengths of Palladium, Rhodium, and Ruthenium, and has published them in The Astrophysical Journal. Mr. J. L. Douglas has continued the work, using the plates which were taken some years ago by Professor Rowland. He has ready for publication the wave-lengths of Manganese and Tungsten.

Under the guidance of the Director and Sub-Director, the researches that follow have been carried on:

Measurements have been made of the shifting of the wave-lengths of various elements when the pressure of the arc is altered. Some of the results of this investigation have already appeared in The Astrophysical Journal; but the work is still in progress. Mr. W. J. Humphreys has studied principally the effects of increased pressure; and Mr. J. F. Mohler, the effects of decreased pressure.

There are certain discrepancies between the appearance and wave-length of metallic spectra in the arc and in the Sun; and these have formed the subject of a most interesting study by Mr. L. E. Jewell, the results of which have been published in The Astrophysical Journal. A joint paper by Messrs. Jewell, Mohler, and Humphreys in the same journal explains the bearings of their separate investigations on each other.

The wave-lengths of Helium both in a discharge-tube and on the Sun have been measured by Messrs. Jewell and Mohler; and the results have already been published in The Astrophysical Journal.

A series of most important observations have also been made by Mr. Jewell on the rates of rotation of different layers of the solar atmosphere at different latitudes.

A study of the effects of magnetization upon iron and nickel wires has been made by Mr. E. F. Gallaudet. This study includes changes in length, magnetization, and Young's modulus of elasticity, and is offered by Mr. Gallaudet as a dissertation for the degree of Doctor of Philosophy.

The research begun last year by Mr. N. E. Dorsey on the surface-tension of aqueous solutions of various salts is still in progress, but is near completion.

A study of the velocity of the ions in solution of silver salts in water has been begun and is nearly completed by Mr. W. T. Mather.

Dr. H. F. Reid, with the assistance of Mr. C. E. Mendenhall, has been carrying on a research as to the laws of radiation from a "black body."

The following researches have been made under the direction of Dr. Duncan and Mr. Hering:

The variation of transformer losses and efficiency with the shape of the curve of applied electromotive force.

The law of losses in condensers with variation of the electromotive force and temperature.

The effect of various shapes of the wave of applied electromotive force upon the losses in a condenser.

The relation between the losses in a condenser and the periodicity of the applied electromotive force.

The armature losses in electric motors.

The effect of the inertia of fly-wheels on alternating current and electromotive force curves taken from a Ferranti motor.

A study of phase relations between the applied electromotive force, back electromotive force and current.

H. A. ROWLAND,
*Professor of Physics.*

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## Chemistry.

During the past academic year the chemical laboratory has been open as usual for advanced and collegiate students. Lectures and class-room instruction have been given as follows:

By Professor Remsen:

1. Chemistry of the Compounds of Carbon, advanced course for graduate students. *Twice weekly, until Christmas, and four times weekly through the rest of the year.*

2. Meetings for reports on the current journals of Chemistry. *One and a half hours weekly, through the year.*
3. General Chemistry (Minor Course). *Three times weekly, until Christmas.*

By Professor Morse:

1. Analytical Methods, for graduate students. *Once weekly, through the year.*
2. Compounds of Carbon (Major Course). *Four times weekly, second half-year.*

By Professor Renouf:

1. Advanced Inorganic Chemistry (Major Course). *Three times weekly, until Christmas.*
2. General Chemistry (Minor Course). *Four times weekly, from Christmas to the end of the year.*

By Dr. Randall:

1. The Principles of Physical Chemistry, for graduate students. *Twice weekly, until Christmas.*
2. Reviews in General Chemistry (Minor Course). *Once weekly, through the year.*
3. Inorganic Chemistry (Major Course). *Four times weekly, during part of the first half-year.*

By Dr. Jones:

1. Special Topics in Physical Chemistry, for graduate students. *Twice weekly, through the year.*

By Dr. Gilpin:

1. Reviews in General Chemistry (Minor Course). *Once weekly, first half-year.*

Besides the lectures named above, ten historical lectures on topics selected and assigned by the Director have been given by advanced students. The lecturers and their subjects are named below:

E. S. Smith, The History of Citric Acid.
C. D. Ragland, Phenylhydrazine.
W. B. Stoddard, The Basicity of Substituted Ammonias.
J. W. Lawson, The History of Salicylic Acid.
R. S. Norris, The History of Quinoline.
E. E. Reid, The History of Ozone.
G. Alleman, The History of Phenol.
J. C. Adair, The History of Glycerol.
C. E. Waters, The History of Marsh Gas.
W. E. Henderson, Malonic Acid Syntheses.

Five candidates presented themselves for the degree of Doctor of Philosophy. They were Messrs. A. D. Chambers, F. S. Hollis, E. Mackay, R. M. McKenzie, and M. D. Sohon. The titles of their theses are: "An

Investigation of the Composition of Certain Oxides of Manganese"; "A Further Investigation of the Chlorides of Paranitroorthosulphobenzoic Acid"; "A Contribution to the Study of Double Salts in Solution"; "Some Double Chlorides of Ferric and of Ferrous Iron with Aromatic Bases"; "An Investigation of some Derivatives of Orthosulphobenzoic Acid." These will be printed in separate form as theses, and the more important parts will be published in the American Chemical Journal.

During the year there have been enrolled thirty-one graduate students following Chemistry as their principal subject.

IRA REMSEN,
*Professor of Chemistry.*

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## Geology.

During the past academic year the Geological Laboratory has been open daily for graduate and collegiate students. The quarters have been somewhat enlarged by the addition of three rooms upon the second floor of the rear building to accommodate the work in Geological Physics.

The instruction in geology was much strengthened by the appointment during the year of Dr. H. F. Reid as Associate Professor of Geological Physics and Dr. R. M. Bagg as Assistant in Geology.

The arrangements made with Mr. G. K. Gilbert and Mr. Bailey Willis, of the U. S. Geological Survey, resulted in important courses of lectures,—the former dealing with the subject of Physiographic Geology, the latter with that of Stratigraphic and Structural Geology. Special lectures were given by Professor Cleveland Abbe, of the U. S. Weather Bureau, on Climatology and by Professor N. S. Shaler, of Harvard University, on Volcanoes.

The George Huntington Williams Memorial Lectureship, established a year ago by the generosity of Mrs. Williams, has resulted in the acceptance by Sir Archibald Geikie, Director-General of the Geological Survey of Great Britain and Ireland, of an invitation to give a course of lectures on the Principles of Geology during the coming year. He will begin his lectures on April 21, 1897.

During the past year the following courses of instruction were given:

(*a*) General Geology, by Professor Clark and Dr. Mathews. *Four lectures and one afternoon of practical work each week throughout most of the year.*

(*b*) Historical Geology, by Professor Clark. *Two lectures each week, from December to April.*

(*c*) Mineralogy, by Dr. Mathews. *Four lectures each week throughout the year.*

(*d*) Physiographic Geology, by Mr. Gilbert. *Four lectures each week from January 1st to February 15th.*

(*e*) Stratigraphic and Structural Geology, by Mr. Willis. *Two lectures each week from February 15th to May 1st.*

(*f*) Glaciology, by Associate Professor Reid. *Five lectures in April.*

(*g*) Climatology, by Professor Abbe. *Four lectures in January.*

(*h*) Volcanoes, by Professor Shaler. *One lecture in February.*

(*i*) Geological Conferences. *Fortnightly, from November 15th to April 1st.*

(*j*) Student lectures. *Fortnightly, from November 15th to April 1st.*

*Original Work and Publications.* Geological studies were continued by Professor Clark upon the Cretaceous and Tertiary formations of New Jersey, under the auspices of the U. S. Geological Survey, and with the co-operation of Dr. R. M. Bagg and Mr. George B. Shattuck. Professor Clark also carried on further investigations upon the Eocene Fauna of the Middle Atlantic slope, the latter work being brought to a conclusion and an extended report prepared. Several papers upon various phases of Atlantic Coastal Plain Geology and Paleontology were read before geological societies and subsequently published.

Dr. Mathews carried on further investigations upon the granites of the Pike's Peak region in Colorado, in co-operation with Dr. Whitman Cross, of the U. S. Geological Survey. Several studies were also conducted upon mineralogical topics.

Two candidates presented themselves in June for the degree of Doctor of Philosophy. The first, Mr. George O. Smith, took up for investigation the geology of the Fox Islands, Maine, and the second, Mr. A. C. Spencer, engaged in a study of the Massanutten Mountain in Virginia, under the direction of Mr. Bailey Willis. The results of these investigations were submitted as theses.

Several other lines of work were inaugurated by other members of the department and have already resulted in brief communications.

*Excursions.* Numerous short excursions were made during the autumn months into the surrounding country, both in the Coastal Plain and the Piedmont Plateau, under the guidance of Professor Clark and Dr. Mathews. Two longer excursions were made in May—the first for a study of the Tertiary formations along the banks of the York and James rivers, Virginia, and the second for a study of the Paleozoic formations of western Maryland.

*Coöperation.* The U. S. Geological Survey has continued to assist the geological work carried on at the University by facilitating field work in Maryland and New Jersey and in supplying maps and reports.

The Maryland Geological and Economic Survey was established in March, 1896, by an act of the Legislature, the authority being vested in a Commission consisting of the Governor, the Comptroller, the President of the Johns Hopkins University, and the President of the Maryland Agricultural College. The sum of ten thousand dollars annually was appropriated. Professor Clark was elected, by the Commission, State Geologist, with in-

structions to carry out the provisions of the act. Work will be undertaken under his direction by the instructors and students of the Geological Department in the various portions of the State. The varied geology of Maryland and its diversified resources offer a most attractive field to the investigator.

The Maryland State Weather Service, organized in 1891, has further extended its work during the past year. New stations have been added from time to time, until now nearly every portion of the State is represented. Weekly Crop Bulletins and Monthly Meteorological Reports have been published. Opportunities have been open to the members of the department to take part in the work of the bureau whenever they desired. Professor Clark continues as the Director of the State Weather Service, representing the Johns Hopkins University; Professor Milton Whitney as Secretary and Treasurer, representing the Maryland Agricultural College; and Mr. Geo. E. Hunt as Meteorologist in charge, representing the U. S. Weather Bureau. The three officers mentioned constitute a commission appointed by the Governor.

*Scientific Societies.* The fortnightly meetings of the Geological Society of Washington were regularly attended during the winter by the instructors and students of the department, all of whom had been elected as non-resident members. As the results of many of the most noteworthy investigations of the year were presented at these gatherings, great benefit was derived by those in attendance.

Several members of the department also became members of the National Geographic Society, and availed themselves of its privileges.

*Apparatus and Collections.* Several important additions were made to the apparatus and collections during the year. A number of large geological maps of the continents have been prepared and a considerable increase has also been made in the maps of foreign official surveys. Several important collections of rocks and fossils have likewise been acquired representing the geology of this and other lands.

WM. BULLOCK CLARK,
*Professor of Organic Geology.*

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## The Biological Sciences.

During the past academic year the biological laboratory has been open for advanced and collegiate students, and certain courses have been attended by students in the medical school. Lectures and class-room instruction have been given as follows:

By Professor Brooks:

1. Advanced Zoology, for graduate students. *Weekly, from October 5 to January 1; three times a week, from January 1 to June 1.*

2. Meetings of graduate students for reports on the current literature of Zoology. *Weekly.*
3. Elementary Zoology. *Four times a week, October* 5 *to January* 1.

By Professor Howell:

1. Physiology. *Three times a week, through the year*, for medical students and graduate students in biology.
2. Meetings of graduate students for reports on the current literature of Physiology. *Weekly, through the year.*
3. Physiological Seminary. *Weekly, through the year.*

By Dr. Andrews:

1. General Biology. *Daily, to April* 1.
2. Elements of Embryology. *Three times a week, from April* 1 *to end of session.*
3. Comparative Embryology. *Daily, April* 1 *to end of session.*
4. Meetings of graduate students for reports on the current literature of Zoology. *Weekly.*
5. (With Dr. Barton.) Elective Course in Zoology. *Once a week, through the year.*

By Dr. Dreyer:

Histology and Physiology. For undergraduates. *Four times weekly, from January* 1 *to April* 1.

Normal Histology. For medical graduates. *Three times weekly, from November* 1 *to January* 1.

By Dr. Humphrey:

Advanced Botany for graduate students. *Twice a week, through the year.*

By Dr. Barton:

Analysis of Plants. *Twice weekly, from April* 1 *to end of session.*

## Advanced Work in Zoology.

A list of researches carried on during the year in the Biological Laboratory and in the Marine Laboratory was printed in the University Circulars for June, 1896.

The zoological seminary met weekly through the year. The work of the seminary was based on Lang's Lehrbuch der Verg. Anatomie.

The Bruce Fellows were H. McE. Knower and George Lefevre.

A fellowship in Zoology was awarded to F. S. Conant, who took charge of the museum during the year.

The University table at the laboratory of the U. S. Fish Commission, at Wood's Holl, was occupied by Dr. Reid Hunt during the summer of 1896.

H. McE. Knower and George Lefevre were granted the degree of Doctor of Philosophy in June. Dr. Lefevre's thesis is on "Budding in Perophora," and that of Dr. Knower is on "The Embryology of a Termite."

A building was rented by the University for research in marine zoology at Port Henderson, Jamaica, and was occupied during June and July, 1896, by a party of graduate students, under the direction of the Professor of Zoology, who spent a part of the summer at Port Henderson.

### Advanced Work in Physiology.

The usual systematic course of lectures upon animal physiology was given by Professor Howell during the year. The lectures occurred three times weekly from October to January, twice weekly from January to March 15, and daily from March 15 to June 1, and were attended by all students offering Physiology as a principal or as a subordinate subject for the degree of Doctor of Philosophy. A laboratory course in experimental physiology was conducted by Professor Howell and Dr. Dreyer. This course was given in duplicate four mornings in the week, 9 a. m. to 12 m., from October to January. The work done consisted in the successful completion of twenty-seven selected experiments involving the employment of some of the graphic methods of recording and operations peculiar to experimental physiology. The physiological seminary met weekly throughout the year, and for a part of the year held supplementary evening sessions. The subject of study was the physiology of reproduction. The work was based upon Hensen's treatise "Physiologie der Zeugung," but included also readings from Gruenhagen's "Physiologie der Zeugung," Boveri's "Befruchtung," Rückert's "Befruchtung," Wilson's "Fertilization," and separate reports by individual members of the seminary upon special topics. The Physiological Journal Club met weekly to read and discuss papers appearing in current journals. One student, offering animal physiology as his principal subject, received the degree of Doctor of Philosophy, Mr. Reid Hunt, whose thesis upon "The fall of blood-pressure resulting from the stimulation of afferent nerves" appeared in the Journal of Physiology, Vol. XVIII.* In addition to these researches the following investigations have been in progress during the year: A study of the accelerator and inhibitory nerves of the crab's heart, by Messrs. Conant and Clark, read before the American Physiological Society, December 28, 1895, and published in the Journal of Experimental Medicine, Vol. I, No. II; The effect of different salts upon the rhythmic contractility of heart-muscle, by Mr. M. T. Sudler; The accelerator nerves of the terrapin's heart, by Mr. C. B. Wilson; A study of the central regeneration of

*The thesis of Dr. T. E. Shields, who received his degree in 1895, was published in the Journal of Experimental Medicine, Vol. I, No. I. The title of his thesis was "The effect of odours, irritant vapours, and mental work upon the blood-flow."

the divided posterior roots of the spinal nerves, by Messrs. Baer, Dawson, and Marshall; A study of the reflex acceleration of the heart-beat, by Dr. Reid Hunt; The effect of nitrous oxide anæsthesia upon the gases of the blood, by Dr. G. T. Kemp; The effect of rarefied air upon the circulation, by Dr. G. P. Dreyer; The physiology of sleep, by Professor Howell. Some of these investigations are ready for publication, while others will be continued during the coming year. One special student pursued a course in laboratory demonstrations as a preparation for teaching physiology. During the year the physiological papers of Dr. H. Newell Martin, formerly Professor of Biology in this University, have been collected and published as Vol. III of the Memoirs from the Biological Laboratory. The expense of publication was defrayed by subscriptions from his friends and former pupils.

### Advanced Work in Botany.

Researches are in progress upon the development of the sporocarp in Massilia and upon the reduction of the chromosomes in the ferns.

During the year the herbaria of the University, including the local collection of the Baltimore Naturalists' Field Club, representing our native flowering plants and ferns, the Schimper herbarium of European and African flowering plants, and the Fitzgerald collection of European and American mosses, have been put in proper condition for ready consultation, in cases which had been provided for the purpose. The local collection is being extended and it will soon include the entire flora of the vicinity of Baltimore.

Reports on current botanical literature have been contributed to the sessions of the Journal Club by the instructors and students in Botany.

W. K. Brooks,
*Professor of Zoology.*

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## Greek.

Under the direction of Professor Gildersleeve the advanced students of Greek have been organized into a Greek Seminary. According to the plan of the Seminary, the work of each year is concentrated on some leading author or some special department of literature. During the past year the centre of work has been Thucydides and Greek Historiography.

In the Seminary proper, which met twice a week during the academic year, selections from Thucydides were interpreted by the members in turn, the passages being arranged along lines of increasing complexity, beginning with simple narrative and ending with formal debate (λόγοι ἐναγώνιοι). All the eight books of Thucydides were analyzed and the important features of each book were brought under discussion. In connection with the work

of the Seminary, the Director delivered a course of eighteen lectures on Greek Historiography, and held a number of conferences on cognate themes.

Professor Gildersleeve also delivered a course of twenty-two lectures on the Syntax of the Greek Cases, and conducted twenty exercises in extemporaneous translation from Greek into English and from English into Greek.

Dr. C. W. E. Miller conducted a course of lectures and practical exercises in Greek Palæography twice a week from January to the close of the session, and further supervised the work of the Greek Seminary and lectured on Greek Cases and Prepositions during the absence of the Professor, who received permission to spend the closing months of the session in Greece.

Instruction in Modern Greek was given during the entire session by Mr. Kyriakos P. Xenides, two meetings a week.

Of investigations carried on by graduate students may be mentioned: "Study of the Melian Dialogue in Thucydides;" "Stylistic Comparison of Diodorus' and Thucydides' Account of the Peloponnesian War;" "Analysis of the two λόγοι ἐναγώνιοι (of Kleon and Diodotos in Bk. III of Thuc.) and a comparison of the structure with that of the other λόγοι ἐναγώνιοι;" "On the use of ὥστε in the Orators, with especial reference to its rhetorical value in Isocrates;" "A Comparison of the usages of prepositions in Apollonius Rhodius and Homer;" "A Comparative Study of Hesiod and Pindar."

Undergraduate courses were conducted as follows:—

Associate Professor Spieker:

Sophocles, *Antigone.* *Three times weekly, first half-year.*

Demosthenes; Elegiac and Lyric Poets. *Three times weekly, second half-year.*

Isocrates, *Panegyricus.* *Three times weekly, first half-year.*

Plato, *Crito;* Euripides, *Hippolytus.* *Three times weekly, second half-year.*

Thucydides, book vii. *Weekly, through the year.*

Prose Composition (two classes). *Weekly, through the year.*

Dr. Wilson:

Homer, *Odyssey;* Herodotus. *Twice weekly, through the year.*

Prose Composition. *Weekly, through the year.*

Undergraduates read privately for examination the following books:

Aristophanes, *Clouds.* (5).

Aeschylus, *Prometheus.* (4).

Xenophon, *Hellenica,* book i. (7).

Plutarch, *Themistocles.* (7).

B. L. GILDERSLEEVE,
*Professor of Greek.*

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## Latin.

The Latin Seminary, under the direction of Professor Warren, held two meetings a week throughout the year, the centre of work being the Roman Historians, especially Livy and Tacitus. Select portions of Livy and Tacitus were interpreted by members of the Seminary. A course of weekly lectures was delivered by Professor Warren on Roman Historiography. Papers were prepared by members of the Seminary on the following subjects: On the use of Metaphors in Statius, on expressions of valuation in Latin, on the use of *quotiens* and *quotienscunque* in different periods of Latin, on the syntax of verbs of commanding, on the syntax and style of Cornificius. Papers were also read on the following minor historians and historical works: Dares Florus, Bellum Africum, Bellum Hispaniense, Bellum Alexandrinum, Hirtius, Aurelius Victor, Eutropius, Ampelius, and Granius Licinianus.

Throughout the year Professor Warren lectured weekly on Historical Latin Grammar. In the latter part of the year he conducted a course of weekly exercises in the interpretation of Latin Inscriptions, using the Monumentum Ancyranum and Rushforth's Historical Inscriptions. A Journal Club met regularly to report on the recent periodical literature in the field of Latin.

Associate Professor Smith conducted a pro-Seminary in Sallust, meeting once a week, and lectured once a week throughout the year on Roman Elegy and Epigram.

Undergraduate courses were conducted as follows:

Professor Warren:

Terence, *Phormio*, and Plautus, *Captivi*. *Three times weekly, second half-year.*

Associate Professor Smith:

Juvenal. *Three times weekly, first half-year.*
Pliny's Letters. *Three times weekly, first half-year.*
Livy, book i. *Three times weekly, first half-year.*
Horace, *Select Odes, Satires*, and *Epistles*. *Three times weekly, second half-year.*
Lucretius. *Twice weekly, second half-year.*
Latin Prose Composition (one class). *Weekly, throughout the year.*

Dr. Wilson:

Cicero and Prose Composition. *Three times weekly, first half-year.*
Ovid, Vergil, and Prose Composition. *Three times weekly, second half-year.*
Prose Composition (one class). *Weekly, through the year.*

Undergraduates read privately for examination the following books:

Caesar, *Bellum Civile*, book i. (23.)
Cicero, *de Senectute*. (24.)

Horace, *Ars Poetica.* (23.)
Selections from Phaedrus. (21.)
Cicero's Letters. (7).
Plautus, *Miles Gloriosus.* (7.)

MINTON WARREN,
*Professor of Latin.*

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## Sanskrit and Comparative Philology.

The plan of the Vedic Seminary is to present in triennial rotation the principal subjects of Vedic study: the literature of the Rig-Veda; the literature of the Atharva-Veda; and the literature of the Brāhmaṇas and Upanishads. The reason for this threefold division was presented in the President's Annual Report of the year 1895.

During the session of 1895–96, the Vedic Seminary under the direction of Professor Bloomfield was engaged in the study of the Rig-Veda, with especial reference to some of its most representative religious and mythological ideas. Under the methods of Vedic study pursued in this Seminary absolute restriction to any single document is precluded. The Vedas are studied as a unit: no conception or expression of a single given text is regarded as satisfactorily understood, until it has been tested in the light of the related conceptions of the remaining texts of the literature. In this way were interpreted four funeral hymns of the tenth book (x. 14, 16, 17, 18); the difficult hymn to the karuts (the Mayāçubhīya, i. 165); the hymn to the frogs (vii. 103), a new treatment of which was presented to the American Oriental Society at its meeting in April 1896; the dialogue-hymn of Saramâ and the Paṇis (x. 108); and a larger group of hymns addressed to individual divinities of the Vedic pantheon.

The work on the Concordance of the lyric and liturgical passages of the entire Vedic literature, begun in 1892 (see Univ. Circ. No. 99), is advancing steadily from stage to stage. During the past session three members of the Seminary, Dr. M. V. Staley, Fellow in Sanskrit, Mr. J. A. Ness, University Scholar in Sanskrit, and Dr. G. M. Bolling, now Instructor in Sanskrit and Comparative Philology in the Catholic University, have given valuable assistance.

A course in the Avesta was carried on by Professor Bloomfield from the beginning of 1896 to the end of the session. After a brief course in Avestan Grammar, selected portions of the texts were read and analyzed with constant reference to the kindred languages, especially the dialect of the Vedas.

A second, more elementary course of Vedic study was carried on during the second half of the session by Mr. J. A. Ness, the University Scholar in Sanskrit. The object of this course is to introduce into the Vedic dialect, and to mark out its relation to the dialect of the classical Sanskrit. Selected

specimens of the Rig-Veda were read and analyzed; the metres, the system of accentuation, the phonetic, morphological, and lexical peculiarities of the Vedic language were especially emphasized.

To the study of classical Sanskrit were devoted four hours during the first semester, and two during the second. The texts read were the Hitopadeça, Kathāsaritsāgara, and the law-book of Manu. The elementary work consisted in a course in grammar, and the interpretation of the Nala.

The work in Comparative Philology was twofold. First, a course of weekly lectures during the entire session on General Comparative Philology. It began with a sketch of the linguistic ethnology of the Indo-European peoples, dealing with their special interrelations, their original home, and common characteristics. Then came, in brief survey, sketches of India, the Vedas, Brahmanism, Buddhism; Iran, the Achemenidan inscriptions, the Zoroastrian religion and literature; the Indo-European peoples on the boundary between Asia and Europe; and, finally, a still briefer treatment of the European peoples. This was followed by a brief account of the history of linguistic science, and, at last, the principles of the science of language, and the exposition and criticism of modern methods in scientific grammar.

Secondly, a series of lectures through the year in the Comparative grammar of Greek, Latin, Teutonic, and Sanskrit vowels and vowel-relations (*ablaut*). The corresponding work during the coming session (1896–97) will be devoted to the comparative history of consonants in the same four languages.

MAURICE BLOOMFIELD,
*Professor of Sanskrit and Comparative Philology.*

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## Oriental Seminary.

In the Oriental Seminary, under the direction of Professor Haupt, nineteen courses were given, special attention being paid to Hebrew, Assyrian, and Comparative Semitic Grammar.

During the year five hours weekly were devoted to the study of the *Old Testament*. Through the first half-year, two hours weekly, Professor Haupt gave a critical interpretation of the *Songs of the Return* (Pss. 120–134). A summary of this course is given by the Fellow in Semitic, Mr. E. B. Goodwin, in an article published in *The Ecclesiastical Review*, New York, May, 1896. During the second half-year, two hours weekly, Professor Haupt interpreted the *Messianic Psalms*, (Pss. 2. 45. 72. 110, &c.), incidentally lecturing on the development of the Messianic ideal. He also conducted, weekly through the year, a class in *Hebrew Prose Composition*, the students translating idiomatic English sentences into Hebrew. Dr. Johnston met a class, one hour weekly

through the year, for the study of selected *Historical Books*, the critical and grammatical examination of the Book of Nehemiah forming the principal subject. The instruction in *Elementary Hebrew* was given by Professor Haupt, two hours weekly, through the year. Mr. Rosenau had charge of the course in *Post-Biblical Hebrew*, the Mishnic tract *Abodah Zarah* (ed. Strack), and the Gemarah of *Abodah Zarah* serving as text books during the first and second half-years respectively.

Five hours weekly were given to the study of *Assyriology* during the first term, and four hours during the second term. In the *Assyrian Seminary*, under the direction of Professor Haupt, the cuneiform Nimrod Epic (Haupt's text) was studied two hours weekly through the year. An *Elementary Course in Assyriology* was conducted by Dr. Johnston two hours weekly through the year, Professor Haupt's *Keilschrifttexte* serving as text-book during the first term, and the *Assyro-Babylonian Chrestomathy* of Dr. Meissner during the second term. Dr. Johnston also lectured one hour weekly during the first term on the *History of the Ancient East;* and during the second term on the *Cuneiform Inscriptions and the Old Testament.*

Through the year five hours weekly were devoted to the study of *Arabic.* Professor Haupt interpreted selected Suras of the *Coran*, weekly through the year; and conducted also a class in *Arabic Prose Composition.* Dr. Johnston gave *Elementary Instruction in Arabic*, two hours weekly through the year, interpreting the texts in Socin's Arabic Grammar. Dr. Johnston also conducted weekly *Exercises in Reading at Sight* selected passages from the Beyrout Chrestomathy *Majâni-el-âdab.*

One hour weekly through the year was given to the study of *Syriac.* Professor Haupt read with the class the Syriac Version of the *New Testament* during the first half-year; and selected portions of the *Chronicles of Bar-Hebræus* during the second half-year.

One hour weekly was devoted to the study of *Ethiopic*, Dillmann's Chrestomathy serving as text-book.

Throughout the year, in all the classes conducted by Professor Haupt, *Comparative Semitic Grammar* was incidentally discussed, and during the second half-year a regular course was given upon that subject.

During the session two parts of the new polychrome edition of the *Sacred Books of the Old Testament*, prepared under the editorial direction of Professor Haupt, were published by the Johns Hopkins Press. They comprise the *Book of Psalms*, with critical notes by Professor J. Wellhausen, of Göttingen (English translation of the notes by Professor J. D. Prince, of New York University), and *Chronicles*, by Professor Kittel, of Breslau (the critical notes being translated by Dr. Bacon, of Yale University). *Genesis*, by the Rev. C. J. Ball, of London; *Daniel*, by Professor A. Kamphausen, of Bonn; *Ezra-Nehemiah*, by Professor H. Guthe, of Leipzig; *Ezekiel*, by Professor Toy, of Harvard University; and *Isaiah*, by Professor T. K. Cheyne, of Oxford, are in the press, so that more than one-half of the whole work will be completed in the near future. A number of Balti-

more friends of the University presented to the Oriental Seminary the sum of $3,000 to ensure the continuation of the large-paper edition of the Old Testament in Hebrew. Also, three parts of the new English translation of the Old Testament are in type, viz., *Psalms*, translated, on the basis of Professor Wellhausen's German manuscript, by Dr. H. H. Furness, of Philadelphia; *Isaiah*, by Professor Cheyne; and *Judges*, by Professor Geo. F. Moore, of Andover. They will be published before the end of next session. Professor Driver's translation of *Leviticus* is already electrotyped.

The second part of the third volume of the *Contributions to Assyriology and Comparative Semitic Grammar*, published with the coöperation of the Johns Hopkins University, and edited by Professor Haupt in conjunction with Professor Friedrich Delitzsch, of Breslau, appeared during the Christmas recess. The volume contains a long article of 73 pages on the building inscriptions of Esarhaddon, by Dr. Meissner, of Halle, and Dr. Rost, of Greifswald (with a diagram and 35 autographed plates); also a paper by Professor Jastrow, of Philadelphia, on a new fragment of the Babylonian Etana legend in the possession of the Rev. Dr. Dwight Whitney Marsh, of Amherst, Mass. (with 4 plates in photolithography and autography). The third part of volume iii is in progress.

There were also published two new quarto volumes of the *Assyriological Library*, edited by Professor Delitzsch and Professor Haupt, viz., *Contributions to the Study of Babylonian Religion*, by Professor H. Zimmern, of Leipsic, and *Assyrian and Babylonian Religious Texts*, by Professor J. A. Craig, of the University of Michigan.

The thesis on *The Songs of the Return*, by Dr. D. G. Stevens, who received the degree of Ph. D. at the end of the session 1893–94, appeared in vol. xi of *Hebraica* (pp. 1–100 and pp. 119–173).

Professor Haupt read four papers (on *Ussharnâ*, Ezra 5, 3. 9; The beginning of the Judaic Account of Creation; On Gen. 4, 1; On Strack's Manual of Biblical Aramaic) before the American Oriental Society, at its meeting in Andover, April 9–11. Dr. Johnston presented a communication on the Epistolary Literature of the Assyro-Babylonians. His thesis on the same subject will appear in vol. xvii of the Journal of the American Oriental Society. He also read before the University Philological Association (May 15) a paper on *The Letter of an Assyrian Princess*.

The library of the Oriental Seminary was enriched by the valuable collection of the late Professor August Dillmann, of Berlin, which was presented to the University by Mr. G. W. Gail, of Baltimore. The books have been placed in the room of the Oriental Seminary, which will henceforth be known as the "Dillmann Library." The family of Professor Dillmann has also presented to the Oriental Seminary a number of valuable pictures, manuscripts, and other relics, including a life-size portrait in oil of Professor Dillmann, an oil painting of his study, water-color pictures of the house in Illingen in which Dillmann was born, and the house in Berlin in which he died; also an album with a series of interesting photographs.

The Oriental Seminary also received a gift of $600 from Mr. Leopold Strouse, of Baltimore, for the purchase of works for the study of Rabbinical literature.

The Dillmann Library was formally opened on the 25th day of April, the anniversary of Dillmann's birth. After an introductory speech by President Gilman, to which Mr. Gail replied with some appropriate remarks, Professor Haupt delivered an address on the work, life, and character of August Dillmann, and Dr. Johnston read a number of extracts from letters sent by the leading Orientalists and Biblical scholars of the world, expressing their admiration for Dillmann's achievements. The exercises closed with a speech from Professor George A. Smith, of Glasgow, Scotland.

Professor Smith also gave the fifth course of the Percy Turnbull Memorial Lectures on Poetry (April 13–29), delivering eight popular lectures on Hebrew Poetry: I. The Race. II. The Language and Rhythms. III. The Poetry of Nature: the Mythology. IV. The Early National Poetry: the Making of Israel. V. David: Fact and Question. VI. Our Mother of Sorrows: the Poetry of Complaint and Confession: of Satire and Vengeance: of Exile and Death. VII. The Poetry of Wisdom: i. The Book of Proverbs. VIII. The Poetry of Wisdom: ii. The Book of Job.

PAUL HAUPT,
*Professor of the Semitic Languages.*

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## German.

The German Seminary, under the guidance of Professor Wood, met three times weekly, through the year. During the first half-year, the period in German literature from Goethe's Italian Journey (1786) to the death of Schiller (1805) was studied. The subjects which received special attention were: Goethe's period of pronounced classical sympathies, Schiller's influence upon Goethe in the direction of subjectivism in poetry, and Goethe's subsequent return to the national point of view in later works. The chief productions considered were the following: Schiller, *Wallenstein*, the dramatic fragments *Demetrius* and *die Malteser*, *Über naive und sentimentalische Dichtung*, the philosophical poems; Goethe's and Schiller's *Ballads*, the *Xenien*, and the adaptations from Greek tragedy and from Shakespeare; Goethe, *Iphigenie*, *Tasso*, *Elpenor*, *Achilleis*, *Pandora*, the *Elegies*, and the *Sonnets*. In the study of all these works, the attempt was made to trace the development of classical style, and to arrive at some conception of the conditions under which German classicism arose. During the second half-year, the poems of Walther von der Vogelweide were read. Lachmann's critical apparatus was used as a basis, together with the reprints of MSS. A B C. A detailed study of Walther's style and of other criteria resulted

in confirming the MS. tradition of complete poems, in many cases where modern editors have printed them in dislocated parts, or in single stanzas. An attempt was made to establish the beginnings of a relative chronology for certain groups of *Minnelieder*, from considerations of style, and to apply the results thus gained to the received theory of song-books for Walther.

The Germanic Society, which is composed of the Director of the Seminary and the Instructors and Graduate Students in German, met fortnightly through the year in an evening session. Besides reviews and reports, papers on the following subjects were presented, which gave from time to time preliminary results of studies still in progress: *hete* and *hâte* as preterite forms of *haben* in Middle High German; geistliches Gespräch zwischen einer Fürstin und einer Kramerin, von einem Paternoster aus Edelsteinen (a MS. of the 15th century); the origin and earliest period of the Tagelied; Konrad von Würzburg's Trojanerkrieg; Kelts and Norsemen in the Early Middle Ages; religious elements in Wolfram's Willehalm and the Old French poem Aliscans; an Old German edition of Aesop's Fables; Johann Fischart's Peter von Stauffenberg, compared with its Middle High German original; Hofmann von Hofmannswaldau and the galante Lyrik; a song of Campion and the Pervigilium Veneris; the Epigram in Modern German; Goethe and Calderon; Coleridge's Wallenstein; Charles Sealsfield and das Junge Deutschland; the poems of Elise Meyer; Heine's literary debt to Justinus Kerner.

Professor Wood gave a course in Gothic and the Elements of Comparative German Grammar, twice weekly. Braune's *Gotische Grammatik* was studied, after which parts of Matthew, Mark, Luke, II Corinthians, and the Skeireins were read. For Comparative Grammar, Kluge, *Vorgeschichte der altgermanischen Dialekte*, and Streitberg, *Urgermanische Grammatik* were studied.

Professor Wood read, with a class in Old Norse, the Eddic poems *Skírnismál*, *Lokasenna*, *þrymskviða*, *Vǫluspá*, and part of *Helgakviða Hundingsbana*. Müllenhoff's theory for the Vǫluspá was compared in detail with that of Bugge, and the influence of the Kelts on the North Germanic nations during the early Wicking age was discussed.

A course on the Swabian and Austrian Poets was conducted by Professor Wood, weekly, through the year. The class first read selected works by Uhland, Kerner, Mörike, Grillparzer, and Lenau, after which Heine's literary debt to Kerner was studied, and the influence of Immermann upon Heine and E. A. Poe. The principal object of the whole course was to vindicate for the Swabians and their allies a more definite position as the true transmitters of Romanticism to the later literature of the century, a process in which Heine and other members of das Junge Deutschland acted as skilled brokers of poetical ideas.

In the undergraduate major course, Professor Wood conducted a class, twice weekly, from January 1 to the end of the year, in Goethe's *Faust*, the First Part of which was read. In the minor course A, he conducted weekly exercises in prose composition.

Professor Wood read two papers before the University Philological Association, at the October and February meetings, on *Shakespeare, burlesqued by two Fellow Dramatists,* and on *Shakespeare in the later Dramas of Marston.* The former of these was printed in the *American Journal of Philology,* Vol. XVI, 273–299. He also read a paper, in April, before the Baltimore Folk-Lore Society, on *The Edda and the Three Nights in Shakespeare's Midsummer Night's Dream.* Mr. F. G. G. Schmidt, Fellow in German, presented a paper to the University Philological Association, in December, on *German MSS. at Maihingen, Bavaria,* which was published in the *University Circulars,* Vol. XV, 40 f., and in *Alemannia,* XXIV, 1 f. He also published an article, *Historie von einem Ritter, wie er büsset* (MS. of the 15th Century), in *Publications of the Modern Language Association,* Vol. XI, 2, 258 ff. The subject of Mr. Schmidt's thesis is *Die Rieser Mundart.*

Dr. B. J. Vos, Associate in German, gave the following courses:

Readings in Early New High German Prose. Weekly. Two pamphlets of Luther, *An den christlichen Adel deutscher Nation,* and *Wider Hans Worst* were read. With these as a basis, differences between the language and style of Luther's earlier and later periods were discussed, and their bearing upon the development of New High German considered. Selections from Fischart's *Geschichtklitterung* (Ch. VIII), and Grimmelshausen, *Simplicissimus* (Bk. I) were then read.

Middle High German. Twice weekly, first half-year. Paul, *Mittelhochdeutsche Grammatik* was studied as an introduction to the language, and the epic poem *Moriz von Craon* was read.

*Undergraduate Courses:*

In the major course, Lessing's *Nathan der Weise* (Acts I–IV) was read. The classical period of German literature was studied in Scherer's *History of German Literature,* Vol. 2. As private readings, the Fifth Act of *Nathan der Weise* and selected ballads and lyrics from Kluge's *Auswahl deutscher Gedichte* were assigned. As in the History of Literature, the classical period received here the larger share of attention.

In the minor course A, the following works were read in class: Goethe, *Hermann und Dorothea;* Schiller, *Maria Stuart;* Chamisso, *Peter Schlemihl;* Seidel, *Novellen.* In the case of the first two works, considerable attention was paid to the metrical form. The class read Gutzkow, *Zopf und Schwert,* as private reading.

Elementary German. Three times weekly. This being preparatory to the regular minor course A, the work was, for the most part, confined to systematic drill in the essentials of German accidence and syntax and in pronunciation. The text-books used were: Thomas, *Practical German Grammar;* Buchheim, *German Reader,* I; Fouqué, *Undine.*

Dr. A. B. Faust conducted classes as follows:

Minor Course B. Four times weekly. Otis, *Elementary German,* Lessons I–XXIV; von Moser, *Der Bibliothekar;* Riehl, *Der stumme Ratsherr;* Goethe,

*Egmont;* E. S. Buchheim, *Elementary German Prose Composition;* Whitney, *German Grammar.*

Prose Composition,—in the major course. Weekly. C. A. Buchheim, *Prose Composition*, furnished the material for translations into German. Wilmann's *Deutsche Schulgrammatik*, Second Part, was studied.

German Conversation. Weekly.

*Special Courses:*

Historical German. Twice weekly. Herman Grimm, *Albrecht Dürer* (44 pp.); Gustav Freytag, *Aus neuer zeit* (80 pp.).

Oral Exercises in German. Twice weekly. During the first half-year, Meissner, *Practical Lessons in German Conversation*, was used. Informal talks were then given, on subjects connected with German *Kulturgeschichte*, and these furnished the topics for conversation. Zschokke's *Das Abenteuer in der Neujahrsnacht*, and *Der zerbrochene Krug* were also read.

Dr. T. S. Baker conducted the following courses:

Elective Course. Twice weekly. Goethe, *Ausgewählte Prosa* (Hart); von Klenze, *Deutsche Gedichte.*

Scientific German. Twice weekly. Dippold, *Scientific German Reader;* Helmholtz, *Goethe's Vorahnungen kommender wissenschaftlicher Ideen.*

Rapid Reading of Contemporary German Literature. Weekly. von Ebner-Eschenbach, *Rittmeister Brand;* Sudermann, *Die Schmetterlingsschlacht;* Storm, *Auf der Universität.*

HENRY WOOD,
*Professor of German.*

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## English.

1. Advanced Courses.

The English Seminary, under the direction of Professor James W. Bright, met twice a week (four hours) through the year. The members of the Seminary numbered twenty-six. During the first two-thirds of the year a special study was made of the poets from Donne to Dryden. The works of the following poets were studied in completeness of detail with reference to standards of literary workmanship, literary sources and traditions, canons of criticism, and the social and political history of the times: Sir John Davies, John Donne, Giles Fletcher, Phineas Fletcher, Thomas Randolph, Sir William Davenant, Sir John Suckling, Richard Lovelace, Thomas Carew, George Herbert, Henry Vaughan, Robert Herrick, Richard Crashaw, George Sandys, William Browne, Abraham Cowley, Edmund Waller, Sir John Denham, George Wither, and Andrew Marvell. During the closing months of the academic year the *Beowulf* was studied.

Professor Bright gave a course of lectures (weekly, first half of the year) on the Indo-European basis of the English vowel-system; in the second half-year he lectured twice a week on Middle English Grammar.

A class was met once a week, by Professor Bright, for the critical study of the Middle English *Ipomedon*.

The members of the Seminary met as a Journal Club (fortnightly, two hours) for reports on current periodicals, reviewing of new books, and the reading and discussion of original papers.

Occasional conferences on literary and on linguistic subjects were conducted by Professor Bright. To these conferences Mr. Nathaniel E. Griffin contributed lectures on the Legend of Troy in European literatures.

Professor Wm. Hand Browne delivered a course of lectures (weekly, throughout the year) on the Scottish Poets from Lyndsay to Burns. In this course were treated the survival of the old, or pre-Reformation poetry; the period of Lutheran influence; the satirical poetry; the earlier ballads and songs; Buchanan and the humanists; the Anglo-Scottish poets; the Scottish revival of the eighteenth century; the later lyrists; the Gaelic romantic influence; Burns.

2. College Courses.

The English major class met Professor Bright (twice a week, first half-year; Dr. James W. Tupper, the second half-year) for the study of Anglo-Saxon, using as a text-book Bright's *Anglo-Saxon Reader*.

This class also met Professor Browne twice a week. One hour weekly was given to the study of the Scottish Poets from Barbour to Lyndsay; and one hour weekly to (1) the Elizabethan literature, and (2) the literature of the fourteenth century.

The English minor class was conducted by Professor Browne. The class studied Early and Middle English texts (two hours a week) using Morris and Skeat's *Specimens* as the text-book, and English literature (two hours a week) using the Morley-Tyler *Manual of English Literature*.

A class in Rhetoric and English Composition met Professor Herbert E. Greene three times weekly, throughout the year. Theory was imparted by means of text-book (A. S. Hill's *Principles of Rhetoric*), lectures, and discussions; practice was obtained by the writing of about forty short papers and of three formal essays. Of the short papers a few were read and criticised in the presence of the class from week to week; of the formal essays about two-thirds were read and criticised privately with the writers, and were returned to them for correction. Each member of the class made a careful study of the style of one prose author (usually of a nineteenth century author), and presented the results of his study in the form of a series of short papers. The classwork included a study of representative passages of description and narration, and of the essays by Macaulay and Carlyle on Croker's edition of Boswell's *Life of Johnson*.

A class in English Literature met Professor Greene three times weekly, throughout the year. This class made a general survey of English Literature from the middle of the fourteenth century to the latter part of the seventeenth century. A detailed study was made of the writings of Chaucer, Spenser, Shakspere, and Milton. Of the writings of these poets a consider-

able amount was critically studied in the classroom; and much more was read by the members of the class in their private reading. Each member of the class prepared two essays.

An elective course in English Literature of the eighteenth and nineteenth centuries,—from Dryden to Wordsworth,—was given by Professor Greene twice weekly, throughout the year. In connection with the weekly lectures and discussions the members of the class did a large amount of private reading. Each member of the class prepared and read before the class two essays.

A course of ten lessons in Elocution, given by Mr. John R. Scott, was prescribed for every member of the undergraduate class in Rhetoric; and further instruction was provided for all who desired it.

The following prizes for proficiency in English Composition were offered by Mr. C. Morton Stewart, President of the Board of Trustees:—

I. For the best essay written by a Bachelor of Arts of the Johns Hopkins University,—a prize of one hundred dollars.

II. For the best essay written by any graduate student of the Johns Hopkins University (whether a Bachelor of Arts of this University, or not)—except a fellow by courtesy or a fellow,—a prize of one hundred dollars.

III. For the best essays written by matriculated students of the first year,—a prize of thirty dollars and a prize of twenty dollars.

IV. For the best essay written by any matriculated student of the second and third years,—a prize of fifty dollars.

A friend of the University, resident in Baltimore, offered to the writer of the best essay upon a given scientific subject a prize of one hundred dollars.

A prize of fifty dollars was offered by a lady of Baltimore to that matriculated student who should prepare and deliver in public the best address.

3. Lectures on Literature.

The fifth course of lectures on the foundation of the Percy Turnbull Memorial Lectureship of poetry was given by Rev. George A. Smith, D. D., LL. D., Professor of Hebrew and Old Testament Exegesis in the Free Church College, Glasgow, Scotland. The subject of this course was Hebrew Poetry, which was treated in eight lectures as follows: 1. The Race.—2. The Language and Rhythms.—3. The Poetry of Nature: the Mythology.—4. The Early National Poetry: the Making of Israel.—5. David: Fact and Question.—6. Our Mother of Sorrows: the Poetry of Complaint and Confession: of Satire and Vengeance: of Exile and Death.—7. The Poetry of Wisdom: I. The Book of Proverbs.—8. The Poetry of Wisdom: II. The Book of Job.

JAMES W. BRIGHT,
*Professor of English Philology.*

WILLIAM HAND BROWNE,
*Professor of English Literature.*

HERBERT EVELETH GREENE,
*Collegiate Professor of English.*

## Romance Languages.

I. Graduate Courses:

Professor Elliott conducted advanced courses as follows:

Romance Seminary. *Two hours a week, through the year.*

The work centered here on the *Fables of Marie de France*, of which it is proposed eventually to issue a critical edition based on the original manuscripts. The object of the course has been to acquire a working knowledge of the fable literature of antiquity and the middle ages; to become acquainted with the characteristics of the Norman and Anglo-Norman dialects in which some of the more important manuscripts are written; to present the fundamental principles of text-criticism and text-constitution, for which five fables were examined. These were based on five English and eight French manuscripts. A clear view of the morphology and phonetics of the language was obtained as contrasted with those of the Isle-de-France. Professor Elliott directed the text-constitution and criticism in this work, while the comparative study of the selected fables was undertaken by the members of the Seminary under the supervision of Dr. Keidel, and reports presented which embodied the chief results of the special investigations made by each student.

Popular Latin. *Weekly.*

The object here was to give the student an introduction to the phonetics and morphology of Folk- and Low-Latin as the common basis for a scientific study of the modern Romance idioms. Meyer-Lübke's treatment of the subject in Gröber's *Grundriss der Romanischen Philologie* was taken as the starting point for this work, in connection with which lectures were given, contrasting the popular forms with the historic development of the classical forms. The material in the *Probi Appendix* was classified and the popular forms worked out on the basis of Schuchardt's *Vocalismus des Vulgärlateins.* Budinszky's *Ausbreitung der Lateinischen Sprache*, D'Arbois de Jubainville's *Déclinaison latine en Gaule*, Bonnet's *Le Latin de Grégoire de Tours*, Wölfflin's *Archiv für lateinische Lexicographie*, and Seelmann's *Aussprache des Latein* were constantly used in connection with this course.

Romance Club. *Weekly.*

The object of this organization, to which all members of the Romance Language department belong, is to foster a common interest in everything that concerns the study of the Romance idioms. Reviews of important journal articles, papers on original investigations, discussions of literary and scientific subjects, reports of correspondence of a professional nature, represent the chief exercises that claim the attention of the club.

French Dialects. *Weekly.*

The Western dialects were especially considered; in addition to this, the Norman, Picard, and Wallonian were treated. The method of work was to

a great extent practical, and had in view a sufficient acquaintance with dialect forms to enable the student to discriminate Old-French texts belonging to these different domains. To this end the leading characteristics of the old and modern dialect were presented in a few lectures; then through the use of early and later texts the student was required to recognize and name the dialect features as they occurred.

Dr. Keidel also gave the following course of lectures:

Romance Versification. *Twice weekly.*

In the series of lectures given, especial attention was paid to the fundamental principles of the science of versification, to the development of the Romance systems out of the Popular Latin, and to the special characteristics of the French system for all periods of the language.

Dr. Menger conducted the following courses:

Old French Philology. *Three hours weekly.*

This course consisted of lectures (two hours weekly) on Phonology and Morphology. One hour per week was given to general discussion by the instructor and students of points involved in the lectures, and to a critical examination of the first few pages of the *Voyage de Charlemagne*, in order to apply the laws of development of Popular Latin into French previously treated of in the lectures.

French Physiological Phonetics. *Weekly.*

In the preliminary lectures of this course a view of phonetics in general, of acoustics as applied to the study, and of the physiology of the organs of speech was given. Then the works of scholars who have dealt with French sounds were described briefly, and characterized according as their authors dealt with the acoustic or organic side of phonetics, or with a combination of the two. French vowel and consonantal sounds were then examined and classified.

Associate Professor Rambeau conducted the following course:

Phonetics and French Pronunciation. *Ten exercises* (March–May).

Lectures upon the importance of phonetics for the teacher of modern languages, the physiology of speech, the vocalic and consonantal system of the French tongue (Parisian standard), basis of articulation (*Indifferenzlage*), etc. There were also practical exercises, and the following phonetic texts were studied: Selections from A. Rambeau and Jean Passy, *Chrestomathie Phonétique*, and from Paul Passy, *Le français parlé*.

Dr. De Haan conducted the following courses:

Old French Readings. *Twice weekly.*

Select pieces, representing the different dialects of Northern France, were first read in Bartsch-Horning's *La Langue et la Littérature françaises*, after which the following works were read entire: *La Chanson de Roland*, *Aucassin et Nicolete*, *Le Voyage de Charlemagne*, Chrestien de Troyes' *Cliges*, and Marie de France's *Lais*, especial attention being given to grammatical forms and syntactical construction.

Provençal. *Weekly.*

Bartsch's *Chrestomathie Provençale* was the text-book used. The prose extracts were first read, beginning with the more recent texts, after which the best poems in the collection were taken up in like order.

Mr. Hugo P. Thieme gave twenty-eight lectures on the development of the Romantic, Parnassian, Symbolist and Decadent schools of French poetry of the nineteenth century. The subjects treated were the following:

Classicism: J. J. Rousseau; André Chénier; Mme. de Staël; Chateaubriand. Romanticism: Victor Hugo (four lectures); Lamartine; Alfred de Vigny; Alfred de Musset; Béranger, Brizeux; Gautier; Baudelaire (two lectures); Banville; Leconte de Lisle (two lectures). Parnassian School: Minor poets; Sully Prudhomme; de Heredia; Coppée. Decadence and Symbolism (two lectures): Verlaine; Richepin and Mallarmé.

Professor F. M. Warren, of Adelbert College, gave twenty lectures, in the month of February, on the Arthurian Cycle, and also twenty lectures on the Naturalistic Novel.

Professor Elliott also conducted the following course:

Lectures on Dante. *Weekly.*

After presenting a review of the material which Dante found existing for the *Divina Commedia*, a detailed analysis of the Trilogy was given, and the leading translations of and critical works on the *Divina Commedia* were commented on for France, England, and America.

Dr. Menger also gave the following course of lectures:

Origins of Italian Poetry. *Weekly.*

In this course the attempt was made to investigate thoroughly all manifestations of poetic literature in Italy previous to the time of Dante. The subject was divided into five periods: the Latin, Lombard, Sicilian, Bolognese school of transition, and the Tuscan. Especial attention was paid to the imitations of the French epic, to the early writers of religious poetry in Lombardy, and to the Sicilian school. A historical *rêsumé* of the discussion of the main points of dispute in connection with the latter school was also given.

Dr. Marden conducted the following course:

Old Spanish Philology. *Twice weekly.*

Baist's article in Gröber's *Grundriss der romanischen Philologie*, Vol. I, was taken as a basis for a series of lectures on Phonology and Morphology. A critical study of a portion of the *Poema del Cid* enabled the class to make practical application of the laws deduced in the lectures.

Dr. De Haan gave the following courses of lectures:

A course of lectures (weekly) on Spanish literature in the nineteenth century. The ground covered was Poetry, the Drama, and Criticism, whilst Fiction was treated down to Fernan Caballero.

A series of lectures (weekly) on the Spanish drama before Lope de Vega. (March–May).

II. Undergraduate Courses:

Associate Professor Rambeau conducted the following courses:

French: Minor Course A. *Four hours weekly.*

1. *Short outline of the History of French Literature (XVII–XIXth centuries), and reading of Contes, Novels, and Dramas.*

Alphonse Daudet, *Contes*, ed. Cameron, pp. 22–30, 134–199; Paul Passy, *Le français parlé*, Poetry, and Prose, No. 4; Mérimée, *Colomba*, ed. Cameron, pp. 1–118 (118–179, private reading and examinations); Molière, *L'Avare*, A. I, II, III, Sc. 1–12 (A. III, IV, V, contents and plot explained); Victor Hugo, *Hernani*, A. I, II, Sc. 1–2 (A. II–V, contents and plot explained); Fortier, *Histoire de la littérature française*, Parts III, IV, V (with numerous omissions; the principal tendencies and movements, the most important writers, and all the authors of works read by the students); Erckmann-Chatrian, *Waterloo;* Alexander Dumas père, *Les trois mousquetaires;* Thiers, *Expédition de Bonaparte en Égypte* (private reading and examinations).

2. *Modern French Comedy.*

Labiche and Martin, *La Poudre aux yeux;* Sandeau, *Mademoiselle de la Seiglière;* Augier and Sandeau's *Le Gendre de M. Poirier*, A. I, II, III, Sc. 1–2 (A. III, IV, end, contents and plot explained).

3. (In connection with 1 and 2) Short *lectures*, frequently in French, upon various subjects of literature and related topics (cf. Report for 1895); exercises in *pronunciation* (Sound-Tablets, and Passy); a few essential features of French *versification;* elements of French *conversation; oral reports*, in French, upon authors and passages of works read by the students.

4. *Syntax and Prose Composition.*

Whitney's *French Grammar*, Part II, and Grandgent's and Kimball's exercises based on *Le Siège de Berlin* (Nos. 1–19) and on *La Belle-Nivernaise* (Nos. 1–14); a few short essays upon authors and subjects connected with the private reading and class-work.

French: Major Course. *Four hours weekly.*

1. *Outline of the History of French Literature from the beginnings to the XIXth century; especially the XVIIth century, study of Classical Tragedy and Comedy.*

Corneille, *Le Cid; Horace.* Racine, *Athalie; Britannicus.* Molière, *Les Précieuses ridicules, Les Femmes savantes, Le Tartuffe, Le Misanthrope, Le Bourgeois gentilhomme, Le Malade imaginaire.* Fortier, *Histoire de la littérature française* (the whole book).

2. *The Romantic Movement and Contemporary Literature.*

Victor Hugo, *Lyrics* (Warren, Bowen, Passy); *Ruy Blas; Notre-Dame de Paris*, Tome I, Livre II, Ch. 4–6 (Tome II, Livres VI, X, private reading and examinations; lectures upon plot and contents, Tome I and Tome II, Livres VII–IX and XI); selections from *Les Misérables* and *Quatre-vingt-treize* (lectures upon characters and contents of these two novels). Musset,

*Lyrics* (Kuhns, Bowen, Passy); *A quoi rêvent les jeunes filles, on ne badine pas avec l'amour.* Béranger, Lamartine, Théophile Gautier, and other poets (Bowen, Passy). Alfred de Vigny, *Cinq-Mars ou une conjuration sous Louis XIII;* Zola, *La Débâcle;* Daudet, *Le Nabab* (private reading and examinations).

3. (In connection with 1 and 2) *Lectures,* mostly in French, upon various subjects of literature and related topics (cf. Report for 1895); exercises in *pronunciation* (Passy); principal laws of *French versification,* the Alexandrine verse, Classical and Romantic; *French conversation; oral reports,* in French, authors and works, or passages of works, read by the students.

4. *Study of Idioms and Prose Composition.*

Storm, *French Dialogues,* Ch. I–XII. Exercises on idioms and Syntax, based upon these dialogues, Ch. I–XII. Original essays with reference to subjects and authors read by the students (cf. Nos. 1–2).

Italian: Minor Course. *Four hours weekly.*

1. Grandgent, *Italian Grammar* (the whole book, all the exercises); *Italian Composition,* Part I, exercises 1–6. Selections from Fornaciari, *Sintassi italiana dell'uso moderno* (moods and tenses).

2. De Amicis, *Fortezza; Un gran giorno; Alberto; Camilla.* Verga, *Vita dei campi,* Nos. 1, 7, 8. Serao, *Terno secco.* Capuana, *Homo,* Nos. 2 and 3 (partly). Alfieri, *Oreste.* Maffei, *Merope.* Selections from Carducci, *Odi Barbare.* Ariosto, *Orlando Furioso,* I, II and XII (partly). Dante, *Divina Commedia* I, III, IX; II, V (partly). Selections from Fenini, *Letteratura italiana,* and Guarnerio, *Manuale di versificazione italiana.*

3. Exercises in *pronunciation;* elements of *conversation;* short lectures upon modern Italian history and other subjects connected with the class-work (No. 2).

Dr. Marden conducted the following courses:

French: Minor Course B. *Four hours weekly.*

This course was intended for graduate students and those undergraduates who had matriculated in Greek. The aim of the course was to give the students a reading knowledge of French. The elements of grammar were studied (Whitney's *Brief French Grammar*), and the following works were read: Super, *French Reader;* Dumas, *L'Évasion du Duc de Beaufort;* Mérimée, *Colomba;* Augier, *Le Gendre de M. Poirier.* Exercises in prose composition were continued throughout the year.

French: Elementary Course. *Three hours weekly.*

This course is part of the work of the preliminary year, and is intended as a preparation for the Minor Course A. The text-books used were Whitney, *Practical French Grammar;* Hugo, *La Chute;* Price, *Choix d'Extraits de Daudet.*

Dr. Menger conducted the following course:

Italian: Elective Course. *Twice weekly.*

The time in this course was devoted entirely to gaining a reading knowledge of Modern Italian. The following texts were translated: Del Testa, *L'Oro e l'Orpello;* De Amicis, *Alberto, Camilla, Fortezza, Un Gran Giorno;* Barrili, *Una Notte Bizarra;* Verga, *Cavalleria Rusticana, Rosso Malpelo, Jeli il Pastore, La Lupa.*

Dr. De Haan conducted the following course:

Spanish: Minor Course. *Four hours weekly.*

Knapp's *Spanish Grammar* was studied and the following texts read: Quintana, *Vida de Las Casas;* Hartzenbusch, *La Locura Contagiosa, Juan de las Viñas;* Diana, *El Destino;* Mesonero Romano, *Un Viaje en galera, El Sereno;* Trueba, *La Obligación, La Buena Ventura, Nuevos Cuentos Populares;* Pereda, *Escenas Montañesas.*

A. M. ELLIOTT,
*Professor of the Romance Languages.*

## History, Economics, and Politics.

Systematic work in these allied subjects has continued throughout the year with undiminished zeal on the part of both students and instructors. The total number of students was one hundred and seven. The staff of the department includes the following members: Professor Herbert B. Adams, Director of the Seminary and Editor of the Studies in Historical and Political Science; Professor George H. Emmott, lecturer on Historical Jurisprudence, English Constitutional History, and Sources of English History; Professor James Schouler, lecturer to graduates on American History; Associate Professor John M. Vincent, lecturer on Economic and Social History, Director of the Historical Conference and collegiate instructor in General European History; Associate Bernard C. Steiner, collegiate instructor in American History; Associate Professor Sidney Sherwood, lecturer on Economics and Director of the Economic Conference; Professor E. R. L. Gould, lecturer on Social Economics; Dr. J. H. Hollander, lecturer on Economic Theory and collegiate instructor in the Elements of Economics; Professor Woodrow Wilson, lecturer on Comparative Politics; Dr. W. W. Willoughby, lecturer on the Theory of the State. Besides these regular lecturers and instructors, the following specialists gave extra courses in Social Science: Dr. Frederick Howard Wines and Professor Davis R. Dewey. All of this work is described in the proper connection.

Of special value to the Baltimore public have been several courses of lectures primarily designed for graduate students. Dr. Wines' special lectures in Social Science were given in McCoy Hall to a large and appreciative audience of citizens and practical workers in city charities. Seats were reserved for University students, whom Dr. Wines also specially addressed

in the Seminary of History and Politics. Professor Woodrow Wilson's lectures on Local and Municipal Government were given at a time when public interest in the subject of municipal reform was rapidly growing in Baltimore. This interest was heightened not only by the attendance of reformers and students upon these lectures, but also by the very suggestive reports prepared by Mr. G. B. Lynes, a member of the Historical Department, and published in *The News*, on the editorial staff of which a former professor in the Johns Hopkins University is now rendering helpful service to the public. The academic policy of opening other class courses on public questions to men and women in Baltimore, who are interested in the promotion of good government and in social economics, has been justified by experience. A useful course on the Conditions and Remedies of Non-Employment, by a graduate of this University, Professor Davis R. Dewey, of the Massachusetts Institute of Technology, was also attended by ladies and gentlemen who cared for the subject. Student attendance on these semi-public class lectures was not affected by the presence of a larger audience.

Six noteworthy books have been issued by former seminarians during the past academic year: (1) Municipal Government in Continental Europe, by Albert Shaw, Ph. D. (New York: The Century Co., 1895); (2) The Nature of the State, by Westel Woodbury Willoughby, Ph. D. (New York: MacMillan & Co., 1896); (3) Southern Sidelights, by Edward Ingle, A. B. (New York: T. Y. Crowell & Co., 1896); (4) Taxation and Taxes in the United States under the Internal Revenue System, by Frederic C. Howe, Ph. D. (New York: T. Y. Crowell & Co., 1896); (5) Letters of David Ricardo to John Ramsay McCulloch, by J. H. Hollander, Ph. D. (American Economic Association, Vol. X); (6) Southern Quakers and Slavery, by Stephen B. Weeks (J. H. U. Studies, Extra Volume XV).

By vote of the Academic Council, the John Marshall Prize for the best original contribution to historical and political science by a graduate of the Johns Hopkins University was awarded, for the year 1895–96, to Dr. Westel Woodbury Willoughby, Reader on Politics in this department, and formerly Lecturer in the Leland Stanford Jr. University, for his book entitled, "An Examination of the Nature of the State: A Study in Political Philosophy." Former recipients of the John Marshall Prize (a bronze medallion portrait) are: Professor Henry Carter Adams, of the University of Michigan, for his book on "Public Debts;" Professor Woodrow Wilson, for his "Congressional Government;" Dr. Charles H. Levermore, for his "Republic of New Haven;" Dr. Charles M. Andrews, for his "Old English Manor;" Dr. Albert Shaw, for his "Municipal Government in Great Britain;" Dr. John M. Vincent, for his "State and Federal Government in Switzerland;" and Professor A. G. Warner, for his "American Charities." All of these writers received their Doctor's degree in this department, and all are now engaged in educational or editorial work.

Other noteworthy features of department progress are: (1) The recent requirement, by academic authority, of courses in History and Political Economy from all undergraduate students in the University; (2) the increased attention to scientific politics, in consequence of the class-work of Dr. W. W. Willoughby, and the public lectures of Professor Woodrow Wilson; (3) the growing interest and superior work in the field of Economics, as evinced by the character of the advanced courses, the larger number of special students, and the remarkable list of published articles and economic monographs prepared under the supervision of Professor Sherwood and Dr. Hollander; (4) the discovery by Dr. Hollander, in the summer of 1895, of a large number of unpublished Letters written by David Ricardo, and hitherto practically unknown to economic science; (5) the study of the financial history of Baltimore, the South American Trade of Baltimore, the history of the Baltimore and Ohio Railroad, the Tobacco Industry in Virginia, the Street Railway System of Philadelphia, State Banking in Maryland, and State Tax Commissions in the United States. Enough good material is already in manuscript to form a volume of six hundred pages on American Economic History. This will be issued in 1897 as the fifteenth annual series of the Studies in Historical and Political Science.

Professor Herbert B. Adams, in addition to the general supervision of the department and of the University Studies, has conducted the following courses of historical instruction:

(1) Historical Seminary, two hours fortnightly throughout the year, with twenty-eight graduate students the first half-year, and twenty-three the second half. Original monographs and reports of progress on dissertations were presented, discussed, and criticised. Among the original papers of the year were the following: Freeman: the Scholar and Professor, by H. B. Adams (*Yale Review*, November, 1895); an Account of the Letters of David Ricardo, by J. H. Hollander (Quarterly Journal of Economics, January, 1896, and the American Economic Association, Vol. X); Lord Amherst and the Conquest of Canada, by H. B. Adams (New England Magazine, February, 1896); Science and Good Government, by H. B. Adams (reports in *The Sun* and *The News*, Baltimore, November 11, 1895); the Constitution of the Kingdom of Belgium, by J. M. Vincent (Annals of the American Academy of Political and Social Science, May, 1896); Democracy *vs.* Aristocracy in Virginia, by J. R. Brackett (Sewanee Review, May, 1896); Historical and Legal Foundations of Sociology, by Hon. F. H. Wines; Representation in Virginia, by J. A. C. Chandler (J. H. U. Studies, Vol. XIV, Nos. 6-7); Negroes under Northern Conditions, by Guy Carleton Lee (Gunton's Magazine, January, 1896); Anna Maria Van Schurman, by B. B. James; Observations in the South and New England, by M. Takaki; Colonial Origins of New England Senates, by F. L. Riley (J. H. U. Studies, Vol. XIV, No. 3); Citizenship and Suffrage in Maryland, by Bernard C. Steiner (Baltimore: Cushing & Co., 1895); Introduction to C. D. Hazen's Translation of Borgeaud's Adoption and Amendment of Constitutions in

Europe and America, by J. M. Vincent (New York: Macmillan & Co., 1895); History of Taxation in Connecticut, by F. R. Jones (J. H. U. Studies, Vol. XIV, No. 10); Jefferson's Plans for the University of Virginia; Causes of the Revolution in Maryland in 1689, by F. E. Sparks (J. H. U. Studies, Vol. XIV, Nos. 11-12); Neutrality of the American Lakes, by J. M. Callahan; Lord Baltimore's Struggle with the Jesuits, by Alfred P. Dennis; Higher Education in Kentucky, by A. F. Lewis (to be published by the U. S. Bureau of Education). In the University Circulars for February, 1896, there is a list of ninety-seven publications in history and politics for the most part by present and former members of the Historical Seminary.

(2) History of Civilization, a collegiate class course, two hours weekly through the year, with seventeen students the first half and eighteen the second half.

(3) Germanic and American History, a graduate class course, with twenty-two students, two hours weekly through the year.

(4) History of the Nineteenth Century, a graduate class course, with twenty students, one hour weekly through the year. In connection with this course was instituted a series of class lectures by students upon the Political Leaders of the Nineteenth Century. Each lecturer was criticised by members of the class and by the instructor.

Professor George H. Emmott lectured on

(1) The History and Development of the Common and Statute Law of England, to sixteen graduate and advanced students, twice weekly through the year. The lectures traced the outlines of the history of the laws of England, with special reference to those relating to real property, and set forth their leading principles, showing how those laws were until recently administered by distinct tribunals, the Courts of Common Law and the Court of Chancery, and pointed out the limits of their respective jurisdictions. The course commenced with an examination of the effects of the Teutonic settlement in England, and of the laws and customs of the Anglo-Saxons relating to property, together with an account of the judicial institutions of the Anglo-Saxons and of the Anglo-Saxon vassalage. It then treated of the sources of the Feudal system, of the origin of Feudal vassalage, and of the effects of the Norman Conquest upon the pre-existing laws and institutions of England. The condition of the law relating to land, in the reigns of Henry II, John, Henry III, and Edward I, was carefully investigated, and the successive steps by which the Common or Earlier Law was completed were traced. In the latter part of the course special attention was paid to the Modern Law of Real Property, including the Origin and Early History of Uses, the Statute of Uses and its principal effects on Modern Conveyancing, the History of the Law of Wills of Land, the Abolition of Military Tenures, and the various Titles and Things Real. Some attention was also paid to the provisions and effect of recent British Statutes. In close connection with the work in this class, the following original papers have been presented: An Arbitration Treaty between Great Britain and the United

States (published in *The Arena*, August, 1895); the Settlement of International Disputes of Arbitration (published in *The American Friend*, July 11, 1895); Arbitral Treaty with the United States (published in *War or Brotherhood*, August, 1895) by G. H. Emmott; the Life and Work of Glanvill, by M. Reizenstein; Bracton, a Study in Historical Jurisprudence, by G. C. Lee; the Mirror of Justices, by S. E. Forman; the Influence of the Roman and Canon Law on the Law of England, by C. H. Brough.

(2) English Constitutional Law and History, to nine graduate and fifteen undergraduate students, twice weekly. The origin and development of the English Constitution and of the fundamental principles of English Constitutional Law were carefully and systematically traced in chronological order from the earliest period down to the present time. Taswell-Langmead's English Constitutional History was taken as containing an outline sketch of the ground covered, with references to the works of Freeman, Stubbs, Hallam, Erskine May, Dicey, Anson, Hearn, Bagehot, Traill, Spencer Walpole, and other writers. The instruction was given by means of lectures delivered by the instructor, by frequent recitations, and by lectures given and reports carefully prepared by the students themselves on the following amongst other topics: the political and social condition of England under the Anglo-Saxons; the political and constitutional effects of the Norman Conquest; the judicial and administrative reforms of Henry the Second; the Tudors and the Reformation, 1485–1603; the political relations of monarch and Parliament from 1603 to 1642; the constitutional significance and political consequences of the Revolution of 1688; the struggles of Whigs and Tories in the eighteenth century; the origin, development, prerequisites, and peculiar form of Cabinet Government in England; the Reform Bills of 1832, 1864, and 1884.

(3) Sources of English History and the History and Literature of Historical Writing in England under the Tudors. These lectures were given once weekly to thirteen graduate and advanced students throughout the year. They contained a careful presentation of the lives and works of the contemporary and modern writers on English history who treat of the period from the accession of Henry VII to the close of the reign of Elizabeth.

Associate Professor John Martin Vincent has conducted the following courses:

(1) Social and Economic History of the Middle Ages, with eighteen graduate students, two hours weekly during the first half-year. Beginning with the period of the Franks, the civilization of Europe was traced down to the close of the Middle Ages with two principal objects in view: (1) To exhibit the various forms of organization found necessary in that time; and (2) to show the close connection between the social organization and contemporary economic conditions. A brief syllabus of the course having been furnished, the students were required at the close to expand this from their notes and reading into a complete digest of the subject, with very beneficial results to themselves.

(2) Early Modern History of Europe, with eighteen graduate students, two hours weekly during the second half-year. A plan similar to that of course (1) was followed in the study of the period between the Age of Elizabeth and the Age of Louis XV. The tendencies of civilization were followed until their modern character became distinctly seen.

(3) Historical Conference, two hours fortnightly. Six graduate students have made coöperative studies of special problems in History in order to gain facility in research. Reports involving criticism and interpretation of sources, studies of institutions and the construction of narrative history have been presented by the students and subjected to the joint criticism of instructor and class. The Salic Law, Anglo-Saxon Slavery, Mediæval Guilds, Augustine's Mission to England were among the topics examined.

(4) European History, with two graduate and seventeen undergraduate students, two hours weekly through the year. By the use of text-books and lectures the history of the chief European nations was traced from the fall of Rome to the close of the French Revolution. As the students were nearly all of the Historical Group, emphasis was laid chiefly upon subjects not otherwise presented in the department.

(5) Mediæval and Modern History, with nine undergraduate students, two hours weekly. This was an elective course provided for students not members of the historical group. Particular attention was given to the modern phases of European politics.

Professor James Schouler, LL. D., of Boston University (Law School), author of the History of the United States under the Constitution, gave a class course of twenty-five lectures to graduates upon American Constitutional History, three hours weekly in February and March, 1896.

Dr. Bernard C. Steiner, Associate in American History, conducted a collegiate class course in American Constitutional and Political History, two hours weekly through the year, with twenty-two students.

Courses in Ancient History, with fifteen undergraduate students, four hours weekly through the year, have been conducted by Dr. J. C. Ballagh and Mr. J. M. Callahan. Text-books on Greek and Roman History were supplemented by extensive readings in translation from Herodotus, Thucydides, and other ancient authors.

## Economics.

Associate Professor Sidney Sherwood conducted the following graduate courses:

(1) The Economic Conference, with a membership of eighteen students, meeting one evening fortnightly throughout the year. The following were the principal papers read and discussed: The Musée Sociale of Paris, by W. F. Willoughby, Statistical Expert of U. S. Bureau of Labor; the Personality of Professor Carl Menger, by H. L. Moore; Some Legal Aspects of the

Strike Question, by J. M. Moses; Rise and Development of the National Banking System, by C. P. Neill; History of the Baltimore and Ohio Railroad, by M. Reizenstein; Notes on Ricardo's Letters to McCulloch and Trower, by J. H. Hollander; the South American Trade of Baltimore, by F. R. Rutter; a Study in Primitive Socialism, by G. B. Lynes; The Tobacco Industry in Virginia, by B. W. Arnold; Ricardo's Attack upon Malthus' Doctrine of Rent, by H. L. Moore; Influence of Agricultural Improvements upon Rent, by C. P. Neill; Prostitution as a Profession, by G. C. Lee; Our Foreign Policy in its Economic Aspects, by Sidney Sherwood (published in *The Forum*, March, 1896); the Economic Aspect of Improved Housing, by E. R. L. Gould; Formation of the Normal Laws of Utility, by S. M. Patten; the Mechanics of Society, by Lester F. Ward; State Tax Commissions in United States, by J. W. Chapman; State Banking in Maryland, by A. C. Bryan; Irrigation in Utah, by C. H. Brough. At each session of the Conference reports were made on recent economic periodical literature and on current legislation and events of interest to students of political economy.

(2) Class in criticism and research, two hours weekly, attended by seven advanced students in economics. The writings of Quesnay were read critically and various members of the class made reports upon other physiocratic writers. The origin of physiocratic doctrine and the exact formulation of it were especially considered. A portion of Turgot's writings was also read and critically discussed.

(3) Credit and Money, twice weekly throughout the year, with eighteen graduate students. The theory of credit was first considered and an analysis was made of modern processes of exchange, which brought out the fundamental relation between credit and money. In the latter half of the year attention was particularly given to the Monetary Legislation of the United States and to the practical questions of Free Coinage of Silver and International Bimetallism.

Dr. J. H. Hollander conducted the following graduate courses:

(1) Historical Development of Economic Theories since Adam Smith, with eighteen graduate students, one hour weekly throughout the year. The main endeavor in this course was to trace the historical development of the fundamental concepts of economic science from Adam Smith to the present time. The current of English thought was mainly considered, but other writers and schools were examined whenever direct influence or analogy was discernible. After a brief survey of political and industrial development during the past hundred years, and an outline of the growth of political economy as a formal science during the century, special study was made of the evolution of the theories of Production, Rent, Wages, Interest, Profits, and Value. The method of treatment was topical, resulting in a series of cross-sectional views of the history of economic thought. In connection with the lectures, members of the class read Adam Smith's Wealth of Nations, certain portions of Ricardo's Principles of Political

Economy and Taxation, and John Stuart Mill's Principles of Political Economy.

(2) Economic Development of Baltimore. A section of the Economic Conference, composed of seven graduate students, met one hour weekly during the first term for the purpose of studying the economic development of Baltimore. Such topics were considered as Territorial Growth; Changes and Increase in Population; Conditions of Residence; Foreign Trade; Industries; Railroads.

The following undergraduate classes were conducted by Doctors Sherwood and Hollander:

(1) Elements of Economics. A two-hour course, required of all candidates for the A. B. degree, attended by thirty students. The subjects treated were the Elementary Principles of Economics in the first half-year, and Money and Taxation in the second half.

(2) Applied Economics. A two-hour course, required, in addition to course (1), of students of Group VI, attended by sixteen students. During the first half-year the Development of Economic Life and Thought was studied; the Tariff and Transportation formed the subject of work the second half-year.

(3) Advanced Economics. An elective undergraduate class, composed of four undergraduate and eleven graduate students, met two hours weekly during the year. Attention was centered upon the recent development of economic thought and upon current economic discussion. Marshall's Principles of Economics and Andrews' Institutes of Economics formed the basis of the course.

Hon. Frederick Howard Wines, LL. D., of Springfield, Illinois, gave six public lectures on Social Problems, in McCoy Hall, December 9–20, 1896. The special topics were: The Genesis of Social Classes; Classification of Social Evils; Problem of Poverty; Problem of Crime; Duty of the State to Special Classes; Function of the University relative to Social Evils.

Dr. E. R. L. Gould gave a course of two lectures weekly, from January to April, 1896, on the State as an Agency in Social-Economic Reform, to seventeen graduate students. Existing social-economic legislation in Europe and the United States was treated with reference to underlying principles and present problems.

Professor Davis R. Dewey, of the Massachusetts Institute of Technology, gave a course of twelve lectures in January, 1896, to a class of eleven graduates, upon the subject of Conditions and Remedies of Non-Employment. The special topics were: (1) the Amount of Non-Employment; (2) Causes of Non-Employment: Influence of Machinery; (3) Causes of Non-Employment: Localization of Industries; International Competition and Interdependence; Fashion; (4) Relation of Migration and Immigration to Non-Employment; (5) Organization of Employment through Employment

Offices and Labor Bureaus; (6) Grant of Employment upon Public Work; (7) Placing the Unemployed upon Farms and the Land; (8) Treatment of the Vagabond Unemployed; Labor Colonies; (9) Attitude of the Poor Law and Charity toward the Problem of Non-Employment; Work of Special Relief Committees; (10) Insurance against Non-Employment; (11) Treatment of the Unemployed in Australia and New Zealand; (12) Reforms proposed for lessening the Amount of Non-Employment.

### Politics.

Professor Woodrow Wilson, of Princeton University, gave twenty-five class lectures on Local and Municipal Government to a mixed audience of students and citizens, five hours weekly in February, 1896.

Dr. Westel W. Willoughby gave a class course of twenty-five lectures, from October to December, 1895 on the Theory of the State, to fourteen graduate students.

Herbert B. Adams,
*Professor of American and Institutional History.*

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## Philosophy.

The following report of the work in Philosophy, during the academic year 1895–96, is respectfully submitted:

All candidates for the degree of Bachelor of Arts are required to follow a course in Logic, Psychology, and Ethics during their last year of residence. On account of the number and variety of the subjects included in it, five hours a week, instead of four, are assigned to this course. It is intended to make the treatment as simple and untechnical as possible, so as to meet the needs of those to whom these studies are new, at the same time calling attention to fundamental problems, so that what is done may serve as an introduction to general philosophical study. Text-books have been used in each subject, as affording definite material of acquisition; but informal lectures, discussions in the class, and passages from various authors assigned for reading, have been largely relied upon in the presentation. Each member of the class has been required to prepare two essays in the course of the year. Thirty-eight students have been in attendance.

The opening weeks of the year were devoted to Logic, Jevons's *Elementary Lessons in Logic* and Fowler's *Elements of Inductive Logic* being made the basis of instruction, with frequent references to the works of Mill, Bain, Keynes, and other writers. Facility in the use of logical forms and methods was sought through oral and written exercises, and the theory of deduction and of induction was discussed, with the view of determining the nature

and value of each of these processes, and their relations to each other in scientific investigation and proof.

The instruction in Psychology attempted to give a general view of the results of experimental methods of study, and also to emphasize the facts of conscious experience as known through introspection. Baldwin's *Elements of Psychology* and Ladd's *Outlines of Psychology* were used as text-books, supplemented by many references to the works of other authors. A series of lectures on the anatomy and physiology of the nervous system was given, as a part of the course, by Dr. L. F. Barker.

The work in Ethics was mainly confined to the theoretical and historical aspects of the subject; questions of applied ethics were, for lack of time, but slightly considered. The various forms of feeling native to our constitution and constituting the possible motives of conduct; the conditions and nature of the sense of obligation; the authority of conscience; the diversities of moral sentiment; the historic theories of morals—hedonism, utilitarianism, intuitionism, and the application to ethical theory of the doctrine of evolution—these are some of the topics treated. Fowler's *Principles of Morals*, Part II, was employed as a text-book, but the instruction was necessarily given, to a considerable extent, through lectures. In kind response to our invitation, Mr. Blanchard Randall, Dr. S. C. Chew, and Joseph Packard, Jr., Esq., presented to the class certain considerations that might be of service in the choice of a vocation, speaking, respectively, in regard to a business career, the profession of medicine, and the profession of law. Last year, when talks of this kind were, for the first time, given to the class approaching graduation—by Mr. C. Morton Stewart, Dr. William Osler, and Charles J. Bonaparte, Esq.—their value and suitableness were so obvious that it was thought desirable to secure the same advantage to the students of this year. As having to do directly with the conduct of life, such addresses may properly find a place in a course of ethical teaching.

One hour each week was used, during the first half of the year, for a brief outline of the History of Philosophy, and the survey was brought down, in a summary way, to the modern period. During the latter part of the year, a weekly lecture was given for the benefit of those who were able to attend it as a voluntary exercise.

A course in the History of Philosophy, for graduate students, was conducted during the year, consisting of the reading and discussion of representative works in modern philosophy from Descartes to Kant. The works read were as follows: Bacon's *Novum Organum*, book I and a part of book II; Descartes' *Method and Meditations;* Spinoza's *Ethics;* Leibnitz's *Monodology;* Locke's *Essay on Human Understanding*, books I, II, IV; Berkeley's *Principles of Human Knowledge;* Hume's *Treatise on Human Nature*, book I; a portion of Kant's *Critique of Pure Reason*. The class met once a week for discussion and criticism.

EDWARD H. GRIFFIN,
*Professor of the History of Philosophy.*

## Drawing.

I beg leave to present the following statement in regard to the work of the undergraduate class in Freehand Drawing for the year 1895–96:

Total number of students attending the course, 81.

Total number of students who have completed the course, 79.

Two students were unable to complete the full course on account of sickness. This is the best record of the number of students completing the course since my connection with the work at the University.

The course of work was, for the first half-year, drawing from simple geometrical objects, beginning in outline and working upward to more complicated groups in light and shade. In the second part of the term students looking forward to courses in Medicine or Biology continued the work in freehand drawing, and made drawings of bones and leaves in order to give them some idea of the practical application of the work required later on. Students taking the course preparatory to Applied Electricity have for the second half-year taken the course in instrumental or constructive drawing, including work in descriptive geometry and perspective.

A class of seven was instructed by Dr. Dreyer, during eight weeks, in botanical drawing.

S. Edwin Whiteman,
*Instructor in Drawing.*

# TABULAR STATEMENT OF COURSES OF INSTRUCTION, 1895-96.

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | **Mathematics and Astronomy.** | | | |
| Craig. | Algebraic Integrals. | 3 | 10 | 11 |
| Craig. | Mathematical Conference. | 2 | 12 | 12 |
| Craig | Mathematical Seminary. | 1 | 12 | 12 |
| Craig. | Theory of Surfaces. | 3 | 11 | 11 |
| Chessin. | Theory of Functions. (Elementary Course.) | 3 | 26 | 23 |
| Chessin. | Transformation Groups. | 2 | 4 | 4 |
| Page. | Transformation Groups. (Second half-year.) | 1 | | 12 |
| Hulburt. | Differential and Integral Calculus. (Second half-year.) | 4 | | 25 |
| Hulburt. | Surfaces and Curves. | 3 | 5 | 4 |
| Hulburt. | Differential Equations. | 2 | 25 | 17 |
| Hulburt. | Analytic Geometry: Minor Course. (First half-year.) | 4 | 28 | |
| Cohen. | Theory of Equations; Analytic Geometry. (Second half-year.) | 4 | | 27 |
| Cohen. | Determinants; Calculus. (First half-year). | 4 | 25 | |
| Cohen. | Algebra; Solid Geometry. (First half-year.) | 4 | 18 | |
| Cohen. | Trigonometry; Analytic Geometry: Elem. (Second half-year.) | 4 | | 19 |
| Poor. | Precession and Nutation. (Second half-year.) | 3 | | 6 |
| Poor. | Astronomical Computations. (First half-year.) | 3 | 4 | |
| Poor. | Reduction of Observations. (Second half-year.) | 3 | | 14 |
| Poor. | Theoretical and Practical Astronomy. | 2 | 7 | 6 |
| Poor. | Theory of Instruments. (First half-year.) | 3 | 6 | |
| Poor. | Descriptive Astronomy. | 2 | 10 | 11 |
| Poor. | Astronomical Seminary. (Second half-year,—alternate weeks.) | 1 | | 8 |
| Poor. | Observatory Work. | | 15 | 13 |
| Chessin. | Celestial Mechanics. | 3 | 2 | 2 |
| | **Physics.** | | | |
| Rowland. | Thermodynamics; Heat Conduction; Physical Optics. | 4 | 20 | 17 |
| Rowland, Ames. | Journal Meeting. | 1 | 26 | 28 |
| Ames. | Physical Seminary. | 1 | 15 | 15 |
| Ames. | Thermodynamics. (First half-year.) | 2 | 26 | |
| Ames. | Spectroscopy. (Second half-year.) | 2 | | 25 |
| Ames. | General Physics: Major Course. | 4 | 35 | 32 |
| Ames. | General Physics: Minor Course. | 4 | 50 | 48 |
| Duncan. | Applied Electricity. (First Year's Course.) | 2 | 7 | 7 |
| Duncan. | Applied Electricity. (Second Year's Course.) | 2 | 15 | 15 |
| Hering. | Electrical Measurements. | 2 | 5 | 5 |
| Geer. | Steam Engineering. | 3 | 13 | 13 |
| Geer. | Mechanics of Engineering. | 2 | 9 | 9 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Rowland, Duncan, Ames, Hering, Geer, Bliss. | Laboratory Work. | | 112 | 109 |
| Uhler. | Experimental Physics. (First half-year.) | 3 | 11 | |
| | **CHEMISTRY.** | | | |
| Remsen. | Compounds of Carbon: Advanced Course. (First half-year.) | 2 | 32 | |
| Remsen. | Compounds of Carbon: Advanced Course. (Second half-year.) | 4 | | 30 |
| Remsen. | Journal Meeting. | 1½ | 30 | 26 |
| Remsen. | General Chemistry: Minor Course. (First half-year.) | 3 | 72 | |
| Morse. | Analytical Chemistry. | 1 | 22 | 21 |
| Morse. | Organic Chemistry: Major Course. (Second half-year.) | 4 | | 24 |
| Randall. | Physical Chemistry. (First half-year.) | 2 | 11 | |
| Renouf, Randall. | Inorganic Chemistry: Major Course. (First half-year.) | 4 | 23 | |
| Renouf, Randall. | General Chemistry: Minor Course. (Second half-year.) | 4 | | 53 |
| Randall, Gilpin. | Reviews in General Chemistry: Minor Course. (First half-year.) | 1 | 72 | |
| Jones. | Physical Chemistry: Special Course. | 2 | 14 | 16 |
| Remsen, Morse, Renouf, Randall, Gilpin, Jones. | Laboratory Work. | | 115 | 109 |
| | Historical Lectures. (Ten lectures by advanced students, second half-year.) | | | |
| | **GEOLOGY AND MINERALOGY.** | | | |
| Clark, Mathews, Bagg. | General Geology. | 4 | 29 | 26 |
| Clark. | Historical Geology, | 2 | 11 | 11 |
| Clark, Bagg. | Palæontology: Laboratory Work. (Advanced.) | | 9 | 9 |
| Mathews. | Mineralogy. | 4 | 18 | 13 |
| Mathews. | Petrography: Laboratory Work. | | 7 | 7 |
| Clark. | Journal Club. | 1 | 10 | 10 |
| Gilbert. | Physiographic Geology. (Second half-year.) | 4 | | 29 |
| Willis. | Stratigraphic and Structural Geology. (Second half-year.) | 2 | | 24 |
| Reid. | Physical Action of Glaciers. (Five lectures.) | | | 24 |
| Abbe. | Climatology. (Four lectures.) | | 24 | |
| | **BIOLOGY.** | | | |
| Brooks. | Zoölogy: Advanced Course. | 5 | 17 | 16 |
| Brooks. | Zoölogical Journal Club. | 1 | 18 | 17 |
| Brooks. | Elements of Zoölogy. (First half-year.) | 4 | 15 | |
| Howell. | Physiological Journal Club. | 1 | 9 | 11 |
| Howell. | Physiological Seminary. | 1 | 12 | 14 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Howell. | Animal Physiology. (First half-year.) | 3 | 44 | |
| Howell. | Animal Physiology. (Second half-year.) | 4 | | 43 |
| Andrews. | Osteology. | 2 | 28 | 29 |
| Andrews. | General Biology. | 2 | 29 | 30 |
| Andrews. | Embryology: Major Course. (During April and May.) | 4 | | 10 |
| Andrews. | Zoology: Elective Course. | 2 | 1 | 1 |
| Andrews. | Embryology: For Medical Students. (Second half-year.) | 4 | | 9 |
| Dreyer. | Physiology and Histology. | 4 | 10 | 10 |
| Barton. | Systematic Botany. (During April and May.) | 2 | | 27 |
| Humphrey. | Morphology of Plants. | 2 | 9 | 8 |
| Brooks, Howell, Andrews, Dreyer, Barton, Humphrey, Sigerfoos. | Laboratory Work. | | 89 | 88 |
| | **Greek.** | | | |
| Gildersleeve. | Greek Seminary: Thucydides. | 2 | 31 | 26 |
| Gildersleeve. | Greek Syntax. | 1 | 32 | 28 |
| Gildersleeve. | Greek Historiography. (Second half-year.) | 2 | | 27 |
| Gildersleeve. | Practical Exercises. (First half-year.) | 2 | 29 | |
| Spieker. | Sophocles. (First half-year.) | 3 | 11 | |
| Spieker. | Isocrates. (First half-year.) | 3 | 7 | |
| Spieker. | Plato; Euripides. (Second half-year.) | 3 | | 7 |
| Spieker. | Demosthenes; Elegiac and Lyric Poets. (Second half-year.) | 3 | | 10 |
| Spieker. | Thucydides. | 1 | 15 | 9 |
| Spieker. | Prose Composition. (Two classes.) | 2 | 24 | 18 |
| Miller. | Greek Palæography. (Second half-year.) | 2 | | 9 |
| Wilson. | Homer; Herodotus; Prose Composition. | 3 | 7 | 7 |
| Xenides. | Modern Greek. | 2 | 5 | 5 |
| | **Latin.** | | | |
| Warren. | Latin Seminary: Livy; Tacitus. | 2 | 29 | 25 |
| Warren. | Roman Historiography: Lectures. (First half-year.) | 1 | 30 | |
| Warren. | Historical Latin Grammar. | 1 | 31 | 27 |
| Warren. | Journal Club. (Alternate weeks.) | 1 | 21 | 18 |
| Warren. | Historical Inscriptions. (Second half-year.) | 1 | | 24 |
| Warren. | Terence; Plautus. (Second half-year.) | 3 | | 8 |
| Smith. | Elegy and Epigram. (Lectures.) | 1 | 27 | 24 |
| Smith. | Pro-Seminary: Sallust. | 1 | 8 | 7 |
| Smith. | Juvenal. (First half-year.) | 3 | 9 | |
| Smith. | Lucretius. (Second half-year.) | 2 | | 5 |
| Smith. | Livy. (First half-year.) | 3 | 26 | |
| Smith. | Horace. (Second half-year.) | 3 | | 25 |
| Smith. | Prose Composition. | 1 | 8 | 7 |
| Wilson. | Prose Composition. | 1 | 26 | 25 |
| Wilson. | Cicero; Ovid; Vergil; Prose Composition. | 3 | 13 | 12 |
| | **Sanskrit, etc.** | | | |
| Bloomfield. | Vedic Seminary: Rig-Veda. | 1½ | 6 | 5 |
| Bloomfield. | Advanced Sanskrit: Hitopadeça; Manu. (First-half-year.) | 2 | 7 | |
| Bloomfield. | Introduction to the Avesta. (Second half-year.) | 1 | | 2 |
| Bloomfield. | Comparative Philology. | 1 | 28 | 28 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Bloomfield. | Comparative Grammar of Latin, Greek, German, etc. | 1 | 17 | 16 |
| Bloomfield. | Elementary Sanskrit. | 2 | 6 | 5 |
| Ness. | Introduction to the Vedas. (Second half-year.) | 2 | | 3 |
| | **Semitic Languages.** | | | |
| Haupt. | Hebrew Prose Composition. | ½ | 5 | 4 |
| Haupt. | Hebrew: Psalms. | 1 | 11 | 11 |
| Haupt. | Hebrew Comparative Grammar. (Second half-year.) | 1 | | 11 |
| Haupt. | Hebrew: Elementary. | 2 | 8 | 7 |
| Haupt. | Syriac. | 1 | 9 | 9 |
| Haupt. | Ethiopic. | 1 | 9 | 6 |
| Haupt. | Biblical Aramaic. (First half-year.) | 1 | 11 | |
| Haupt. | Assyrian Seminary. | 2 | 10 | 9 |
| Haupt. | Arabic: Advanced. | 1 | 9 | 8 |
| Haupt. | Arabic Prose Composition. | ½ | 9 | 8 |
| Johnston. | Arabic: Elementary. | 2 | 5 | 4 |
| Johnston. | Arabic Exercises. | 2 | 3 | 2 |
| Johnston. | Assyrian: Elementary. | 2 | 3 | 4 |
| Johnston. | Assyrian: Advanced. (First half-year.) | 1 | 4 | |
| Johnston. | Hebrew Exercises. | 1 | 5 | 4 |
| Johnston. | Ancient East: Lectures. (First half-year.) | 1 | 6 | |
| Johnston. | Cuneiform Inscriptions: Lectures. (Second half-year.) | 1 | | 12 |
| Rosenau. | Post-Biblical Hebrew. | 1 | 1 | 2 |
| | **German.** | | | |
| | *Advanced Work.* | | | |
| Wood. | German Seminary. | 3 | 14 | 16 |
| Wood. | Germanic Society. (Alternate weeks.) | | 15 | 16 |
| Wood. | Old Norse. | 1 | 3 | 3 |
| Wood. | Swabian and Austrian Poets. | 1 | 8 | 9 |
| Wood. | Gothic. | 2 | 11 | 11 |
| Vos. | Middle High German. (First half-year.) | 2 | 9 | |
| Vos. | Early New High German Prose. | 1 | 2 | 4 |
| | *Major Course.* | | | |
| Wood, Vos. | Lessing; Goethe. | 2 | 7 | 13 |
| Wood, Faust. | Prose Composition. | 1 | 7 | 13 |
| Vos. | History of German Literature. | 1 | 7 | 13 |
| | *Minor Course: Class A.* | | | |
| Wood. | Prose Composition. | 1 | 31 | 30 |
| Vos. | Selected Prose Readings. | 1 | 31 | 30 |
| Vos. | Classics. | 2 | 31 | 30 |
| | *Minor Course: Class B.* | | | |
| Faust. | Otis; Goethe; Von Moser; Riehl. | 3 | 30 | 29 |
| Faust. | Prose Composition. | 1 | 30 | 29 |
| | *Supplementary Courses.* | | | |
| Faust. | Historical Readings. | 2 | 14 | 16 |
| Baker. | Scientific Readings. | 2 | 30 | 23 |
| Faust. | Oral Exercises. | 2 | 9 | 7 |
| Vos. | Elementary German. | 3 | 9 | 8 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| | *Elective Courses.* | | | |
| Baker. | Goethe; Deutsche Gedichte. | 2 | 7 | 6 |
| Baker. | Contemporary Literature: Readings. | 1 | 4 | 4 |
| Faust. | German Conversation. | 1 | 9 | 9 |
| | **Romance Languages.** | | | |
| Elliott. | Romance Seminary: Marie de France. | 2 | 13 | 13 |
| Elliott. | French Dialects. | 1 | 12 | 12 |
| Elliott. | Romance Club. | 1 | 12 | 12 |
| Elliott. | Dante. | 1 | 12 | 12 |
| Elliott. | Popular Latin. (First half-year.) | 1 | 9 | |
| Rambeau. | Comparative Phonetics, etc. (Second half-year.) | 1 | | 9 |
| Rambeau. | French: Major Course. | 4 | 6 | 5 |
| Rambeau. | French: Minor Course (Class A). | 4 | 26 | 24 |
| Rambeau. | Italian: Minor Course. | 4 | 4 | 5 |
| Menger. | Old French Philology. | 3 | 11 | 8 |
| Menger. | Italian Literature. | 1 | 7 | 7 |
| Menger. | French Phonetics. (First half-year.) | 1 | 10 | |
| Menger. | Italian. (Undergraduate Elective.) | 2 | 5 | 2 |
| Marden. | Spanish Philology. | 2 | 5 | 5 |
| Marden. | French: Minor Course (Class B). | 4 | 18 | 17 |
| Marden. | Elementary French. | 3 | 6 | 7 |
| De Haan. | Old French Readings. | 2 | 10 | 10 |
| De Haan. | Provençal. | 1 | 11 | 11 |
| De Haan. | Spanish Literature (XIX Century). | 1 | 6 | 6 |
| De Haan. | Spanish: Minor Course. | 4 | 5 | 5 |
| Keidel. | Romance Versification. | 2 | 12 | 12 |
| Thieme. | French Poetry (XIX Century). | 1 | 19 | 14 |
| Warren, F.M. | The Arthurian Epic. (Twenty lectures.) | | | 14 |
| Warren, F.M. | Realists and Naturalists of the XIX Century. (Twenty lectures). | | | 15 |
| | **English.** | | | |
| Bright. | English Seminary. | 4 | 24 | 26 |
| Bright. | History of English Philology. (Lectures.) | 1 | 26 | 27 |
| Bright. | Conferences on Literature and Grammar. | 1 | 18 | 20 |
| Bright. | Interpretation of Texts. | 1 | 19 | 19 |
| Bright, Tupper. | Anglo-Saxon. | 2 | 15 | 16 |
| Bright. | Journal Meeting. (Alternate weeks.) | 2 | 25 | 26 |
| Browne. | Scottish Poets (Lyndsay to Burns.) | 1 | 16 | 16 |
| Browne. | Elizabethan Literature; Early Scottish Poets. | 2 | 5 | 8 |
| Browne. | English Literature; Early English: Minor Course. | 4 | 13 | 14 |
| Greene. | English Literature: Elective Course. | 2 | 4 | 4 |
| Greene. | English Literature. | 3 | 37 | 38 |
| Greene. | Rhetoric and Composition. | 3 | 62 | 58 |
| | **Historical and Political Science.** | | | |
| Adams. | Seminary of History and Politics. (Alternate weeks.) | 2 | 28 | 23 |
| Adams. | Germanic History. | 2 | 22 | 22 |
| Adams. | History of Civilization. | 2 | 17 | 18 |
| Adams. | Nineteenth Century. | 1 | 18 | 20 |
| Emmott. | Historical Jurisprudence: English Private Law. | 2 | 16 | 16 |
| Emmott. | English Constitutional Law and History. | 2 | 22 | 24 |
| Emmott. | Sources of English History. | 1 | 11 | 12 |
| Vincent. | Historical Conference. (Alternate weeks.) | 2 | 6 | 6 |
| Vincent. | European History. | 2 | 18 | 19 |

| Instructor. | Courses. | No. of hours per week. | No. of students, 1st half-year. | No. of students, 2d half-year. |
|---|---|---|---|---|
| Vincent. | Social and Economic History of the Middle Ages. (First half-year.) | 2 | 18 | |
| Vincent. | Early Modern History of Europe. (Second half-year.) | 2 | | 18 |
| Vincent. | Mediæval and Modern History. | 2 | 9 | 9 |
| Sherwood. | Physiocrats. | 2 | 7 | 7 |
| Sherwood. | Credit and Money. | 2 | 18 | 18 |
| Sherwood. | Economic Conference. (Alternate weeks.) | 2 | 18 | 18 |
| Sherwood, Hollander. | Economics: Minor Course. (First half-year.) | 4 | 33 | |
| Hollander. | Economics: Minor Course. (Second half-year.) | 4 | | 32 |
| Hollander. | Economic Development of Baltimore. | 1 | 7 | 6 |
| Hollander. | Development of Economic Thought. (First half-year.) | 2 | 16 | |
| Sherwood, Hollander. | Economics: Advanced Elective. | 2 | 15 | 15 |
| Hollander. | Economic Theories. | 1 | 18 | 18 |
| Steiner. | American Constitutional History. | 2 | 20 | 22 |
| Schouler. | United States Constitution. (Second half-year.) | 3 | | 15 |
| Wilson. | Local Government. (Second half-year—five weeks.) | 5 | | 13 |
| Gould. | Social Economic Legislation. (Second half-year.) | 2 | | 17 |
| Willoughby. | Theory of the State. (First half-year.) | 2 | 14 | |
| Dewey. | Social Economics. (Second half-year,—twelve lectures.) | | | 11 |
| Ballagh, Callahan. | Greek and Roman History. | 4 | 16 | 15 |
| | **Philosophy.** | | | |
| Griffin. | History of Philosophy. | 1 | 10 | 8 |
| Griffin. | Logic. (Until December 15.) | 5 | 38 | |
| Griffin. | Psychology. (December 15 to April 15.) | 5 | | 38 |
| Griffin. | Ethics. (After April 15.) | 5 | | 38 |
| | **Drawing.** | | | |
| Whiteman. | Freehand, Constructive, and Perspective Drawing. | 6 | 70 | 65 |
| Geer. | Mechanical Drawing. | 6 | 17 | 19 |

# DEGREES CONFERRED, 1896.

## Doctors of Philosophy.

Benjamin William Arnold, Jr., of Virginia, A. B., Randolph Macon College, 1891. *Subjects:* Economics, Mathematics, and Philosophy. *Thesis:* History of the Tobacco Industry in Virginia from 1860 to 1894. *Referees on thesis:* Professor Sherwood and Dr. Hollander.

George Melville Bolling, of Baltimore, A. B., Loyola College, 1891. *Subjects:* Greek, Sanskrit, and Latin. *Thesis:* The Participle in Hesiod. *Referees on thesis:* Professors Gildersleeve and Spieker and Dr. Miller.

Ferdinand Bonnotte, of Baltimore, Collège Louis-Le Grand, Paris. *Subjects:* French, Italian, and History. *Thesis:* Phonologie et Morphologie du dialecte picard dans le Laonais et le Soissonnais. *Referees on thesis:* Professor Elliott and Dr. Menger.

Alfred Cookman Bryan, of Maryland, A. B., Johns Hopkins University, 1892. *Subjects:* Economics, History, and Social Science. *Thesis:* State Banking in Maryland. *Referees on thesis:* Professors Adams and Sherwood.

Arthur Douglas Chambers, of Canada, A. B., University of Toronto, 1892. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* An Investigation of the Composition of certain Oxides of Manganese. *Referees on thesis:* Professors Remsen and Morse.

Julian Alvin Carroll Chandler, of Virginia, A. B., William and Mary College, 1891. *Subjects:* History, English, and Jurisprudence. *Thesis:* Representation in Virginia. *Referees on thesis:* Professors Adams and Vincent and Dr. Steiner.

James Wilkinson Chapman, Jr., of Maryland, A. B., Washington College, 1892. *Subjects:* Economics, History, and Social Science. *Thesis:* State Tax Commissions in the United States. *Referees on thesis:* Professor Sherwood and Dr. Hollander.

Henry Scofield Cooley, of New Jersey, S. B., University of the City of New York, 1891. *Subjects:* History, Economics, and Philosophy. *Thesis:* A Study of Slavery in New Jersey. *Referees on thesis:* Professors Adams and Vincent and Dr. Steiner.

Henry Rushton Fairclough, of California, A. B., University of Toronto, 1883. *Subjects:* Greek, Latin, and Sanskrit. *Thesis:* Attitude of the Greek Tragedians towards Nature. *Referees on thesis:* Professor Spieker and Dr. Miller.

Edson Fessenden Gallaudet, of the District of Columbia, A. B., Yale University, 1893. *Subjects:* Physics, Electricity, and Mathematics. *Thesis:* Relations between Length, Elasticity, and Magnetization of Iron and Nickel Wires. *Referees on thesis:* Professors Rowland and Ames.

William Francis Gallaway, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Greek, Latin, and Sanskrit. *Thesis:* On the Use of μή with the Participle in Classical Greek. *Referees on thesis:* Professors Gildersleeve and Spieker.

Frederick Stearns Hollis, of Massachusetts, S. B., Massachusetts Institute of Technology, 1890. *Subjects:* Chemistry, Mineralogy, and Geology. *Thesis:* On the two Chlorides of Nitroorthosulphobenzoic Acid. *Referees on thesis:* Professors Remsen and Morse.

Reid Hunt, of Ohio, A. B., Johns Hopkins University, 1891. *Subjects:* Physiology, Zoology, and Chemistry. *Thesis:* The Fall of Blood-Pressure resulting from the Stimulation of Afferent Nerves. *Referees on thesis:* Professors Howell and Andrews.

Charles William Leverett Johnson, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Greek, Latin, and Sanskrit. *Thesis:* Musical Pitch and the Measurement of Intervals among the Ancient Greeks. *Referees on thesis:* Professors Gildersleeve and Spieker, and Professor H. W. Parker, of Yale University.

Oliver Martin Johnston, of Louisiana, A. B., Mississippi College, 1890. *Subjects:* French, Italian, and History. *Thesis:* Syntactical History of the Atonic Personal Pronouns in Italian. *Referees on thesis:* Professor Elliott and Dr. Menger.

Frederick Robertson Jones, of Baltimore, A. B., Western Maryland College, 1892. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* History of Taxation in Connecticut, 1636–1776. *Referees on thesis:* Professors Adams and Vincent and Dr. Steiner.

James Pinckney Kinard, of South Carolina, S. C. Military Academy, 1886. *Subjects:* English, German, and History. *Thesis:* A Study of Wulfstan's Homilies. *Referees on thesis:* Professors Bright and Browne.

Henry McElderry Knower, of Baltimore, A. B., Johns Hopkins University, 1890. *Subjects:* Morphology, Physiology, and Botany. *Thesis:* The Embryology of a Termite. *Referees on thesis:* Professors Brooks and Andrews.

Gordon Jennings Laing, of Canada, A. B., University of Toronto, 1891. *Subjects:* Latin, Greek, and Roman Law. *Thesis:* Expressions of Valuation in Latin. *Referees on thesis:* Professors Warren and Smith.

George Lefevre, of Baltimore, A. B., Johns Hopkins University, 1891. *Subjects:* Morphology, Physiology, and Botany. *Thesis:* Budding in Perophora. *Referees on thesis:* Professors Brooks and Andrews.

Ebenezer Mackay, of Nova Scotia, A. B., Dalhousie University, 1886. *Subjects:* Chemistry, Physics, and Mathematics. *Thesis:* A Contribution to the Study of Double Salts in Water Solution. *Referees on thesis:* Professors Remsen and Morse.

Raphael Monroe McKenzie, of New Jersey, S. B., University of the City of New York, 1890. *Subjects:* Chemistry, Physics, and Mathematics. *Thesis:* Some Double Chlorides of Ferric and of Ferrous Iron with some Aromatic Bases. *Referees on thesis:* Professors Remsen and Morse.

Henry Ludwell Moore, of Baltimore, A. B., Randolph Macon College, 1892. *Subjects:* Economics, History, and Jurisprudence. *Thesis:* Von Thünen's Theory of Natural Wages. *Referees on thesis:* Professor Sherwood and Dr. Hollander.

Franklin Lafayette Riley, of Mississippi, A. B., Mississippi College, 1889. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* Colonial Origins of New England Senates. *Referees on thesis:* Professors Adams and Vincent and Dr. Steiner.

Brantz Mayer Roszel, of Baltimore, A. B., Johns Hopkins University, 1889. *Subjects:* Astronomy, Mathematics, and Physics. *Thesis:* The Action of the Asteroids on Mars. *Referees on thesis:* Professors Newcomb and Poor.

Herbert Armistead Sayre, of Alabama, B. E., University of Alabama, 1893. *Subjects:* Mathematics, Astronomy, and Physics. *Thesis:* On the Generation of Surfaces by the Motion of Plane Curves. *Referees on thesis:* Professor Craig and Dr. Hulburt.

Frederick George Gottlob Schmidt, of Baltimore, University of Erlangen. *Subjects:* German, English, and Philosophy. *Thesis:* Die Rieser Mundart. *Referees on thesis:* Professor Wood and Dr. Vos.

Thomas Stanley Simonds, of Massachusetts, A. B., Harvard University, 1884. *Subjects:* Latin, Sanskrit, and Greek. *Thesis:* The Subjects treated by the Elder Seneca. *Referees on thesis:* Professors Warren and Smith.

George Otis Smith, of Maine, A. B., Colby University, 1893. *Subjects:* Geology, Palæontology, and Chemistry. *Thesis:* The Geology of the Fox Islands, Maine. *Referees on thesis:* Professor Clark, Dr. Matthews, and Mr. Bailey Willis.

Michael Druck Sohon, of the District of Columbia, A. C., Lehigh University, 1880. *Subjects:* Chemistry, Geology, and Physics. *Thesis:* An Investigation of some Derivatives of Orthosulphobenzoic Acid. *Referees on thesis:* Professors Remsen and Morse.

Francis Edgar Sparks, of Maryland, A. B., Johns Hopkins University, 1893. *Subjects:* History, Economics, and Jurisprudence. *Thesis:* Causes of the Maryland Revolution of 1689. *Referees on thesis:* Professors Adams and Vincent and Dr. Steiner.

Frederic William Speirs, of Pennsylvania, S. B., Worcester Polytechnic Institute, 1888. *Subjects:* Economics, History, and Administration. *Thesis:* A Study of Local Transportation in the City of Philadelphia. *Referees on thesis:* Professor Sherwood and Dr. Hollander.

Arthur Coe Spencer, of Ohio, S. B., Case School of Applied Science, 1892. *Subjects:* Geology, Palæontology, and Biology. *Thesis:* The Geology of Massanutten Mountain in Virginia. *Referees on thesis:* Professor Clark, Dr. Matthews, and Mr. Bailey Willis.

Thomas Hardy Taliaferro, of Baltimore, C. E., Virginia Military Institute, 1890. *Subjects:* Mathematics, Physics, and Astronomy. *Thesis:* The Congruences formed by the Tangents to the Lines of Curvature of a given Surface. *Referees on thesis:* Professors Craig and Franklin.

John Thorne, of Baltimore, A. B., Denison University, 1885. *Subjects:* Latin, History, and Roman Law. *Thesis:* Syntax and Style of Macrobius. *Referees on thesis:* Professors Warren and Smith.

Harry Langford Wilson, of Canada, A. B., Queen's University, 1887. *Subjects:* Latin, Sanskrit, and Greek. *Thesis:* The Metaphor in Statius. *Referees on thesis:* Professors Warren and Smith. (36)

## Bachelors of Arts.

Thomas Sewell Adams, of Baltimore.
Cornelius Beatty, of Baltimore.
Augustus Cæsar Binswanger, of Baltimore.
Charles Edward Caspari, of Baltimore.
Clarence Carroll Clark, of Baltimore.
Frank Wilbur Collier, of Baltimore.
Charles Edward Diehl, of West Virginia.
William Reginald Dorsey, of Baltimore.
George Dyre Eldridge, Jr., of Massachusetts.
Albert Dale Gantz, of Baltimore.
Alfred Dearing Harden, of Georgia.
William Faithful Hendrickson, of Baltimore.
Frank Holmes Johnson, of New York.
Charles Harwood Knight, of Baltimore.
William Kurrelmeyer, of Baltimore.
Robert Lacy, of Baltimore.
Henry Lanahan, of Baltimore.
Monroe Luchs, of the District of Columbia.
Arthur Webster Machen, Jr., of Baltimore.
Richard Elliott Marine, of Baltimore.
Henry Pickering Parker, of Maryland.
Albert Cabell Ritchie, of Baltimore.
Louis Rosenbaum, of Baltimore.
Glanville Yeisley Rusk, of Baltimore.
Laurence Frederick Schmeckebier, of Baltimore.
James Eustace Shaw, of Italy.
St. George Leakin Sioussat, of Maryland.
Alexander Raymond Stevens, of Baltimore.
John Wesley Richardson Sumwalt, of Baltimore.
John Hanson Thomas, of Baltimore.
Charles Burnet Torsch, of Baltimore.
James McConky Trippe, of Baltimore.
Charles William Waidner, of Baltimore.
William Fisher Wallis, of Baltimore.
Frederick Howard Warfield, of Baltimore.
John Armistead Welbourn, of Baltimore.
John Montgomery West, of Baltimore. (37)

## Proficients in Applied Electricity.

Certificates of Proficiency were given, June 11, 1896, to the following persons who had completed the two years' course in Applied Electricity:

Matthew Maury Corbin, of Virginia.
Isidor Deutsch, of Baltimore.
Hugh Miller Fraser, of Kentucky.
James Holdsworth Gordon, Jr., of the District of Columbia.
Horace Marshall Harriman, Jr., of Baltimore.
Malcolm Westcott Hill, of Baltimore.
George Harwood Hodges, of Baltimore.
Jasper Alan McCaskell, of Utah.
George Stevens Maynard, of the District of Columbia.
Henry Todd Powell, of Baltimore.
Charles Leonard Reeder, of Baltimore.
Martin Schwab, of Baltimore.
James Mowton Saunders Waring, of Baltimore.

(13)

# REPORT OF THE MARINE LABORATORY, SESSION OF 1896.

To the President of the Johns Hopkins University:

In accordance with your request, I beg leave to submit the following report of the sixteenth session of the marine laboratory.

A few of the graduate students in zoology determined, in the spring of 1896, to go to Jamaica to continue, at the sea-shore, researches which had been begun in Baltimore, and a small sum of money was intrusted to me by the Trustees of the University to aid them in their studies. This appropriation was used to pay the rent of a small house at Port Henderson on Kingston Harbor. This was occupied and used as a laboratory for three months, from April 29 to July 30.

While our party was small, our expedition was very successful, for we all secured abundant material for the prosecution of the researches for which the journey was made.

Mr. H. L. Clark, who had spent last winter studying the life-history of a viviparous Synapta, visited Jamaica in the hope of finding material to complete this work. He obtained it in abundance, and he is now engaged in preparing, for final publication, his work, of which abstracts have been printed in Jamaica and in Germany. (Notes on the Life-History of Synapta vivipara, Journal of the Jamaica Institute, III, 3, 1896, and The Viviparous Synapta of the West Indies, Zoologischer Anzeiger, No. 512, Sept. 14, 1896.)

Mr. F. S. Conant studied last winter a specimen, which we had obtained at Beaufort, of an order of medusæ, the Cubomedusæ, which is very rare, and he visited Jamaica in the hope that he might find more material, although Cubomedusæ are seldom met with. He found, in very great abundance, two species, both new, and one a representative of a new genus. He also found the eggs, and the early stages in the development of the larva, and he is now engaged in the preparation of a memoir on the Cubomedusæ.

I visited Jamaica in hope of an opportunity to review and revise my work on Lucifer, which was published fourteen years ago in the Philosophical Transactions of the Royal Society.

The great improvements which have been made in technical methods since this memoir was printed, made me wish to review the subject, and I

visited Jamaica in the hope of finding the specimens for this purpose. In this I succeeded, and, with the aid of Mr. M. T. Sudler, obtained an ample supply of eggs and larvæ at all stages.

I am now engaged in studying them, and I find that while there is nothing to correct in my earlier paper, there is much to add, and I hope to prepare a second memoir on the subject this year.

Yours Respectfully,

W. K. BROOKS,
*Director.*

October 1, 1896.

# REPORT CONCERNING THE MARYLAND GEOLOGICAL SURVEY.

To the President of the Johns Hopkins University:

I submit, at your request, the following report regarding the organization and work of the Maryland Geological and Economic Survey which was inaugurated by the last General Assembly. The bill was approved by the Governor March 19th, 1896, and is in full as follows:—

*A Bill*, entitled "An Act to establish a State Geological and Economic Survey, and to make provision for the preparation and publication of reports and maps to illustrate the natural resources of the State, together with the necessary investigations preparatory thereto."

*Section* 1. Be it enacted by the General Assembly of Maryland, That there is hereby established a State Geological and Economic Survey which shall be under the direction of a commission composed of the Governor, the Comptroller, the president of the Johns Hopkins University and the president of the Maryland Agricultural College, who shall serve without compensation, but shall be reimbursed for actual expenses incurred in the performance of their official duties; and the said commissioners shall have general charge of the survey, and shall appoint as superintendent of the same a geologist of established reputation, and upon his nomination such assistants and employes as they may deem necessary; and they shall also determine the compensation of all persons employed by the survey, and may remove them at pleasure.

*Sec.* 2. And be it enacted, That the survey shall have for its objects:

(1). An examination of the geological formations of the State, with special reference to their economic products, viz., building-stones, clays, ores and other mineral substances.

(2). An examination and classification of the soils and a study of their adaptability to particular crops.

(3). An examination of the physical features of the State with reference to their practical bearing upon the occupations of the people.

(4). The preparation of special geological and economic maps to illustrate the resources of the State.

(5). The preparation of special reports, with necessary illustrations and maps, which shall embrace both a general and detailed description of the geology and natural resources of the State.

(6). The consideration of such other scientific and economic questions as in the judgment of the commissioners shall be deemed of value to the people of the State.

*Sec.* 3. And be it enacted, That the commissioners shall cause to be prepared a report to the Legislature before each meeting of the same, showing the progress and condition of the survey, together with such other information as they may deem necessary and useful or as the Legislature may require.

*Sec.* 4. And be it enacted, That the regular and special reports of the survey, with proper illustrations and maps, shall be printed as the commissioners may direct, and that the reports shall be distributed or sold by the said commissioners as the interests of the State and of science demand, and all moneys obtained by the sale of the reports shall be paid into the State treasury.

*Sec.* 5. And be it enacted, That all material collected, after having served the purposes of the survey, shall be distributed by the commissioners to the educational institutions in such manner as to be of the greatest advantage to the educational interests of the State; or, if deemed advisable, the whole or a part of such material shall be put on permanent exhibition.

*Sec.* 6. And be it enacted, That the sum of ten thousand dollars annually, or so much thereof as may be necessary, is hereby appropriated out of any funds of the treasury not otherwise appropriated, for the purpose of carrying out the provisions of this Act.

*Sec.* 7. And be it further enacted, That this Act shall take effect from the date of its passage.

Upon March 25 the Commissioners met in the Executive Chamber of the State House at Annapolis, and appointed a State Geologist, "whose duty," in accordance with a resolution then adopted, "it will be to propose, and, with the authority of the Commission, to carry out, such measures as shall be requisite for fulfilling the requirements of the act by which the Survey is established." In pursuance of that resolution the State Geologist proceeded at once to organize the Survey. The offices granted by the Johns Hopkins University upon the third floor of its Front Building, were made ready for occupancy and properly equipped with the apparatus necessary for conducting the operations of the Survey. A corps of well-trained geologists was selected, including representatives of the Johns Hopkins University and of other institutions both within and without the State.

The investigations which have been carried on up to the present time may be classed under four heads. The first line of work has embraced a preliminary survey of the State, in which general information in regard to all mines, pits and quarries has been ascertained by a personal visit on the part of a member of the Survey. This work was carefully divided by districts, a properly equipped geologist being placed in charge of a single county or group of counties, as the case demanded. He frequently had associated with him one or more younger men who constantly reported to him. Specially prepared forms were submitted to the proprietor of every industry which had to do with the mineral resources of the State. These forms properly filled out and signed have been placed on file at the Survey offices.

While this general work has been going on throughout the State, a second line of special investigations upon the building and decorative stones has been in progress. Extensive collections of material and carefully prepared notes have been secured throughout the areas where these stones occur, and the specimens collected will be submitted to careful tests during the coming winter. It is planned to make an exhaustive study of the character, distribution and value of Maryland building and decorative stones. This work will be under the direction of Professor George P. Merrill, of the U. S. National Museum.

The third line of investigation has been a magnetic survey. Stations have been established at every county town in Maryland as well as at other points, while many of the early stations of the U. S. Coast and Geodetic Survey, in the vicinity of the Chesapeake Bay, have been re-occupied. The data furnished by these observations will be of immediate value to all land surveyors, while they will also serve for the more fundamental investigations connected with the location of the great rock masses within the State. This work has been under the direction of Dr. L. A. Bauer, of the University of Chicago.

The fourth line of work has been the preparation of topographical maps by co-operation with the U. S. Geological Survey. This work has been entirely carried on by the staff of the U. S. Geological Survey and has already resulted in the survey of several hundred square miles in the northern and northeastern sections of the State. The topographical work will be continued, by arrangements which have been perfected with the National Survey, until a suitable map of the State has been prepared.

Manuscripts for two reports are at the present time in process of preparation. The First Report will contain an historical statement concerning our knowledge of Maryland geology, combined with a complete bibliography; also an outline of the physical features and geology of the State illustrated by new and entirely revised hypsometric and geological maps; a history of Maryland rivers with especial reference to the development of the streams of the Piedmont plateau; and the results of the magnetic survey. The Second Report will contain an exhaustive discussion of the stone-quarrying industry, illustrated by numerous maps, diagrams, and views which will show the distribution, color, and texture of the various stones suitable for building and decorative purposes.

Much interest has been manifested in the investigations of the Maryland Geological Survey throughout the State and the members have been received at all points with marked courtesy. The press of the State especially has commented widely and often upon the work of the Survey and universally with a spirit of appreciation of the results already accomplished.

WM. BULLOCK CLARK,
*State Geologist of Maryland.*

# REPORT CONCERNING THE MARYLAND STATE WEATHER SERVICE.

To the President of the Johns Hopkins University:

I submit, in accordance with your request, the following report concerning the Maryland State Weather Service, for the past year.

The Maryland State Weather Service, which was organized in May, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College, and the United States Weather Bureau, has been carried on since the spring of 1892, by the same institutions, under authority granted by the Legislature of the State, which at the same time appropriated the sum of two thousand dollars annually for the expenses of the work. This amount, which is intended primarily to defray the cost of printing, admits of the publication of a large amount of data relating to the climate and physical features of the State.

Monthly Meteorological Reports, extending throughout the year, and Weekly Crop Bulletins, covering the growing and harvesting seasons, have been published. That these publications are appreciated by the people is evidenced by the hearty support they have given in rendering information in regard to the weather and the crops, and by the general and complete publication of reports by the newspapers of the State.

The biennial report to the last Legislature, published in February, 1896, and entitled "The Climatology and Physical Features of Maryland, Vol. II," is concerned largely with a review of the climate of the State, and contains both maps and tables which show at a glance the leading climatic features. This publication, which is distributed free, is in much demand by those seeking information in regard to the climatic features of Maryland.

During the year just closing a much more extended system of co-operation has been effected between the State and the National Services, by which the U. S. Weather Bureau promises to do far more for the study of the climatic features of Maryland than has been undertaken in the past. In order that this work may be the more effectively carried out, the Baltimore office of the U. S. Weather Bureau has been re-consolidated with the State Weather Service office and given much more commodious quarters in the Front Building of the University than it enjoyed earlier, when established in the Physical Laboratory. The larger quarters and equipment, together with the increased number of observers detailed by the U. S. Weather Bureau to the central office, will much increase the efficiency of the State work.

It is planned during the coming year to undertake several new lines of investigation upon Maryland climatology. Already hydrographic apparatus has been placed upon several of the Maryland rivers preparatory to a measurement and study of the relative out-flow of the Maryland streams as compared with the precipitation over the drainage basis. This latter work will be carried on in connection with the Hydrographic Division of the U. S. Geological Survey, and the results will be of much interest and value to the agricultural interests of the State.

The Commission representing the institutions above mentioned consists, in addition to the Director, of Professor Milton Whitney, of the Maryland Agricultural College, who serves as Secretary and Treasurer, and Mr. George E. Hunt, of the U. S. Weather Bureau, who serves as Meteorologist in charge. The other officials at the central office at the University are Dr. C. P. Cronk, J. Barry, E. C. Easton, Wm. R. Abbott, and F. S. Coale, all of whom are detailed by the U. S. Weather Bureau in Washington.

The past year has shown marked progress in the number of stations established and in the results of the work over previous years, and the above mentioned plans indicate a service of much increased efficiency in the immediate future.

WM. BULLOCK CLARK,
*Director of the Maryland State Weather Service.*

# ABSTRACT OF THE REPORT OF THE LIBRARIAN.

The number of bound volumes in the library is 79,926, the recorded increase during the year is 9481. Of this number 1356 were purchased, 5509 were presented, and 2616 volumes have been bound for the first time. The number of pamphlets and unbound volumes added during the year is about 6500. The serials regularly received exceed one thousand.

The principal accession during the year was the Dillmann collection of Oriental books, presented by Mr. G. W. Gail, of Baltimore. This collection consists of 2318 bound volumes and 2222 pamphlets, and is especially rich in works in Biblical philology and in Ethiopic. The collection has been arranged and catalogued by the library staff. The Oriental Seminary room has been furnished with new shelving for books and satisfactorily rearranged. The Semitic Library as a whole, now consists of about 4500 volumes,—and this department may be considered as well equipped with working books. The University is indebted to Father Goodwin, Fellow in the Semitic Languages, for his intelligent and painstaking assistance in the classification of the collection.

There has also been received from the widow of Professor Williams a considerable portion of his collection of geological books and pamphlets consisting of 511 bound volumes and about 1600 pamphlets. These have been suitably labelled and will be kept together in the "Williams Room" in the Geological Laboratory.

The University has also recently received, under the will of the late Henry Phillips, Jr., of Philadelphia, his collection of books and manuscripts. This collection contains 750 bound volumes and a number of pamphlets. Its most important features are collections in numismatics and in Spanish and Italian classical literature.

The bequest of Mr. Phillips reads as follows:—

"I give all my books, prints, MSS. &c., &c., except as otherwise provided for to the library of the Johns Hopkins University of Baltimore: the said books, &c., if practicable, to be kept together by themselves in a special portion of the library to be labelled and known as 'the Phillips Alcove;' such bequest to be indicated by a book plate inserted in such volumes designating my prior ownership."

The wish of Mr. Phillips has been complied with. A separate alcove has been constructed, and in the volumes received has been placed an

appropriate book plate. Henry Phillips, Jr. was born in Philadelphia September 6, 1838. He died June 6, 1895. He was the nephew of Henry M. Phillips, a well-known lawyer and citizen of Philadelphia. Since 1880, he has been secretary of the American Philosophical Society. He was the author of works on American Paper Currency; of several poetical translations from the Spanish, German, and Hungarian, and many miscellaneous papers in numismatics, archeology, and general literature. He was considered a leading authority in this country in numismatics.

Among other important gifts of the year are the following:

From Mr. Leopold Strouse, a sum of money to be expended by Professor Haupt in the purchase of Rabbinical books.

From Mr. J. H. Converse, of Philadelphia, the sum of one hundred dollars to be expended in the purchase of books in psychology.

From Mr. W. W. Spence, of Baltimore, the expensive and valuable series of the Jesuit Relations, now being reprinted.

From two anonymous benefactors, fifty dollars to be expended in acquiring books on municipal government.

From the American Academy of Arts and Sciences, a complete set of their Memoirs and ten early volumes of their Proceedings.

From Messrs. Henry Holt & Co., of New York, their publications for the year.

From Mr. S. P. Avery, some rare volumes of bibliographical and literary interest.

From Mrs. E. M. Greenway, Jr., a valuable collection of autographs.

From the family of the late Mr. Edmund Law Rogers (through Dr. K. F. Smith), about one hundred and fifty miscellaneous volumes.

From the Museum of La Plata, a dozen volumes of their sumptuously printed Annals, in folio.

A list of Gifts to the Library is appended. Among these, should be especially noted those received from Professor H. B. Adams, Professor A. Agassiz, Prince Albert of Monaco, the Geologische Landes-Untersuchungs-Commission of Alsace-Lorraine, the Augsburger Naturwissenschaftlicher Verein, President Gilman, Dr. S. A. Green, Professor Remsen, the Royal Geological Commission of Italy, Dr. R. de Saussure, and Mr. Russell Sturgis.

Our system of exchanges has contributed the usual large quota of the publications of the learned institutions of the world.

The geological collection has been greatly enriched by the accession of many memoirs and maps secured by gift or exchange, through the intervention of Professor Clark.

A map and chart room has been fitted up in the Geological Laboratory. Most of the maps and charts belonging to the University have been brought together there,—where they are well catalogued and arranged.

The staff of the General Library consists of Mr. Brandow, in charge of the general reading room, Mr. Miller, in charge of the periodicals, the

stack rooms, etc., a lady, in charge of the study room and of cataloguing, and a boy attendant.

The classical library has been in charge of Dr. C. W. E. Miller, under the supervision of Professor Gildersleeve.

The modern language collection has been in charge of Mr. Schmidt and a library attendant, under the supervision of Professor Wood.

The historical collection has been in charge of Miss Daran, under the direction of Professor Adams and Dr. Vincent.

The chemical library has been in charge of Dr. Gilpin, under the direction of Professor Remsen.

The biological library has been in charge of Dr. R. Hunt and a library attendant, under the direction of Professor Brooks.

The geological library has been in charge of Dr. Mathews, under the supervision of Professor Clark.

The medical library has been in charge of Miss Thies, under the supervision of Professor Hurd.

The astronomical library has been in charge of Mr. S. V. Hoffman.

The physical and mathematical seminary collection has been under the supervision of Professor Ames.

Detailed statements of expenditures for the library have been submitted separately.

During the year the New Book Department has purchased 4,500 volumes of the estimated value of $7,000. Since the opening of this department 86,000 volumes of the estimated value of $132,000 have been exhibited on its shelves.

N. MURRAY.

1896, November 1.

# ABSTRACT OF THE REPORT OF THE JOHNS HOPKINS PRESS.

The principal event of the year in this department was the establishment, under the editorial direction of Professor Welch, with the assistance of many collaborators, of the Journal of Experimental Medicine. The first volume is now completed. It contains 728 pages, large octavo, with thirty-six full page plates and seventeen figures in the text. It has been printed, in an admirable style, by Messrs. D. Appleton & Co., of New York, who are the publishers on behalf of the University. The journal may be considered the leading representative in America of advanced research in the medical sciences. It has met with a most gratifying reception from the leaders of the work in experimental medicine at home and abroad.

In December, 1895, the volume of Physiological Papers of Professor H. Newell Martin appeared. It contains two hundred and sixty-four pages with fifteen plates and other illustrations. The publication of this volume was made, on behalf of the friends and former pupils of Professor Martin, as a memorial of their appreciation of his scientific work here. The committee of publication were President Gilman, Professor Welch, and Professor Howell. The editorial work was undertaken by Professor Howell. Copies of the volume have been sent to the subscribers and to leading foreign physiologists.

A volume on the Southern Quakers and Slavery, by Dr. S. B. Weeks, has been issued as extra volume fifteen of the Studies in History and Politics. It contains four hundred and fourteen pages, octavo, with a map. This work has received much favorable comment in the critical reviews.

Of the Hebrew Text (Polychrome) Edition of the Old Testament, edited by Professor Haupt, the following parts have appeared during the year:—Joshua, by Professor W. H. Bennett, of London; Jeremiah, by Professor C. H. Cornill, of Königsberg; Psalms, by Professor J. Wellhausen, of Göttingen; and Chronicles, by Professor Kittel, of Breslau. Seven parts in all (both of the ordinary and the large paper edition) are now ready. In this connection, the gift of $3,000, by certain German citizens of Baltimore, to render possible the continuance of the publication of the large paper edition of this work, should be recorded.

A volume of Selections from the Early Scottish Poets, edited with introductory notes and glossary by Professor William Hand Browne, has just been issued. It contains two hundred and forty pages duodecimo.

The several regular journals have been continued during the year.

Volume seventeen of the American Journal of Mathematics edited by Professor Craig, with the coöperation of Professor Newcomb, has been completed, and two numbers of volume eighteen have appeared. The series of portraits of mathematicians was continued in this volume with the portrait of Professor Appell.

Of the American Chemical Journal, under the editorial direction of Professor Remsen volume seventeen has been completed and seven numbers of volume eighteen have been issued.

Of the American Journal of Philology, of which Professor Gildersleeve is the editor, volume sixteen has been completed and two numbers of volume seventeen have appeared.

Of the Studies in Historical and Political Science, edited by Professor Adams, six numbers of the thirteenth series and eight numbers of the fourteenth series and extra volume fifteen have been published.

Numbers 121–126 of the University Circulars have appeared during the year.

Part two of the third volume of the Beiträge zur Assyriologie, of which Professor Haupt is one of the editors, was issued.

The Twentieth Annual Report of the President of the University was issued in December 1895, and the Annual Register in April 1896.

The Press has continued in charge of the publications of the Johns Hopkins Hospital, viz: The Hospital Bulletin, appearing monthly; The Hospital Reports, appearing irregularly.

The Physiological Papers of Professor Martin, above referred to, were issued as the third volume of the Memoirs from the Biological Laboratory.

There have been received, in accordance with the regulations, one hundred and fifty copies of the theses accepted for the degree of Doctor of Philosophy from the graduates named below:

Anderson, J. N.—On the Sources of Ovid's Heroides I, III, VII, X XII.

Bascom, F.—The Ancient Volcanic Rocks of South Mountain, Pennsylvania.

Beyer, S. W.—The Sioux Quartzite and Certain Associated Rocks.

Chambers, A. D.—An Investigation of the Composition of Certain Oxides of Manganese.

Chandler, J. A. C.—Representation in Virginia.

Cooley, H. S.—A Study of Slavery in New Jersey.

Gorrell, J. H.—Indirect Discourse in Anglo-Saxon.

Gray, G. W.—The Chlorides of Paranitroorthosulphobenzoic Acid.

Grey, W. R.—The Treatment of Philosophy and Philosophers by the Greek Comic Poets.

Griffin, J. J.—On the Reaction of Ethyl and Methyl Alcohol with Paradiazometatoluenesulphonic Acid in the Presence of Certain Substances; and on Metatoluenesulphonic Acid.

Harrison, R. G.—The Development of the Median and Paired Fins of the Teleosts.

Hendren, S. R.—Government and Religion of the Virginia Indians.

Higbee, H. H.—The Double Halides of Antimony with Aniline and Toluidines.

Hollis, F. S.—A Further Investigation of the Chlorides of Paranitroorthosulphobenzoic Acid.

Hough, T.—On the Escape of the Heart from Vagus Inhibition.

Hunt, R.—The Fall of Blood Pressure resulting from the Stimulation of Afferent Nerves.

Jones, F. R.—History of Taxation in Connecticut, 1636–1776.

Maltbie, W. H.—On the Curve $y^m - G(x) = 0$, and its Associated Abelian Integrals.

Marden, C. C.—The Phonology of the Spanish Dialect of Mexico City.

McKee, S. R.—A Further Investigation of the Chlorides of Orthosulphobenzoic Acid.

McKenzie, R. M.—Some Double Chlorides of Ferric and of Ferrous Iron with Some Aromatic Bases.

Moore, H. L.—Von Thünen's Theory of Natural Wages.

More, L. T.—On the Changes in Length produced in Iron Wires by Magnetization.

Muckenfuss, A. M.—Some Transformations of Parasulphaminebenzoic Acid.

Riley, F. L.—Colonial Origin of New England Senates.

Saussure, R. de—Sur la Génération des Courbes par Roulement.

Shields, T. E.—The Effect of Odours, Irritant Vapours, and Mental Work upon the Blood Flow.

Sohon, M. D.—An Investigation of Some Derivatives of Orthosulphobenzoic Acid.

Sparks, F. E.—Causes of the Maryland Revolution of 1689.

Stevens, D. G.—A Critical Commentary on the Songs of the Return.

Tatnall, R. R.—The Arc-Spectra of the Elements.

Thomas, T. P.—The City Government of Baltimore.

The system of exchanges has been conducted as in previous years.

N. MURRAY.

1896, November 1.

# GIFTS TO THE LIBRARY.

ABERDEEN, UNIVERSITY OF. Catalogue of Library. Aberdeen, 1895. Q.

ABETTI, PROF. A. Six of his recent publications.

ADAMS, PROF. H. B. Massachusetts Historical Society, Proceedings. Boston, 1895. D.
Annual Report of the American Historical Association. Washington, 1895. O.
Five miscellaneous volumes.

AGASSIZ, PROF. ALEXANDER. Publications of the Harvard Museum of Comparative Zoology for the current year. 6 parts. Cambridge, 1895–6. Q and O.

AIX, UNIVERSITY OF. Six Academic Publications.

ALGIERS, UNIVERSITY OF. Three Academic Publications.

ALSACE-LORRAINE: GEOLOGICAL COMMISSION. Mittheilungen. Vols. I–IV and Maps. Strassburg, 1886. O.

ALVORD, HON. WILLIAM. San Francisco Municipal Reports for 1894–95. O.

AMERICAN ACADEMY OF ARTS AND SCIENCES. A complete set of their Memoirs and ten early volumes of their Proceedings.

ARCHER, DR. G. W. Papers and clippings relating to the history of Harford Co., Md.

ARON, J. (Author). Canada Transvaal. Paris, 1896. D.

AUGSBURG NATURWISSENSCH. VEREIN. Twenty vols. of their publications.

AVERY, S. P. Avery, B. P. Californian Pictures in Prose and Verse. San Francisco, 1885. O.
Briani Waltoni Biblicus Apparatus. Tiguri, 1753. F.
Milton, J. Paradise Lost, ed. T. Newton, 2d ed. 2 vols. London, 1750. O.
Paradisus Amissus, Poema Joannis Miltoni, Latine redditum a Guilielmo Dobson. Oxonii, 1750. Q.
Fuller, T. Historie of the Holy Warre. Cambridge, 1639. Q.
Le Temple des Muses. Amsterdam, 1742. F.
Roberti de Hampden Britannia, Lathmon, Villa Bromhamensis. Parmae, 1792. F.

AVERY, MR. AND MRS. S. P. AND THE TRUSTEES OF COLUMBIA UNIVERSITY.
Catalogue of the Avery Architectural Library. N. Y., 1895. F.

BABES, PROF. V. (Author). Die stellung des staates zur modernen bacteriologischen forschung. Rome, 1895. O.

BALDWIN, PROF. J. M. Princeton Contributions to Psychology. Princeton, 1896. O.

BASLE, UNIVERSITY OF. Eighty-one Academic Publications.

BAXTER, A. H. Scott, L. The Orti Oricellari. Florence, 1893. O.

BAYLEY, PROF. W. S. (Author). Three of his recent publications.

BERGEN MUSEUM, (NORWAY). Aarbog for 1893. Bergen, 1894. O.
Guldberg, G. and Nansen, F. On the Development and Structure of the Whale, 1. Bergen, 1894. F.

BERLESE, DR. A. (Author). Berlese, A. and Leonardi, G. La Cothylis Ambiguella. Firenze, 1896. O.

BERLIN: ROYAL LIBRARY. Jahres-Verzeichniss der an den Deutschen Universitäten erschienenen Schriften, X. Berlin, 1895. O.

BERLIN, UNIVERSITY OF. Two hundred and forty-eight Academic Publications.

BESANÇON, UNIVERSITY OF. Two Academic Publications.

BEYER, DR. H. G. Agassiz, L. Histoire naturelle des poissons d'eau douce de l'Europe centrale. Text and Atlas. Neuchatel, 1839–42. 2 vols. F and Q.

BIGELOW, MISS M. Ellis, G. E. Memoir of Jacob Bigelow. Cambridge, 1880. O.
BLOOMFIELD, PROF. M. Weber, A. Die Vajrasûci des Açvaghosha. Berlin, 1860. Q.
BODLEIAN LIBRARY. Anecdota Oxoniensia. 3 vols. 1895. O.
BONN, UNIVERSITY OF. Ninety-one Academic Publications.
BORNTRAEGER, GEBRÜDER. Die Litteratur des Jahres 1892 ueber Morphologie, etc. Berlin, 1895. O.
BREWER, W. W. & Co. (Publishers). Thayer, A. M. Jurisdiction of the Federal Courts. St. Louis, 1895. O.
BRIGHT, PROF. J. W. Six miscellaneous volumes.
BROOKS, PROF. W. K. Packard, A. S. First Memoir on the Bombycine Moths. 1895. Q.
BRÜNN: TECHNICAL HIGH SCHOOL. Katalog der Bibliothek. Brünn, 1893. Q.
BRYN MAWR COLLEGE. Franklin, S. B. Traces of Epic Influence in the Tragedies of Aeschylus. (Diss.). Baltimore, 1895. O.
BUCKLER, W. H. (Author). Contract in Roman Law (Yorke prize essay, 1893). London, 1895. D.
BULKLEY, DR. L. D. (Author). Sleep, in its relations to Diseases of the Skin. 1895. O.
BUTLER, N. (Author). The College Ideal and American Life. Portland, 1896. O.
CAEN, UNIVERSITY OF. Fourteen Academic Publications.
CAMBRIDGE UNIVERSITY PRESS, (ENGLAND). Cayley, A. Collected Mathematical Papers. Vols. 9 and 10. Cambridge, 1896. 2 vols. Q.
CANADA: DEPARTMENT OF AGRICULTURE. Report on Canadian Archives. (D. Brymner). Ottawa, 1896. O.
CANADA: GEOLOGICAL SURVEY. Annual Report with Maps. 2 vols. O and F.
CANADA: ROYAL SOCIETY. Proceedings and Transactions. Ottawa, 1895. O.
CARLSRUHE: TECHNICAL HIGH SCHOOL. Twelve Academic Publications.
CHESSIN, DR. A. S. (Author). Introduction into the Study of the Theory of Functions. MS. 1895–6.
Gillet, J. A. Elementary Algebra. N. Y., 1896. D.
CHIPMAN, DR. M. M. (Author). Government Forest Reservations. 1893. O.
CHOATE, HON. J. H. (Author). Oral Argument for Mrs. Stanford in U. S. *vs.* Jane L. Stanford. 1896. O.
CLARK, J. M. (Author). Functions of a Great University. Toronto, 1895. O.
CLERMONT-FERRAND, UNIVERSITY OF. Two Academic Publications.
COHEN, DR. S. S. Some Thoughts concerning Disease and Recovery, etc. 1896. O.
COLUMBIA COLLEGE. Contributions from the Observatory. N. Y., 1895. F.
Nine Academic Publications. 1896.
COMSTOCK, PROF. F. M. Mabery, C. F. Composition of the American Sulphur Petroleums. Phila., 1895. O.
CONANT, F. S. Darwin, E. Zoonomia. 3 vols. N. Y., 1796. O.
CONKLING, HON. A. R. New York at the World's Columbian Exposition. Albany, 1894. O.
Investigation of the Police Dept. of the City of N. Y. 5 vols. Albany, 1895. O.
CONVERSE, J. H. A gift of $100 to be expended in the purchase of books in Psychology.
COPE, PROF. E. D. (Author). Eight of his recent publications.
COPENHAGEN, UNIVERSITY OF. Sixteen Academic Publications.
CORNELL UNIVERSITY. Twenty Academic Publications.
COSTA RICA, DEPARTMENT OF PUBLIC INSTRUCTION. Annales del Instituto fisico-geografico. 3 vols.
Twenty-four miscellaneous pamphlets descriptive of Costa Rica. San José. O and Q.
COWEN, HON. J. K. Geologic Atlas of the United States.
CROCKER, U. H. (Author). Cause of Hard Times. Boston, 1896. S.
CURRY, HON. J. L. M. Carpenter, N. Geography delineated forth in two books. Oxford, 1625. D.
CUST, DR. R. N. (Author). Linguistic and Oriental Essays, 1847–87. London, 1887. O.
Three other volumes of his works.
DALL, W. H. (Author). Alaska as it was and is, 1865–95. Washington, 1895. O.

DAVENPORT ACADEMY OF NATURAL SCIENCES. Proceedings, 1893. Davenport, 1894. O.
Starr, F. Summary of the Archæology of Iowa. Davenport, 1895. O.
DAVIES, T. A. (Author). Gospel Christianity, [N. Y., 1896]. D.
DIJON, UNIVERSITY OF. Seven Academic Publications.
DODSWORTH, W. (Author). The Treasury Question, etc. N. Y., 1896. O.
DORIA-PAMPHILI, PRINCE A. Lettere di D. Giovanni d' Austria a D. Giovanni Andrea Doria, 1. Roma, 1896. Q.
DRESSER, H. W. (Author). The Perfect Whole. Boston, 1896. O.
DREW THEOLOGICAL SEMINARY. Alumni Record, 1869-95. N. Y., 1895. O.
ERLANGEN UNIVERSITY. Two hundred and thirty-eight Academic Publications.
FAY, PROF. E. W. (Author). Agglutination and Adaptation. Baltimore, 1895. O.
FERNALD, PROF. C. H. (Author). The Cambridae of North America, 1896. O.
FICKEN, HON. J. F. (Mayor of Charleston). Year Book of Charleston, 1895. O.
FIELD COLUMBIAN MUSEUM. Eight publications of the Museum. Chicago, 1895-96. O.
FLEETWOOD, MAJOR C. A. (Author). The Negro Soldier. Washington, 1895. O.
FRAAS, PROF. E. (Author). Die Schwäbischen Trias-Saurier. Stuttgart, 1896. F.
FRANKLIN, MRS. C. L. Carus, P. Primer of Philosophy. Chicago, 1896. D.
FREIBURG, UNIVERSITY OF. Eighty-six Academic Publications.
GAIL, G. W. The Dillmann Collection of Oriental Literature. (*See the report of the librarian.*)
GATSCHET, DR. A. S. (Author). Three of his recent publications. 1896. O.
GENEVA, FACULTY OF LETTERS. Pages d'histoire dédiées à M. P. Vaucher à l'occasion de la trentième année de son professorat. Genève, 1895. Q.
GIBBONS, PHEBE E. (Author). Pennsylvania Dutch, etc. Phila., 1882. D.
GIESSEN, UNIVERSITY OF. Forty-four Academic Publications.
GILMAN, PRES. D. C. A large number of miscellaneous volumes.
GLASGOW: FACULTY OF PHYSICIANS AND SURGEONS. Duncan, A. Memorials of the Faculty of Physicians and Surgeons of Glasgow. 1599-1850. Glasgow, 1896. Q.
GLASS, D. W. Three miscellaneous volumes.
GLENN, DR. W. Bowditch, N. Navigator. N. Y., 1851. O.
GOODENOW, REV. S. B. (Author). Bible Chronology. Chicago, 1896. O.
GÖTTINGEN, UNIVERSITY OF. One hundred and ninety-five Academic Publications.
GOULD, DR. E. R. L. (Author). Popular Control of the Liquor Traffic. Baltimore, 1895. D.
GREEN, DR. S. A. (Author). Four of his recent publications. 1896. O.
Twenty-eight miscellaneous pamphlets.
GREEN, Dr. S. S. (Author). The Scotch-Irish in America. Worcester, 1895. O.
GREENWAY, MRS. E. M. Two albums with valuable Autographs and Photographs.
Two Albums with Impressions of Seals and Autographs.
A miscellaneous collection of autographs.
E. M. Greenway. Words and their History. Baltimore, 1871.
GREIFSWALD, UNIVERSITY OF. One hundred and ten Academic Publications.
GRENOBLE, UNIVERSITY OF. Eight Academic Publications.
GROLIER CLUB. Catalogue of an Exhibition Illustrative of a Centenary of Artistic Lithography. N. Y., 1896. D.
GROSSMANN, DR. L. (Author). Two of his recent publications.
GRUETZNER, PROF. P. Thirteen of his recent publications.
HALLE, UNIVERSITY OF. One hundred and twenty-five Academic Publications.
HAMPDEN-COOK, E. (Author). Three of his recent publications.
HARVARD COLLEGE: ASTRONOMICAL OBSERVATORY. Annals. 8 vols. Cambridge, 1895. Q.
Fiftieth Annual Report of the Director. Cambridge, 1895. O.
HARVARD COLLEGE LIBRARY. Harvard Studies in Classical Philology. Vols. 6 and 7. Boston, 1895-96. 2 vols. O.
HASSAM, J. T. (Author). Dunster Papers. Cambridge, 1895. O.
Genealogies, The Hassam Family, Hilton Family, The Cheever Family. Boston, 1896. O.

HERTY, PROF. C. H. (Author). Mixed Double Halides of Platinum and Potassium. 1896. O.

HINRICHS, J. C. Das alte Freiburg im Breslau. Freiburg, 1895. D.

HOLDEN, PROF. E. S. Lick Observatory Atlas of the Moon, No. 1.

HOLMES, DR. D. H. (Author). Index Lysiacus. Baltimore, 1895. Q.

A Study of the Type of the Greek Epitaphios. Lawrence (Kansas), 1896. O.

HOLT, H. & Co. (Publishers). Thirty-nine of their publications. 1895-96.

HOWARD ASSOCIATION, (LONDON). Tallack, W. Penological and Preventive Principles, 2d ed. London, 1896. O.

HUEPPE, PROF. F. (Author). Einführung in die Bakteriologie. Wiesbaden, 1896. O.

HUMPHREY, DR. J. E. Murray, G. Introduction to the Study of Seaweeds. London, 1895. D.

ILLINOIS: GEOLOGICAL SURVEY. Report. Vol. 8. Springfield, 1890. 2 vols. Q.

ILLINOIS STATE MUSEUM OF NATURAL HISTORY. Bulletins. Springfield, 1894-96. Q.

INDIANA STATE MEDICAL SOCIETY. Transactions. Indianapolis, 1895. O.

INTERNATIONAL DEEP WATERWAYS ASSOCIATION. Proceedings, Annual Convention. Cleveland, 1895. O.

IOWA GEOLOGICAL SURVEY. Annual Report, vol. 5, 1895. Des Moines, 1896. Q.

ITALY: MINISTER OF AGRICULTURE, INDUSTRY AND COMMERCE. Istruzione secondaria classica e tecnica. Roma, 1896. Q.

Statistica della emigrazione Italiana. Roma, 1896. Q.

Statistica delle biblioteche. Roma, 1896. Q.

Statistica giudiziaria civile e commerciale. Roma, 1896. Q.

ITALY: MINISTER OF PUBLIC INSTRUCTION. Le Opere di Galileo Galilei. Vol. 5. Firenze, 1895. Q.

Indici e Cataloghi. 3 vols. Roma, 1896. O.

ITALY: ROYAL GEOLOGICAL COMMISSION. Nine volumes of Memoirs and five supplemental series of maps and charts.

JACK, R. L. (Author). Jack and Etheridge. Geology and Paleontology of Queensland and New Guinea. Brisbane, 1892. 2 vols. and maps. O.

Submarine Leakage of Artesian Water. 1896. O.

JAMES, PROF. E. J. (Author). Seven of his recent publications. O.

Harley, L. R. History of the Public Education Association of Phila. Phila., 1896. O.

JAMES, F. H. (Author). The Foundations of Religion [in Chinese]. Shanghai. 1894. 2 vols. O.

JAMESON, PROF. J. F. Papers from the Historical Seminary of Brown University. Vols. 6 and 7. Providence, 1896. O.

JENNESS, C. K. (Author). The Charities of San Francisco. San Francisco. 1894. O.

KANSAS ACADEMY OF SCIENCE. Transactions, Vol. 14. Topeka, 1896. O.

KANSAS HISTORICAL SOCIETY. Transactions, Vol. 5. Topeka, 1896. O.

KANSAS, UNIVERSITY OF. Haworth, E. University Geological Survey of Kansas. Vol. 1. Topeka, 1896.

KERALLAIN, R. DE. Les Français au Canada: La jeunesse de Bougainville, etc. Paris, 1896. O.

KEYES, DR. C. R. Missouri Geological Survey. Annual Report for 1894. Q.

KÖNIGSBERG, UNIVERSITY OF. Forty-five Academic Publications.

LACKAWANNA INSTITUTE OF HISTORY AND SCIENCE. Nine of their recent publications.

LAPLATA (ARGENTINE REPUBLIC) MUSEUM. Annals. 12 vols. F.

LEANDER MCCORMICK OBSERVATORY. Publications. University of Va., 1896.

LEHIGH UNIVERSITY. Brown, T. M. Educational Value of Engineering Studies. 1895. O.

LEYDEN, UNIVERSITY OF. Seven Academic Publications.

LESLIE, A. VON W. (Author). Was Swift married to Stella? Halle, 1895. O.

LICK OBSERVATORY. Contributions, No. 5. Sacramento, 1895. O.

LILLE, UNIVERSITY OF. Fifty-four Academic Publications.

LIVERPOOL BIOLOGICAL SOCIETY. Proceedings and Transactions. Liverpool, 1895. O.

LLOYD, C. G. Photogravures of Fungi.
LONDON CLINICAL SOCIETY. Transactions, Vols. 28 and 29. London, 1895. O.
LUND, UNIVERSITY OF. Twenty-three Academic Publications.
LYMAN, B. S. (Author). Two of his recent publications. Phila., 1895. O.
LYONS, UNIVERSITY OF. One hundred and fifty Academic Publications.
MCCLURE, S. S. (Publisher). Tarbell, I. M. Early Life of Abraham Lincoln. N. Y., 1896. O.
MCCORMICK, C. H. Hubert, P. G., Jr. Inventors. N. Y., 1896. O.
MACDONALD, DR. A. (Author). Neuro-social Data. O.
MCLANE, R. M., JR. (Author). Hodge, W. L. and McLane, R. M., Jr. Law of Attachment in Maryland. Baltimore, 1895. O.
MARBURG, THEODORE. (Author). The World's Money Problem, Part I. Baltimore. 1896.
Mills, L. H. (Editor). The Five Zoroastrian Gathas. 1894. Q.
MANCHESTER GEOGRAPHICAL SOCIETY. Seven volumes of their Journal. O.
MARSEILLES FACULTY OF SCIENCES. Les Annales de la Faculté. 4 numbers. Q.
MARYLAND SOCIETY OF COLONIAL WARS. Annual Register. N. Y., 1896. O.
MARYLAND SOCIETY OF SONS OF THE REVOLUTION. Year Book. Baltimore, 1896. Q.
MASSACHUSETTS, BUREAU OF STATISTICS OF LABOR. Reports. 6 vols. Boston, 1881–95. O.
Statistics of Manufactures, 6 vols. Boston, 1889–95. O.
MASSACHUSETTS, SECRETARY OF THE COMMONWEALTH OF. Acts and Resolves of the Province of Massachusetts Bay. Vol. 8. Boston, 1895. Q.
MASSACHUSETTS HISTORICAL SOCIETY. Ellis, G. E. and others. Siege and Evacuation Memorial (Boston, 1776). Boston, 1876. Q.
Twenty-four miscellaneous publications of Rev. G. E. Ellis, D.D.
METROPOLITAN MUSEUM OF ART. Annual Reports from 1871 to 1894. N. Y. O.
MICHIGAN BUREAU OF LABOR AND INDUSTRIAL STATISTICS. Annual Reports. 3 vols. O.
Michigan Factory Inspection. Three annual reports. O.
MICHIGAN STATE LIBRARY. Michigan Pioneer and Historical Collections. 2 vols. Lansing, 1895. O.
Joint documents of the State of Michigan for 1893. Lansing. O.
MICHIGAN, UNIVERSITY OF. Dixon, F. H. State Railroad Control. N. Y., 1896. D.
MISSOURI GEOLOGICAL SURVEY. Annual Report, Vol. 8. Jefferson City, 1895. Q.
Winslow, A. Lead and Zinc Deposits. 2 vols. Jefferson City, 1894. O.
MONACO, S. A. LE PRINCE ALBERT I. DE. Sur la deuxième campagne scientifique de la Princesse Alice. (Continuations). 1895. Q.
MONROE, W. S. (Author). Educational Museums and Libraries of Europe. 1896. O.
MONTPELIER, UNIVERSITY OF. Ninety-six Academic Publications.
MOSSO, PROF. A. (Author). Two of his recent publications. O.
MOSSO, PROF. U. (Author). Four of his recent publications.
MÜNSTER, UNIVERSITY OF. Seventeen Academic Publications.
MURGUIONDO, P. DE. Figueira, J. H. Los primitivos habitantes del Uruguay. Montevideo, 1894. Q.
MURRAY, S. (Author). The Goulburn Weir and its dependent system of works. Melbourne, 1893. F.
NANCY, UNIVERSITY OF. Nineteen Academic Publications.
NAVAL WAR COLLEGE, PRESIDENT OF. Snow, F. International Law. Washington, 1895. O.
NEAL, L. American Pharmaceutical Association Proceedings. 14 vols. Phila., 1858–73. O.
NETHERLANDS ZOOLOGICAL SOCIETY. Compte-rendu des séances du troisième Congrès International de Zoologie. Leyden, 1896. Q.
NEW JERSEY GEOLOGICAL SURVEY. Annual Report for 1894. Trenton, 1895. O.
Geological Map of the Valley of the Passaic.
NEWMAN, K. (Author). Kosto komparatibo en Chile del gas i de la elektrizidad. Santiago, 1896. O.
NEW SOUTH WALES GOVERNMENT BOARD FOR INTERNATIONAL EXCHANGES. Historical Records of New South Wales. Vol. 3. Sydney, 1895. O.

NEW YORK BOARD OF ALDERMEN. Seventeen official publications. N. Y., 1883-96. O.

NEW YORK LIFE INSURANCE COMPANY. Hudnut, J. M. History of the New York Life Insurance Co. (1845-95). N. Y., 1895. O.

NEW YORK STATE LIBRARY. Official Publications of the State. O.

NOBLE, DR. C. P. (Author). Ten of his recent publications. O and D.

NOVA SCOTIA HISTORICAL SOCIETY. Collections. Vols. 8 and 9. Halifax, 1895. O.

NOVA SCOTIAN INSTITUTE OF SCIENCE. Proceedings and Transactions. 6 vols.

OBERLIN COLLEGE LIBRARY. Jones, J. Bird Migration at Grinnell (Iowa) and Oberlin (O). 1895. O.

Dickinson, E. History of Church Music. Oberlin, 1896. D.

Annual Reports and Library Bulletins.

OHIO STATE ARCHÆOLOGICAL AND HISTORICAL SOCIETY. Fowke, G. Notes on Ohio Archæology. O.

PADUA, UNIVERSITY OF. Onoranze Centenarie a Galileo Galilei, (1892). Padua, 1896. Q.

PARIS FACULTY OF LAW. Seventy-nine Academic Publications.

PARIS, UNIVERSITY OF. Six hundred and thirty Academic Publications.

PARKMAN CLUB. Publications of the Club. Milwaukee, 1896. O.

PENNSYLVANIA STATE LIBRARY. Fifty volumes of official publications.

PIERCE, G. W. (Author). My Sound Speed Discovery. 1895. O.

PIETTE, E. (Author). Hiatus and Lacune. Beaugency, 1895. O.

PHILLIPS, HENRY, JR. The Library of Mr. Phillips. (*See the report of the librarian.*)

POITIERS, UNIVERSITY OF. Six Academic Publications.

PRINCETON COLLEGE. Farrand, M. The Legislation of Congress for the Government of the Organized Territories. Newark, 1896. O.

PROVIDENCE RECORD COMMISSIONERS. Early Records. Vol. 10. Providence, 1896.

RADCLIFFE OBSERVATORY. Astronomical and Meteorological Observations. Oxford, 1896. Q.

RANDOL, J. B. Knox and Osborn *vs.* Quicksilver Mining Company. 1880. 2 vols.

REMSEN, PROF. I. Eleven volumes of recent chemical publications.

RENNES, UNIVERSITY OF. Four Academic Publications.

RILEY, F. L. (Author). Colonial Origins of New England Senates. Baltimore, 1896. O.

RIO DE JANEIRO, OBSERVATORY OF. Annuario. 1891 and 1896.

ROGERS, E. L., FROM THE HEIRS OF THE LATE. One hundred and sixty miscellaneous volumes, principally government reports.

Copies of the "Baltimore Sun," issued during the Civil War.

Eight wall maps of Baltimore and vicinity.

ROYAL ASTRONOMICAL SOCIETY. Memoirs. Vol. 51. London, 1895. Q.

General Index to Vols. 30-52 of the Monthly Notices. London, 1896. O.

ROYAL HISTORICAL SOCIETY. Transactions, new series, Vol. 9. London, 1895. O.

ST. PETERSBURG, UNIVERSITY OF. (Oriental Faculty). Oriental Essays. St. Petersburg, 1896. F.

SANCHEZ, A. (Author). La Cornoide. San Salvador, 1895. O.

SANTIAGO DE CHILE, LIBRARY OF THE NATIONAL INSTITUTE. Biblioteca peruana. Santiago, 1896. Q.

SAUSSURE, DR. R. DE. Saussure, H. B. de. Voyages dans les Alpes. 8 vols. Neuchatel, 1796-1803.

SCHIFF, JACOB H. Flügel, M. The Messiah Ideal. 2 vols. Baltimore, 1896. O.

SLOCUM, PRES. W. F. Ethical Problem of the Public Schools. 1894. O.

SMITH, E. S. Macquer. Dictionary of Chemistry. 3 vols. London, 1717. O.

SOUTH AFRICA GEODETIC SURVEY. (J. Templer Home, Surveyor General). Report of Dr. D. Gill on Colonel Morris' Geodetic Survey of South Africa.

SPANISH LEGATION AT WASHINGTON. Spanish Rule in Cuba. N. Y., 1896. O.

SPENCE, W. W. The series of Jesuit Relations and Allied Documents, as published. (Text and translation.) Cleveland. O.

STAVANGER MUSEUM, (NORWAY). Aarsberetning. Stavanger, 1895. O.

STICKNEY, G. P. (Author). Nicholas Perrot. 1896. O.

STOKVIS, PROF. B. J. (Author). La colonisation et l'hygiene tropicale. Paris, 1896. O.

STROUSE, L. A sum of money to be expended by Professor Haupt in the purchase of Rabbinical books.

STURGIS, RUSSELL. (Author). European Architecture. N. Y., 1896. O.

SWEDISH ACADEMY OF SCIENCES, ROYAL. Current publications, also sixteen early volumes to aid in completing set.

SYDNEY, UNIVERSITY OF. Reprints of papers from the Science Laboratories. Sydney, 1896. O.

THOMAS, DR. J. C. (Author). A collection of his published pamphlets.

TOULOUSE, UNIVERSITY OF. Eighty-eight Academic Publications.

TÜBINGEN, UNIVERSITY OF. Forty-six Academic Publications.

TUNISON, J. S. (Author). The Sapphic Stanza. Granville (O). 1896. O.

TYPOTHETÆ OF THE CITY OF NEW YORK. Catalogue of library. N. Y., 1896. O.

UGHETTI, PROF. G. B. (Author). Azione del curare e della cocaina, etc. Q.

UHLER, DR. P. R. Publications of the Peabody Institute.

UPSALA, UNIVERSITY OF. Sixty-one Academic Publications.

UTRECHT, UNIVERSITY OF. Thirty-seven Academic Publications.

VERY, F. W. (Author). Photometry of a Lunar Eclipse. Chicago, 1895. O.

VIENNA, UNIVERSITY OF. Five Academic Publications.

VOS, DR. B. J. Reye, T. Géométrie de Position. Paris, 1881–82. O.

WAGNER FREE INSTITUTE OF SCIENCE. Transactions. Phila., 1896. Q.

WALTON, J. Minutes of the Yearly Meeting of Friends in Phila. 2 vols. O.

WASHBURN OBSERVATORY. Publications. Madison, 1885–95. 2 vols. O and Q.

WHITEHOUSE, F. (Author). [Oldboy, F.] Walks in our Churchyards. N. Y., 1896. D.
The Redemption of the Body. London, 1892. O.

WILLIAMS, MRS. G. H. A Collection of Geological Works. (*See the report of the librarian.*)

WILSON, G. (Author). Financial Philosophy. Chicago, 1895. D.

WILSON, W. P. Contributions from the Zoological Laboratory of the University of Penna., Vol. 1, No. 2. Phila., 1895. O.

WINSLOW, REV. W. C. (Author). Governor Edward Winslow. N. Y., 1896. O.

WISCONSIN STATE HISTORICAL SOCIETY. Collections and Proceedings. 3 vols. O.

WISTAR, E. M. "Good Government" for 1896.

WOODS HOLL MARINE LABORATORY. Reports. I–VII. Boston, 1889–96. O.

WÜRZBURG, UNIVERSITY OF. One hundred and fifty-eight Academic Publications.

YALE UNIVERSITY ASTRONOMICAL OBSERVATORY. Transactions. New Haven, 1896. Q.

YALE UNIVERSITY LIBRARY. Biographical Sketch of Graduates (F. B. Dexter). Vol. 2. N. Y., 1896. Q.

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Reports and other current publications of the year have also been received from the societies and institutions named below. This does not include catalogues, reports, etc., received in regular exchange.

American Association for the Advancement of Science; American Bar Association; American Bible Society; American Board of Commissioners for Foreign Missions; American Climatological Association; American Colonization Society; American Forestry Association; American Historical Association; American Humanitarian League; American Institute of Mining Engineers; American Microscopical Society; American Museum of Natural History in New York City; American Orthopedic Association; American Society of Heating and Ventilating Engineers; Atlanta Board of Education; Baltimore City Library; Baltimore Corn and Flour Exchange; Baltimore Commissioners of Public Schools; Baltimore Health Department; Baltimore Young Men's Christian Association; Boston Board of Overseers of the Poor; Boston Museum of Fine Arts; Boston Public Library; Boston Record Commissioners; Bowdoin College; Brooklyn Library; Brooklyn Superintendent of Public Instruction; Buffalo Historical Society; Buffalo Library; California, University of; Cambridge (Mass.) Public Library; Carnegie Free Library; Chicago Academy of Sciences; Chicago Department of Public Works; Chicago Public

Library; Cincinnati Chamber of Commerce; Cincinnati Museum Association; Cincinnati Public Library; Cleveland Public Library; Compagnie Utrecht; Connecticut Agricultural Experiment Station; Connecticut Bureau of Labor Statistics; District of Columbia Health Officer; District of Columbia Public Schools; Enoch Pratt Free Library; Fletcher Free Library; Forbes Library; Friends Free Library (Germantown, Pa.); Glasgow, University of; Harvard Law School Association; Hebrew Technical Institute; Indian Rights Association; Iowa Superintendent of Public Instruction; Jersey City Free Public Library; Jewish Hospital Association of Philadelphia; Jewish Theological Seminary Association (New York); Kansas Board of Railroad Commissioners; Liverpool Public Libraries; Los Angeles Public Library; McGill University; Maimonides Free Library; Maryland Prisoners' Aid Association; Maryland School for the Deaf and Dumb; Mason College; Massachusetts Agricultural College; Massachusetts Board of Education; Massachusetts Board of Railroad Commissioners; Massachusetts Gas and Electric Light Commissioners; Massachusetts Humane Society; Massachusetts State Board of Health; Massachusetts State Board of Lunacy and Charity; Melbourne, University of; Michigan Department of State; Milwaukee Public Library; Milwaukee Public Museum; Minneapolis Public Library; Missouri Botanical Garden; Missouri, University of; Newark Free Public Library; Newberry Library; New England Society in the City of Brooklyn; New England Society in the City of New York; New Hampshire State Library; New Jersey Bureau of Statistics; New Jersey State Charities Aid Association; New Jersey State Library; Newton Free Library; New York Chamber of Commerce; New York Forest Commission; New York Free Circulating Library; New York Mercantile Library; New York Society of Mechanics and Tradesmen; New York State Charities Aid Association; New York State Colonization Society; New York State Meteorological Bureau; Ohio Mechanics' Institute; Ohio State Conference of Charities and Correction; Ontario Agricultural College; Ontario Department of Education; Panjab University; Peabody Education Fund; Perkins Institution; Philadelphia College of Physicians; Philadelphia Library Company; Philadelphia Mercantile Library; Providence Athenæum; Providence Public Library; Reformed Church Board of Publication; Rhode Island Commissioners of Industrial Statistics; Rochester, University of; St. Louis Free Public Library; St. Louis Mercantile Library; Salem Public Library; San Francisco Free Public Library; San Francisco Mechanics' Institute; San Francisco Mercantile Library; Smithsonian Institution; Springfield City Library Association; Syracuse Central Library; Toronto, University of; Turin, University of; Union League Club (N. Y.); Victoria (Australia) Department of Mines and Water Supply; Victoria Public Library and Museums; Victoria University (Manchester, Eng.); Wisconsin Agricultural Experiment Station; Wisconsin Natural History Society; Wisconsin Treasury Department; Worcester (Mass) Free Public Library.

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The University is indebted, as in previous years, for many and valuable gifts from the several Governmental Departments in Washington.

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# RETROSPECT OF TWENTY YEARS.

1876-1896.

# A SURVEY OF THE RESOURCES OF THE JOHNS HOPKINS UNIVERSITY IN 1896.

The completion of a period of twenty years of actual instruction suggests a review of the work which the University has accomplished since its inception. It is a favorable time, also, to consider some of the characteristics of this foundation, and to take an account of its material possessions. Its maintenance and enlargement depend upon the good-will and liberality of the people among whom it has been placed, and of those at a distance who may appreciate its national influence. Generous gifts have recently been made to its treasury by citizens of Baltimore, and, it is believed, that others are contemplated. For the information of those who have given and of those who may give, and for the encouragement of those who have earnestly endeavored to establish a strong institution, the following statements have been prepared.

## A Glance at the Past.

*The Problem Stated.* When the Johns Hopkins University was opened, many people, afar and near, regretted that another college was founded. They saw no reason for it. Baltimore had its City College. The State of Maryland had St. John's. North and South were institutions which for years had been favorite places for the education of Maryland youth. No demand had been shown by the people for any departure from

the ancient land-marks. All was quiet. There were, however, a few persons who believed that it was possible to establish a new institution upon a new plan. They saw (or thought that they saw) the educational requirements of this country; and they desired to supply those wants without entering into competition with other foundations. It was their purpose to enlarge the resources of American scholarship. They believed that the funds at command, if rightly employed, might give a strong impetus to learning and culture,—first in Baltimore, then in Maryland and the other Southern States, and, at length, throughout the entire land. Such aspirations were not quickly understood. They were received in certain quarters with incredulity; elsewhere with chilling curiosity; and occasionally with open hostility or avowed indifference. But those who were in charge had the courage of their convictions. They knew what strong desires were already manifested, in every part of the country, by young men of talents and ambition, for the opportunities of "university" education as distinct from "college" discipline; and, adding to this knowledge faith, the management announced its modest programme, very simple and unostentatious, and as modern as it was modest, but including (as was then believed) the germs of life and strength. Support of the heartiest character came at once from men of the highest distinction, Europeans and Americans. Counsel freely sought was freely given. The Baltimore methods came under discussion in distant circles, and, ere long, not a few of these methods were introduced or imitated elsewhere,—in many cases with the most generous words of recognition and approbation from men of science and letters. Timid observers were at first afraid that a seat of learning which bore no ecclesiastical character, might be ad-

verse to religion, but they soon discovered how groundless were these apprehensions. The best answer to such objections was found in the character of the young men who pursued their studies here, and in the readiness with which the teachers 'lent a hand' in the advancement of all the highest interests of the community.

In those early days, the dominant note was "the University," as a place where youth, properly trained by a long course of discipline for intellectual freedom, might be aided, by teachers, instruments, and books, to pursue advanced courses of study, and thus to become fitted for the traditional professional life, for professorships of science or literature, and for other callings which are based upon high intellectual attainments. But the College idea was never forgotten, and arrangements were made from the beginning to provide for the wants of those who might wish to pursue, in this place and under these circumstances, their undergraduate training.

*Characteristics of the Institution.* In looking over the history of this institution during the past twenty years, it is evident that the effort has been made to preserve the traditions and experience of the past, so far as they could be made useful in our day; and, at the same time, to accept with the utmost heartiness the newer methods which have been devised in modern times in every country that is distinguished for its promotion of knowledge. Thus the ancient classics, the Semitic tongues, comparative philology, and history have been prominent subjects of instruction among us; and, at the same time, all the newer sciences have been freely welcomed, and have received as much encouragement as was compatible with the limited resources at our command. From the beginning,

the introduction of what may be termed the methods of the laboratory and the methods of the seminary has been fruitful. The close relations between the teachers and their pupils, which must exist in a laboratory or seminary, have tended to enforce the value of personal guidance and inspiration. Among the more advanced students, the formation of reading clubs for the scrutiny of scientific periodicals and for the consideration of new books has likewise proved to be a most efficacious method of instruction. Many special associations in which the faculty and students have taken part,—for example, scientific, philological, historical, philosophical, archæological, mathematical, etc.,—have been steadily maintained.

At the same time, the value of well-prepared lectures has not been under rated, and, in addition to those that have been offered by the members of our own staff, a large number have been given by eminent men from other colleges in this country and from foreign lands. The examination of the list of these lecturers, elsewhere given, will show the variety of subjects thus brought forward; but it cannot give any idea of the impulse to scholarship which has been afforded by the presence of such men. It is true that some of them have delivered but a single lecture; but, in many cases, the lecturers have come year after year, and some of the courses have included twenty or thirty lectures. Especially noteworthy was the presence of Lord Kelvin in 1884, and the company of "coefficients" who were gathered around him, during the four weeks in which he remained in Baltimore. Of like value was the presence of Professor Cayley, the illustrious mathematician of Cambridge, England, who spent several months among us, during the time when Professor Sylvester held his professorship. On the literary side, it is especially pleasant to remember the lectures

of James Russell Lowell, Francis J. Child, Sidney Lanier, William D. Whitney, and others of great distinction.

The importance of acquiring a knowledge of French and German has been emphasized from the beginning. This has not been because it is supposed that these languages afford any better intellectual discipline than Greek or Latin, but because a knowledge of French and German is, in these days, essential to a liberal education. Every progressive student must keep abreast of the investigations that are in progress in other parts of the world, and he cannot do this without a reading knowledge of those modern languages which embody the thoughts of the leaders of our day. No one is here permitted to receive the degree either of a bachelor or of a doctor, without giving evidence, by examination or otherwise, that he has sufficient knowledge of these two languages to read them at sight. At the same time, manifold courses have been provided for the instruction of those who wish to go forward in any branch of Teutonic or Romance philology. As a consequence of these arrangements, the advanced students generally, and, to some extent, the undergraduates, are accustomed to make use of French and German books in the prosecution of their studies.

When this University was organized, the distinction between the appropriate work of a college and the appropriate work of a university was very much obscured in this country. An unfortunate nomenclature was current. On the one hand, some of the feeblest and humblest schools in the country bore the highest titles; and, on the other hand, not a few of those institutions which were most distinguished for their learning, their comprehensiveness, and their wealth, retained the simple title of a college. Moreover, the usage was

established of admitting to the professional schools of law, medicine, and theology, pupils who had received no college training; the cases were by no means infrequent in which young men, who were unable to pass the entrance examination of a respectable college, went over without examination to a school of medicine or law, and at the end of two or three years were admitted, far in advance of their undergraduate comrades, to all the rights and dignities of a learned profession.

It was under these circumstances that the Johns Hopkins University recognized the freedom which was given to it by a large fund, a simple charter, and an open field, to determine that within its walls a sharp distinction should be made between the work of a college and the work of a university. The college was essentially a place for intellectual and moral discipline. Its methods were positive and didactic. Its regulations were imperative. Its examinations were strict and frequent. The university, on the other hand, was intended for those who had undergone a period of collegiate discipline, whose intellectual habits were formed, who had acquired exact knowledge, who had learned how to study. It was the theory of the institution that a collegiate training was valuable to everybody who could secure it, whether he expected to enter at its close upon the active pursuits of business, or preferred to go forward in some course of higher study. At the same time, it was clearly seen that many of those who had received baccalaureate diplomas, might be so deficient in the studies to which they proposed to devote their lives, that they must take one or more years of undergraduate work among us. This is true particularly in what may be called the studies of the laboratory. There are large numbers of institutions in this country that can give what may be termed a book-knowledge

of physics, chemistry, or natural history; it is only the best endowed institutions that can make arrangements for the guidance of students in practical work.

Great freedom has been allowed to the students of this University in selecting their courses of study. At the same time, this freedom has been constantly controlled by the advice of the instructors, and, whenever the student has been a candidate for a degree, by the general regulations of the Faculty. Thus, among the undergraduates, seven groups of studies may be followed, each having a distinct character; but when a candidate elects his group, he must adhere to it, and must take the subjects that it includes, unless for some good reason the Faculty allow a modification. So, among the graduates, any qualified person may pursue for a longer or a shorter period any course that he may select; but, in case he wishes to take the degree of Doctor of Philosophy, he must select three related subjects, to one of which he devotes his principal energy, while he attains proficiency in the other two as subordinates. By these arrangements, the mind of the student is kept fixed on certain definite objects to be attained by this course of study, while at the same time he is prevented from becoming narrow, partly by the variety of topics included in his group, and partly by the opportunities open to him for attendance upon lectures and for the free use of books and periodicals.

There has been no attempt to discriminate between the value of science and of letters. Every candidate for the baccalaureate degree has been required to attain some proficiency in Latin, German, French, English, History, and Philosophy, and also to pursue, for one year at least, some branch of science which involves prolonged attendance and effort in a scientific

laboratory. The requirements for entrance upon the scientific courses have been just as rigid as for the other groups, and the same degree has been given at the close. The authorities have endeavored to give a liberal education to every one who was in training for the degree of Bachelor of Arts, and to encourage all over whom they had an influence, to take this degree before proceeding to professional or technical studies. They have accordingly encouraged undergraduate students to enter this University at a younger age than is usual elsewhere, in order that the recipients of the B. A. degree might find time for one or more years of advanced study in the philosophical department of the University, or might proceed to the schools of law, medicine, and theology at a somewhat earlier age than is now common.

A few additional words seem called for in respect to seminaries. The earliest of these organizations was devoted to the study of Greek. Every day through the academic year the Professor of Greek has been accustomed to meet a group of twenty or thirty college graduates, seated round a table, at the head of which his chair was placed, in the presence of the books which pertained to the particular author that was under discussion, and in close proximity to a library to which the class at other hours had the freest access. Each year a different subject was taken up,—it might be the Greek historians, the Greek orators, the Greek dramatists, or the Greek philosophers. Sometimes by a lecture, sometimes by questioning, sometimes by current comment, sometimes by the production of essays, the study of Greek was carried forward.

The methods thus introduced have been followed in subsequent years in the seminaries of the Semitic Languages,

Sanskrit and Comparative Philology, the Romance Languages, the Germanic Languages, and English.

## The Subjects of Instruction.

Since the opening of the University, in October, 1876, the staff has increased from twenty-nine teachers to one hundred and ten, and instruction is now provided in the following subjects:

### *I. Philosophical Department.*

Greek.
Latin.
Hebrew and other Semitic languages.
Sanskrit and Comparative Philology.
English, including Anglo-Saxon, Early, Middle, and Later English.
German and other Teutonic languages.
French, Italian, Spanish, and other Romance languages.
Historical and Political Science, and Institutional History.
Economics.
Philosophy, including Logic, Ethics, and Psychology.
Mathematics, Pure and Applied.
Astronomy.
Physics, including Applied Electricity.
Chemistry.
Geology and Mineralogy.
Biology, including Physiology, Morphology, and Botany.
Pathology, including Bacteriology.

The number of professors and their associates, exclusive of the minor assistants, is seventy-five.

### *II. Medical Department.*

The Medical School was opened in 1893, and, in connection with the Johns Hopkins Hospital, gives instruction in the following subjects:

Physiology and Histology.
Anatomy.
Pathology.
Physiological Chemistry.
Pharmacology.
Medicine.
Surgery.
Gynecology.
Obstetrics.
Neurology.
Dermatology.
Pediatrics.
Psychiatry.
Laryngology.
Ophthalmology and Otology.
Hygiene.

The number of professors and their associates, not counting the minor assistants, is thirty-five.

## The Students.

The entire number of persons who have here been instructed is three thousand one hundred and forty-two.* Of this number five hundred and fourteen are now here; four hundred and ninety-six have proceeded to the degree of Bachelor of

*Including those who entered in the autumn of 1896.

Arts, and three hundred and ninety-four to the degree of Doctor of Philosophy. A study, made in 1894, of the occupations of those who have here been graduated, showed that one-tenth were physicians, fifteen per cent were lawyers, three per cent were clergymen, and not far from half the number had engaged in the work of instruction. During the whole period under review in this report more than eight hundred persons formerly students here have become teachers,—one of the most important and gratifying achievements of the Johns Hopkins University. The influence of the Johns Hopkins University has thus been greatly extended. It may be safely asserted that these young men are governed by the principles with which they became familiar in Baltimore. They are not afraid of the progress of modern science; they believe in the formation of habits of accuracy, independence, and investigation; they are cooperative and fond of the work of instruction.

The following enumeration gives the names of institutions where three or more men from the Johns Hopkins have been engaged. The enumeration would be more than twice as long if the institutions were included to which only one or two persons have been called. Sixty-seven of those who are now on the staff of the Johns Hopkins University were formerly students here.

| | |
|---|---|
| Chicago, University of, | 23 |
| Wisconsin, University of, | 19 |
| Bryn Mawr College, | 18 |
| Leland Stanford, Jr. University, | 17 |
| Michigan, University of, | 17 |
| Pennsylvania, University of, | 16 |
| Cornell University, | 14 |
| Columbia University, | 13 |
| Massachusetts Institute of Technology, | 11 |
| Nebraska, University of, | 11 |
| Northwestern University, | 11 |

| | |
|---|---|
| Harvard University, | 10 |
| Woman's College of Baltimore, | 10 |
| Clark University, | 9 |
| Kansas, University of, | 9 |
| Brown University, | 8 |
| California, University of, | 8 |
| Indiana University, | 8 |
| South, University of the, | 8 |
| Wesleyan University, | 8 |
| Princeton University, | 7 |
| Haverford College, | 6 |
| Swarthmore College, | 6 |
| Vanderbilt University, | 6 |
| Williams College, | 6 |
| Davidson College, | 5 |
| Iowa College, | 5 |
| Lehigh University, | 5 |
| Rutgers College, | 5 |
| Toronto, University of, | 5 |
| Western Reserve University, | 5 |
| Allegheny College, | 4 |
| Amherst College, | 4 |
| Bowdoin College, | 4 |
| Colby University, | 4 |
| Colorado College, | 4 |
| Louisiana State University, | 4 |
| New York, University of the City of, | 4 |
| Ohio State University, | 4 |
| Oregon, University of, | 4 |
| Pennsylvania State College, | 4 |
| Rose Polytechnic Institute, | 4 |
| St. John's College (Md.), | 4 |
| Tokio, University of, (Japan), | 4 |
| Wake Forest College, | 4 |
| Catholic University, | 3 |
| Central University (Ky.), | 3 |
| Colorado, University of, | 3 |
| Dalhousie University, | 3 |
| Denver, University of, | 3 |
| DePauw University, | 3 |
| Georgetown College (Ky.), | 3 |
| Georgia, University of, | 3 |
| Hobart College, | 3 |
| Iowa State University, | 3 |
| Oberlin College, | 3 |
| Purdue University, | 3 |

| | |
|---|---|
| Richmond College (Va.), | 3 |
| Sapporo Agricultural College (Japan), | 3 |
| South Carolina, University of, | 3 |
| Texas, University of, | 3 |
| Trinity College (N. C.), | 3 |
| Tufts College, | 3 |
| Tulane University, | 3 |
| U. S. Naval Academy, | 3 |
| Vermont, University of, | 3 |
| Virginia, University of, | 3 |

It is interesting to compare with the foregoing table the following enumeration, which indicates the States and countries from which the students of this University have been drawn. Especial attention is called to the fact that while, as every one would desire, Maryland furnishes the principal quota, distant States and countries have been well represented; California sends 47, Virginia, 133, North Carolina, 92, Massachusetts, 111, New York, 167, Ohio, 120, Canada, 76, Japan, 25.

| | | | |
|---|---|---|---|
| Alabama, | 23 | Missouri, | 27 |
| Arkansas, | 7 | Montana, | 1 |
| California, | 47 | Nebraska, | 23 |
| Colorado, | 12 | Nevada, | 1 |
| Connecticut, | 36 | New Hampshire, | 12 |
| Delaware, | 9 | New Jersey, | 48 |
| District of Columbia, | 74 | New York, | 167 |
| Florida, | 6 | North Carolina, | 92 |
| Georgia, | 35 | North Dakota, | 2 |
| Idaho, | 1 | Ohio, | 120 |
| Illinois, | 84 | Oregon, | 3 |
| Indiana, | 58 | Pennsylvania, | 154 |
| Iowa, | 43 | Rhode Island, | 15 |
| Kansas, | 16 | South Carolina, | 47 |
| Kentucky, | 48 | South Dakota, | 4 |
| Louisiana, | 16 | Tennessee, | 20 |
| Maine, | 38 | Texas, | 8 |
| Maryland (Baltimore, 1038), | 1300 | Utah, | 11 |
| Massachusetts, | 111 | Vermont, | 12 |
| Michigan, | 25 | Virginia, | 133 |
| Minnesota, | 29 | Washington, | 3 |
| Mississippi, | 7 | West Virginia, | 21 |

| | | | |
|---|---|---|---|
| Wisconsin, | 40 | Holland, | 1 |
| United States Army, | 12 | India, | 1 |
| United States Navy, | 6 | Italy, | 5 |
| Asia Minor, | 2 | Japan, | 25 |
| Canada, | 76 | Mexico, | 1 |
| China, | 1 | Porto Rico, | 1 |
| Cuba, | 2 | Russia, | 4 |
| Egypt, | 1 | Sicily, | 1 |
| England, | 2 | Switzerland, | 2 |
| France, | 8 | Spain, | 1 |
| Germany, | 7 | Venezuela, | 1 |

## Buildings.

Two dwelling-houses on Howard street chosen for temporary service were opened to students in October, 1876, and during the first year eighty-nine were in attendance. It was expected that the site selected at the opening would be occupied for a brief period only, until the plans of the University could be formed and developed. The situation was found to have more advantages than had been foreseen, and after a prolonged discussion, during the winter of 1881–82, the Trustees determined to build a biological laboratory, and to enlarge the chemical laboratory. This fixed the site. In subsequent years other pieces of property have been added to the original purchase.

1. *McCoy Hall.* The latest, the largest, the costliest, and, in some respects, the most important building is that which is due to the liberality of Mr. John W. McCoy, of Baltimore, who made the University his residuary legatee. This timely bequest enabled the Trustees to provide for the accommodation of the library, and for the classes and seminaries that are closely dependent upon the library, and for certain large lecture rooms. The building has four stories above the basement. The upper floor is devoted to the general library

and reading room, which is well lighted, quiet, spacious, and easily approached by electric elevators. The third floor contains the seminaries and special libraries for instruction in Latin, Greek, Hebrew, Assyriology, Sanskrit and Comparative Philology, History, Political Science, and Economics.

On the second floor, provision is made for the students in Modern Languages,—including English, German, French, Spanish, and Italian, and also for the students in Logic, Psychology and Ethics. On the main floor there is a large assembly room, which may hold from eight hundred to a thousand persons, a smaller lecture room for one hundred and fifty persons, and the offices of the President and Trustees. In the basement is the postoffice, the lunch-room, the heating apparatus, etc.

2. *Levering Hall.* Adjacent to McCoy Hall and connected with it, is a two-story building given to the University by Mr. Eugene Levering, of Baltimore, and designed particularly to meet the wants of the Young Men's Christian Association. On the first floor is a conference room, or chapel, for religious services, and a parlor, which remains open throughout the day, where the books and periodicals of the Association are conveniently accessible. In the second story there is a hall which seats four hundred persons and is intended to be used when special lectures are delivered before the Association. It has been frequently used for the meetings of such religious and philanthropic associations as are in harmony with the characteristic work of the Young Men's Christian Association, and it has thus been a great convenience to the public.

3. *Chemical Laboratory.* The first of a series of laboratories constructed for the University was devoted to Chemistry. It is a building of three stories, above the basement, and

contains accommodations for the practical work of perhaps two hundred students. Here are rooms for those who take instruction in chemistry as a part of their undergraduate course, and also for those who pursue advanced courses looking towards the profession of chemistry. Here are rooms, also, for chemical research, for the chemical library, and for the offices of the Director and his colleagues.

4. *Biological Laboratory.* The building devoted to biological studies was the first of its kind constructed in this country. When the University was organized, Biology had scarcely been recognized as a branch of liberal education. Prominence was here given to this study as the proper training for naturalists and also as a basis for instruction in medicine. The work now carried on in this building is three-fold. Instruction is given in Physiology, in Zoology, (including Morphology and Embryology,) and in Botany. The building contains an excellent collection of books pertaining to the biological sciences, a small museum, including an herbarium, and there are special arrangements for the prosecution of original investigations.

5. *Geological Laboratory.* Another building is devoted to Geology and Mineralogy, including Petrography and Crystallography.

This building, once known as "Hopkins Hall," comprises nearly twenty-five rooms, large and small, upon the second and third floors. Here are placed the library, apparatus, and collections.

The main room upon the third floor, called the Williams Room, contains the collections and library of the late Professor George Huntington Williams. Here a memorial tablet has been recently placed by his parents. A smaller room upon

the same floor contains the books and collections of the late Professor H. Carvill Lewis, and is known as the Lewis Room. The remaining rooms are used as lecture halls, offices, and special laboratories.

The work of the Geological Survey of Maryland, to which reference is elsewhere made, is supplemented and advanced, without expense to the State, by the facilities here provided.

6. *Physical Laboratory.* A large and costly building is devoted to Physics in the most comprehensive sense. In the basement are the rooms of the electrical section, with the necessary instruments, a mechanic's shop, and a sub-cellar devoted to the ruling of the diffraction gratings of Professor Rowland. The four upper floors of the building are for instruction and research in light, heat, sound, electricity and magnetism, as well as for instruction in pure and applied mathematics, and in astronomy. In the dome is an astronomical observatory. A transit-house in the yard furnishes exact time.

7. *Power-house.* A power-house has been erected to facilitate the work in electrical engineering. It is a one-story building, 25 by 65 feet, located opposite the physical laboratory, on Garden street, and contains a 900-light Westinghouse alternating current dynamo with its complete equipment, a 500-light Fort Wayne continuous current dynamo, a two-phase plant for the transmission of power, other smaller dynamos and motors, a 50 horse-power Ball & Wood engine, and a 60 horse-power vertical boiler to drive these machines. The electric current from any of the machines can be conveyed to the physical laboratory to furnish light and power, or to be used for experimental purposes. A large number of other dynamos and motors are in the basement of the laboratory.

8. *Gymnasium.* This building was erected in 1883, when the number of students was not half as large as it is now. It served its ends very well for a time, but the growth of interest in athletic sports and in physical exercises calls for enlargement and improvement.

9. *Weather Bureau.* Convenient rooms for the Maryland State Weather Service and for the Maryland Geological Survey are provided, without expense to the State, in the upper stories of the building on Howard Street. Here also are the offices of the University Treasurer and the accountants.

10. *The Medical School.* A special building devoted to Anatomy and to Pharmacology, known by request, as "The Women's Fund Memorial Building," has been constructed for the use of the Medical School, near the Hospital. It is of three stories, well lighted and ventilated and admirably adapted to the work that is carried on within its walls.

11. *Pathological Laboratory.* By an arrangement with the Trustees of the Johns Hopkins Hospital, the pathological building of that institution is employed by the University for the instruction of students in pathology and for investigation.

12. *Clinical Laboratory.* A similar remark may be made respecting this laboratory, a new and commodious building lately given to the Hospital.

13. The residence of the President of the University is the gift of the late Mr. John W. McCoy.

## The Library.

The heart of the University, as scholars know, is the library. Every member of the organization is affected by its healthy growth. The number of books that it contains is not nearly as significant as their character. A library selected with direct

reference to the needs of a company of teachers and students, even if it be small in numbers, is far more valuable than the immense collections which include a large amount of worthless and antiquated volumes. From the beginning, the library of this University has been choice. The books have been gradually collected in accordance with the specific requests of the leading instructors, and these purchases have been supplemented by many generous gifts. In one central room has been brought together what may be called the general collection of books, including long sets of journals and transactions of learned societies, historical series, encyclopædias and dictionaries, and the great books of every department of science and literature here represented. Apart from this central room are subordinate special libraries, so placed as to be convenient of access to the students of separate departments.

The whole number of volumes, not including unbound pamphlets, is about 80,000. Among the books, are many noteworthy gifts which are held in special remembrance.

The amount expended in the purchase and binding of books and periodicals since 1876 is $112,000,—(not including salaries or incidental expenses).

Grateful mention must be made of the extraordinary facility in the use of books which is afforded by the library of the Peabody Institute, now numbering 125,000 volumes. This collection has been formed with great care during the last thirty years; it is admirably catalogued, the books are well bound, and any volume that is called for can be immediately produced. The library is open between thirteen and fourteen hours daily; the librarians are most obliging; special tables are provided for those who come day after day to prosecute some study, and, under exceptional circumstances, those who

are engaged in investigation are allowed to carry books to their own rooms. When Lord Kelvin was delivering his course of lectures upon light, he had occasion to refer to a vast number of memoirs given in the transactions of learned societies, and in other scientific journals. These were laid upon his table day after day, and he remarked that during his life he had never had equal facilities. The Peabody Library is well supplemented by the lending library founded by Enoch Pratt, the library of the Maryland Historical Society, the New Mercantile Library, the Steinecke Library of the Diocese of Maryland, and by various special collections; so that a student may have access, within a circle of half a mile's radius, to nearly half a million volumes,—of which it is safe to say that at least one-half are chosen for and adapted to the use of scholars.

## Apparatus and Collections.

All the laboratories are well equipped for their purposes,—the sum of $116,000 having been expended by the Trustees, since 1876, for the purchase of such instruments as have been called for by the professors (not including in this figure expenditures for what may be termed fixtures or furniture, or current running expenses).

It is not easy to describe scientific apparatus in terms that will be interesting to those who are not expert in scientific investigation; but in order to illustrate, in some degree, the character of our equipment, two examples are given.

The first of the following statements was prepared by Professor Ames, and the second by Professor Poor.

*Physics.*—The equipment of the Physical Laboratory is a collection of apparatus and machinery designed primarily for

accurate measurements and research; but it includes as well apparatus for class-demonstrations and instruction in the elementary or preliminary laboratory.

Among the most important pieces of apparatus are:

Two concave-grating spectroscopes, one having a radius of curvature 21 ft., the other, twelve.

A plane-grating spectroscope, the telescope having an aperture of seven inches.

Two micrometer screw comparators specially designed for the measurement of spectrum-plates. These screws are made according to Professor Rowland's special plan described in the Ency. Brit., art. "Screw."

Two bolometers and one radio-micrometer. A complete polariscope outfit. Rock salt prisms and lenses.

A quite complete set of electric radiation apparatus.

A set of König's acoustic apparatus, including tuning-forks, organ-pipes, siren, resonators, manometric flame apparatus, etc.

A Thomson quadrant electrometer; an absolute electrometer, standard Clark cells, capacities, resistances, galvanometers, etc. Also, alternating and direct dynamos, two-phase dynamos, motors, storage cells, etc.

For measurements of temperature there are standard mercury thermometers, which have been compared with the Paris standard, and a Griffiths' platinum thermometer, as well as a most complete outfit for comparisons with other thermometers.

Several air-pumps, both Geissler and Sprengel.

A Rogers-Bond comparator designed for the careful comparison of lengths.

Two ruling-engines for ruling gratings and scales.

Three lathes, a planer, two steam-engines, a well-equipped machine shop, a gas-engine, a glass-blowing table.

*Astronomy.*—The instruments and collections below named, designed for the practical instruction of young men in Astronomy rather than for the systematic observations of celestial phenomena, have been acquired by purchase and gift:—

1. An Equatorial Telescope of 9½ inches aperture, with clock work and filar micrometer.

The objective was made by Dr. C. S. Hastings (then one of our staff, and now a Professor in the Sheffield Scientific School), in acccordance with original formulae of his own elaboration.* The dome and mounting were built by Warner and Swasey, of Cleveland, Ohio.

## 2. A Meridian Circle of 3 inches aperture.

This instrument was built by Fauth & Co., of Washington, D. C., and is provided with all the usual accessories of such instruments. The circle is 2 feet in diameter, divided on silver to 5 minutes of arc, and read by two microscopes to single seconds of arc. The collimators are 1½ inches in aperture.

## 3. A Meridian Transit Instrument of 3 inches aperture.

The objective and tube were made by Dolland, of London. It has been newly mounted and is now on stone piers.

## 4. Clocks and Chronographs.

*a.* A Sidereal Clock made by Molyneaux & Sons, of London. The pendulum is of the usual mercury form of compensating pendulums; the chronograph circuit is made and broken by a platinum point, which is attached to the pendulum and which passes through a globule of mercury.

*b.* A Mean Time Chronometer.

*c.* Two Chronographs, built by Fauth & Co., of Washington, D. C. The cylinders are 14 inches long and 7½ inches in diameter, and rotate either once a minute or once in 30 seconds. One of these instruments was the gift of Mr. S. V. Hoffman, a student of the University.

## 5. Several small portable instruments including:

*a.* An Astronomical Theodolite of 1½ inches aperture, with circles of 8 inches in diameter, reading by microscopes to seconds of arc.

*b.* A Reflecting Circle by Pistor and Martins. The circle is 10 inches in diameter and is read by the verniers to 10 seconds of arc. With this instrument there is a balance stand and an artificial horizon.

*c.* A smaller Reflecting Circle, which reads to 20 seconds of arc.

*See an article on "Some Recent Experiments in the Construction of Telescope Objectives," by C. S. Hastings, published in the University Circulars, No. 19, November, 1892; and an allusion to the instrument in the Twelfth Annual Report of the University, 1887, page 23.

6. Photographs.

A collection of photographs, made at the leading observatories of the world, including among others the Lick Observatory, l'Observatoire de Paris, the Royal Observatory at Greenwich, and the private observatory of Isaac Roberts. Many of these were issued under the direction of the Royal Astronomical Society of London and were presented to the University by Dr. Chas. Lane Poor. In this collection there is a set of the Rutherford photographs of the Moon. Besides the photographs there is also a large collection of charts of the heavens.

*Botany.*—The botanical collections are as follows:—

(1) The Schimper collection of European and African flowering plants, of about 4300 sheets, the gift of Dr. A. F. W. Schimper, now Professor of Botany in Bonn;

(2) The Fitzgerald collection of American and European mosses, including about 1000 sheets, the gift of Mr. Charles H. Fitzgerald, formerly of Baltimore.

Deposited with the University and available for use in its work are:—

(3) The local collection of flowering plants and ferns belonging to the Naturalists' Field Club, of about 1400 sheets;

(4) The collection of American Cryptogams, chiefly algae and fungi, belonging to Dr. J. E. Humphrey, comprising about 2500 sheets.

Accessible to suitably prepared students, is the remarkable herbarium of Capt. John Donnell Smith of Baltimore, representing the flowering plants and ferns of many parts of the world, and especially rich in the flora of tropical America, including some 85,000 sheeets. The owner of this collection has generously offered to give it to the Johns Hopkins University when a suitable place can be provided for it. The authorities are only prevented from accepting this gratifying

and liberal offer, because they have not at command any resources that can be applied to a new building.

*Coins.—The Helbig Collection.* A collection of ancient Greek and Roman coins, gathered by the German archaeologist, Professor K. F. W. Helbig, during a residence of about twenty-five years in Rome, was purchased through the mediation of Professor Arthur L. Frothingham, and presented to the University, February 22, 1888, by the following gentlemen: Christian Ax, Jr., D. L. Bartlett, Mendes Cohen, G. W. Gail, Robert Garrett, T. Harrison Garrett, Daniel C. Gilman, Hodges Brothers, Reverdy Johnson, Francis T. King, J. W. McCoy, W. W. Spence, and Francis White.

The collection includes coins from the Greek colonies in Spain, Gaul, Italy, Sicily, and Africa and from the different States of ancient Greece itself, beginning as early as the seventh century before Christ, and continuing through the age of Alexander to the period of Roman occupation. Many specimens are of the finest types known to numismatics. The collection of Roman coins begins with the heavy archaic forms of cast copper and continues to the close of the later Empire. The group of silver coins of the Republic is particularly fine, and the brasses of the Emperors from the beginning to the end unusually full. There are more than 1,200 coins from the various countries, and the collection, having been gathered by a specialist with the view of illustrating lectures on ancient history and archaeology, is highly interesting from many points of view. A complete catalogue has been prepared and the coins are arranged in cases according to the accepted system of numismatists.

Smaller collections of coins, ancient and modern, representing most of the civilized countries of the world, have been presented to the University from time to time by various gentlemen. Their names are to be found in the list of donors published in 1892.

*A collection of Greek vases and terra-cottas* has been here deposited by the Baltimore Society of the American Institute of Archaeology. The collection was purchased in 1887 through Prof. Frothingham from a fund raised among the members of the society to defray the expenses of a excavation in Eretria, under the supervision of Professors Frothingham and Emerson. It was afterwards found, however, that, owing to some technical difficulties with the local authorities, the original purpose for which the sum was intended could not be carried out.

Within its limits, this collection is hardly surpassed in America. Nearly every object is in a perfect state of preservation and many of them have been described in the various European journals of Archaeology. There are fine examples of *figurine*, oil-flasks, *antefixae*, *amphorae* and the like, but the most valuable part of the collection are the Attic *cylices* largely from Cervetri and Chiusi. The are eleven in number and originally formed a collection described by Hartwig in the Bulletin of the German School at Rome (vol. 2, pp. 367–70). Several of the subjects represented are rare, if not unique. With one exception they belong to the early "red-figured" style and some of them are signed by such artists as Nikosthenes, Xenokles and Philtias.

*Geology.*—1. *Collections.* The collections of the Geological Department consist primarily of a large amount of material brought together from Maryland and adjacent States of Virginia, Pennsylvania, Delaware, and New Jersey and include representatives of most of the important rock types, fossils and minerals from the several formations of this territory. The collections are especially rich in crystalline rocks and in Cretaceous and Tertiary fossils. Some of this material has already been described while much awaits further study.

In addition to the large amount of material thus brought together from the surrounding region, the following special collections form a portion of the University's possessions:—

The Williams Collection contains several thousand objects, consisting of extensive suites of specimens and thin sections of minerals and rocks from the best known and most thoroughly studied localities in both Europe and America. They have been recently presented to the University by Mrs. Williams.

The Lewis Collections of rocks and thin sections, numbering over 1000 specimens, have been deposited with the University by Mrs. Lewis. These specimens were collected by the late Professor H. Carvill Lewis, and include carefully selected materials, especially from Pennsylvania, Germany, Switzerland, and South Africa.

The Krantz Collection of fossils contains several thousand specimens from the best known localities in Europe, being representative of all the different horizons.

The Hill Collection contains a large number of specimens of rocks and characteristic fossils from the Cretaceous formations of Texas, collected by Professor R. T. Hill, of the U. S. Geological Survey. It was presented to the University by Messrs. Jesse Tyson, Francis White, Mendes Cohen, W. T. Dixon and D. C. Gilman.

The Stürtz Collection comprises a suite of over 400 hand specimens and accompanying thin sections. These represent the rocks cited by Professor Rosenbusch in his *Mikroskopische Physiographie* and are from the type localities.

The Lehmann Collection, a suite of specimens and thin sections gathered by Professor J. Lehmann, was sent by him to the University to illustrate his well known work on the Crystalline Schists.

The Allen Collection of minerals, which is especially rich in early discoveries from American localities, and includes many of the type specimens illustrating the papers of Professor O. D. Allen, late of Yale University.

There are also private collections made by Professor Clark and others of the Department; also numerous small collections acquired by gift, exchange or purchase, among others from the U. S. National Museum, the National Surveys of Russia and

Canada, the Universities of Berlin, Göttingen, Harvard, Yale, Chicago, Iowa, Michigan, Alabama, etc., as well as from individuals in this country and in Europe.

2. *Apparatus.* Among the models are the following:—

(*a*) A set including Europe, Asia, Africa, North America, South America, United States and Pennsylvania, placed in the custody of the University by E. H. Butler & Co. of Philadelphia.

(*b*) A large relief of the State of Maryland on the scale of a mile to an inch prepared for the World's Columbian Exposition and deposited by the State Geological Survey.

(*c*) A model of Baltimore and vicinity on the scale of 4 inches to the mile without vertical exaggeration, all of the above being the work of Cosmos Mendelef of Washington.

(*d*) The Shaler and Lewis models illustrating the development of topographic form and geologic structure.

(*e*) The Heim models showing the structure of volcanic cones, glaciers, Alpine valleys and coast lines.

(*f*) Models illustrating the development of the Ammonites and the different types of Foraminifera.

(*g*) Several hundred models illustrating different phases of geology, paleontology and mineralogy.

In addition to the above there are several hundred lantern slides and Photographs.

The mechanical apparatus includes:—

(*a*) An electric-dynamo machine for preparing rock-sections and an electric separator.

(*b*) A dissolving stereopticon.

(*c*) Ten microscopes of late design, four goniometers of different types, and several stauroscopes.

(*d*) Crystal mirrors, heating appliances and a Michel-Levy comparator.

(*e*) A large rock trimmer and numerous smaller appliances both for field and laboratory work.

(*f*) A photographic outfit for outdoor photography and indoor development and enlargement.

3. *Maps.* Extensive suites of maps and among them, these:—

(*a*) A set of topographical and geological maps prepared by the U. S. Geological Survey; maps prepared by the U. S. Coast and Geodetic Survey, Mississippi and Missouri River Commissions, U. S. Land Office, and many of the earlier national surveys.

(*b*) Maps prepared by the various state geological and topographical surveys in the United States.

(*c*) Partial, and in some cases complete, sets of topographical and geological maps prepared by the national surveys of Great Britain, including many of the colonies (especially Canada and Australia), France, Germany, Austria, Russia, Norway and Sweden, Italy, Holland, Belgium, and Japan.

## Scientific Publications.

### *From The Johns Hopkins Press.*

Since its opening, the University has encouraged the publication of the results of advanced scientific research. Several journals have been regularly maintained, and support has been given to many separate works. Among the more important publications have been:

*The American Journal of Mathematics.* This journal was founded in 1878 under the editorship of Professor Sylvester, and was conducted by him for the first seven years. It is now edited by Professor Craig with the coöperation of Professor Newcomb. Eighteen volumes of about 400 pages each, have been issued. It is devoted to the publication of memoirs in pure mathematics. Since its foundation, it has numbered among its contributors the leading mathematicians of the world.

*The American Chemical Journal.* This journal was founded in 1879. Professor Remsen has been its editor from the first.

Eighteen volumes of about 450 pages each have been issued. Ten numbers are issued yearly. It has been the chief repository of the work of the chemical laboratories of the country, since its beginning.

*The American Journal of Philology.* This journal was founded in 1880. Professor Gildersleeve has been its editor from the beginning. Sixteen volumes of about 570 pages each have been issued. It appears four times yearly. It has contained contributions from the leading philological scholars of Europe and America.

*Studies from the Biological Laboratory.* The publication of these studies commenced in 1879. Four volumes of about 500 pages, octavo, and 40 plates each, were issued under the editorial direction of Professor Martin and Professor Brooks. These papers contain reports of the work in the Biological and Marine Laboratories of the University,—including the researches in the marine zoology of the Chesapeake Bay by Professor Brooks and others.

*Memoirs from the Biological Laboratory.* These memoirs have appeared under the editorial direction of Professor Brooks. Three volumes, illustrated with numerous plates, have been issued. Volume I contains a series of Morphological Memoirs from the Marine Laboratory. Volume II is a Monograph on the Genus Salpa, embodying the results of prolonged studies by Professor Brooks. Volume III contains a collection of the Physiological Papers of Professor H. Newell Martin,—published as a memorial of his connection with this University, by his friends and former pupils.

*Studies in Historical and Political Science.* The publication of a series of papers by members of the University on historical and political topics was begun under the editorship of

Professor Adams in 1882. Fourteen volumes of about 600 pages each, containing about one hundred separate papers, have been issued. The papers contain important studies in American history and politics, and, notably, on municipal problems. Fourteen extra volumes, containing prolonged memoirs, have also appeared in this series, which thus includes twenty-eight volumes in all.

*Contributions to Assyriology and Comparative Semitic Philology.* The issue of these papers, devoted to the publication of the most recent researches in Assyriology, was begun in Leipsic, in 1889. Two volumes have been issued, and a third is in progress. Professor Haupt of Baltimore and Professor Delitzsch of Breslau are the editors. The university contributes a certain sum toward the outlay.

*The Journal of Experimental Medicine.* The issue of this journal began in January 1896, under the editorship of Professor Welch, with the aid of a large corps of collaborators representing the leading medical laboratories of the country. It is designed to present the results of the latest researches in experimental medicine. Volume I has been completed.

*The Johns Hopkins University Circulars.* The publication of these Circulars was begun in 1879, and 127 numbers have been issued. They contain reports of the scientific and literary work here in progress, the proceedings of the university societies, announcements from the governing and teaching bodies, university notices, etc.

*Modern Language Notes.* Professor Elliott, and the staff associated with him, have maintained since 1886 a series of Modern Language Notes. These notes are now in the eleventh volume.

on the same terms as men. The school thus endowed was opened for instruction in 1893. There are now 124 students pursuing a four years' course of medical studies, and every year there is in attendance a large number of Doctors of Medicine, who come here for advanced study or investigation. The medical staff includes a President and ten professors, four clinical professors, four associate professors, eight associates, and a large number of assistants. The contributions of these gentlemen to the publications of the Johns Hopkins Hospital, the Journal of Experimental Medicine, and to other journals, as well as the volumes of which they are authors, illustrate the spirit that is here prevalent. The Hospital side of the work is the relief of suffering patients brought here for treatment; the University side of the work is the advancement of the medical arts and sciences, and the training of students.

Since the opening of the Hospital, a system of publication of reports of the work of the members of the medical staff has been regularly sustained by the Trustees. The Hospital Bulletin, begun in 1889, has contained abstracts of the papers read before the medical societies of the Hospital, details of hospital and dispensary practice, and other matters of interest. Seven volumes have been issued. The Hospital Reports, begun in 1890, have brought before the profession a large number of elaborate monographs and reports from the several departments. Six volumes, with numerous and costly illustrations, have been issued. Under the supervision of Dr. John S. Billings, was also issued an elaborate description of the Johns Hopkins Hospital, with sixty large quarto plates. This is considered one of the most serviceable works upon modern hospital construction ever issued. These publications have had a wide circulation at home and abroad. The first

volume of the Journal of Experimental Medicine is now completed, under the editorial direction of Professor Welch, with the collaboration of the heads of our own and other medical laboratories. This journal is affording to the scholars of this country a medium for the publication of their researches in experimental medicine that has long been needed.

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