JOHNS HOPKINS
UNIVERSITY CIRCULARS

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JAMES JOSEPH SYLVESTER.

1814-1897.

Professor Sylvester died in London, March 15, 1897. He was the Professor of Mathematics in the Johns Hopkins University from its foundation till 1883. He was the first editor of the *American Journal of Mathematics*, and one of the principal contributors to the early volumes of these *Circulars*. The numbers of the *Circulars* from 1879–1883 contain numerous and valuable notes from him.

The following biographical sketch is reprinted from *Nature*, London, March 25. It is written by Major P. A. MacMahon, of the Royal Artillery, Professor in the Artillery College at Woolwich, a friend of Professor Sylvester, and a conspicuous contributor to the same field of mathematical science.

PROFESSOR SYLVESTER.

By Major MacMahon, R. A.

He is dead, and it becomes a sad duty to give a brief account of his long life and great work.

Born in London September 3, 1814, he was the youngest but one of seven children of Abraham Joseph Sylvester. Three sisters lived for many years at Norwood, and of his three brothers two, Frederick and Joseph, lived for the most part in America, whilst George resided at Worcester.

He obtained his early education at private schools in London; thence he went to the Liverpool Institution, and in 1837 graduated at St. John's College, Cambridge, as Second Wrangler. The first five names in the Mathematical Tripos of the year are Griffin, Sylvester, Brumell, Green, Gregory. It is astonishing to think that Green, of immortal memory, has been dead for nearly fifty years! Sylvester was keenly disappointed at his failure to be senior of the year. He was always of an excitable disposition, and it is currently reported that, on hearing the result of the examination, he was much agitated. Being of the Jewish persuasion, he was unable to take his degree at Cambridge, but later he obtained a degree at the University of Dublin. On leaving Cambridge he at once commenced the long series of mathematical papers, which he was to contribute to scientific periodicals all over the world, by the publication, in vol. xi. of the *Philosophical Magazine*, of an analytical development of Fresnel's optical theory of crystals.

This was followed by some articles upon subjects of applied mathematics, and it was not until 1839 that he brought his intellect to bear upon the analysis of continuous and of discontinuous quantity, departments of pure mathematics which well-nigh monopolised his attention for the remainder of his life. He was appointed Professor of Natural Philosophy at University College, London, and later on held the post of Professor of Mathematics in the University of Virginia. He returned to England in the year 1845, and the first period of his scientific career may be said to have closed. He had published some thirty papers, and was already well known in both hemispheres as an original and imaginative man of science. The subjects dealt with comprise "Dialytic Method of Algebraical Elimination," "Sturm's Functions," "Criteria for Determining the Roots of Numerical Equations," "The Calculus of Forms" (afterwards known as the "Theory of Invariants"), "The Equation in Integers $Ax^2 + By^3 + C^3 = Dxyz$" The latter problem was a favourite subject of thought throughout his life, and the first problem in the theory of numbers that he attacked. The theory of invariants sprang into existence under the strong hand of Cayley, but that it emerged finally a complete work of art, for the admiration of future generations of mathematicians, was largely owing to the flashes of inspiration with which Sylvester's intellect illuminated it. The nomenclature of the theory is almost entirely due to him. The words "invariant," "covariant," "Hessian," "discriminant," "contravariant," "combinants," "commutant," "concomitant," are a few of those introduced by him at this time, which have been part of the stock-in-trade of mathematicians ever since.

A beautiful theory of the rotation of a rigid body about a fixed point, after Poinsot, should be mentioned. It is one of the few papers that he wrote on dynamics.

For ten years after his return from Virginia he was occupied with a firm of actuaries. He founded the Law Reversionary Interest Society, and also accomplished a considerable amount of mathematical research. In 1853 appeared his first important memoir in the *Philosophical Transactions* of the Royal Society, bearing the title, "On a theory of the syzygetic relations of the rational integral functions, comprising an application to the theory of Sturm's functions and that of the greatest algebraical common measure." This is a masterly exposition, covering 170 quarto pages.

In 1855 he was appointed Professor of Mathematics at the Royal Military Academy, Woolwich. This was a great relief, as the work of an actuary was manifestly unsuitable, and had indeed been most distasteful to him. He held this professorship for fifteen years. It was a time of great activity. Year by year his fame increased, and recognition by foreign academies was liberally bestowed. In addition to continual work at the theory of invariants, he laboured at some of the most difficult questions in the theory of numbers.

Cayley had reduced the problem of invariant enumeration to that of the partition of numbers. Sylvester may be said to have revolutionised this part of mathematics by giving a complete analytical solution of the problem, which was in effect to enumerate the solutions in positive integers of the indeterminate equation—

$$ax + by + cz \ldots + ld = m$$

Thereafter he attacked the similar problem connected with two such simultaneous equations (known to Euler as the Problem of the Virgins), and was partially and considerably successful. In June, 1859, he delivered a series of seven lectures on compound partition in general at King's College, London. The outlines of these lectures, printed at the time for distribution amongst his audience, are now being published for the first time by the London Mathematical Society. He was assisted in the preparation of these lectures by Captain (now Sir Andrew) Noble, with whom from that time forth he was in sympathetic friendship.

The year 1864 may be regarded as the time of his greatest intellectual achievement, which caused him to be considered as one of the foremost of living mathematicians. On April 7, 1864, he read a paper before the Royal Society of London, bearing the title "Algebraical Researches, containing a disquisition on Newton's rule for the discovery of imaginary roots, and an allied rule applicable to a particular class of equations, together with a complete invariantive determination of the character of the roots of the general equation of the fifth degree, &c." In the "Arithmetica Universalis," Newton gave a rule for discovering an inferior limit to the number of imaginary roots in an equation of any degree, but without demonstration. Neither did he give any indication of the mental process by which he was led to conjecture the truth of the rule, nor did he set forth the evidence upon which it rests. For years the question of proving or disproving the rule had been a crux of the science. Euler, Waring, Maclaurin and Campbell were amongst those who sought in vain to unravel the mystery. The only step that had been gained was to show that if *any* negative terms occur in the quadratic elements involved in the statement, there must be *some* imaginary roots. This, however, was not a great step, as a slight consideration renders it apparent. Sylvester, in the paper quoted, established the validity of the rule for algebraical equations as far as the fifth degree inclusive. The method employed was that of "infinitesimal substitution," which he himself initiated, and had previously employed in an essay, "On the Theory of Forms," in the *Cambridge and Dublin Mathematical Journal.* It proceeded upon the principle that every finite linear substitution may be regarded as the result of an indefinite number of simple and separate infinitesimal variations impressed upon the variables. He also discussed the probability of the specific superior limit to the number of real roots in a superlinear equation equalling any assigned integer. This valuable memoir contained only a small instalment of the desired result. It was not till the following year—1865—that he fully established and generalised the conjectured theorem of Newton. On June 19, he communicated the substance of his discoveries to the Mathematical Society of London. Prof. de Morgan being in the chair as its first president; and on the following June 28 he gave a public lecture in King's College, London, taking as his title, "On an elementary proof and generalisation of Sir Isaac Newton's hitherto undemonstrated rule for the discovery of imaginary roots." Sylvester's fame with posterity will, perhaps, be principally associated with this great intellectual triumph. It may be observed that, subsequent to the demonstration, Dr. J. R. Young claimed to have proved Newton's rule twenty years before. Sylvester contested this assertion in a characteristic manner, and mathematicians are, I think, in agreement that he showed it to be without basis. He always wrote well and with considerable power of expression; but, perhaps, he was strongest when attempting to demolish any one who questioned or denied his claim to priority in a particular mathematical discovery. In the case in point he wrote: "It is such stuff as dreams are made of, and culminating as it does in a palpable *petitio principii* does not need a detailed refutation at the hands of the author of this lecture. It is not by such vague rhetorical processes, but by quite a different kind of mental toil, that the truths of science are won, or a way opened to the inner recesses of the reason."

When the British Association for the Advancement of Science met at Exeter, in 1869, Sylvester was the President of the Mathematical and Physical Section. Huxley had recently written in *Macmillan's Magazine:* "Mathematical training is almost purely deductive. The mathematician starts with a few simple propositions the proof of which is so obvious that they are called self-evident, and the rest of his work consists of subtle deductions from them;" and again, in the *Fortnightly Review:* "Mathematics is that study which knows nothing of observation, nothing of experiment, nothing of induction, nothing of causation." It may be safely said that any man engaged constantly in mathematical research would find no difficulty in refuting these statements to the satisfaction of any representative body of scientific men. Sylvester devoted a considerable portion of his address to the Section to contesting Huxley's statements, and put in a powerful and eloquent plea for mathematics as being a science of observation and experiment, and as affording a boundless scope for the exercise of the highest efforts of imagination and invention. Huxley, I believe, made no reply; and I think there can be no doubt that, like many other remarkable men in other branches of science, he had no conception of the real nature of the life-work of mathematicians of the high order to which Sylvester belonged. Amongst other matters in his address, he remarks upon the extraordinary longevity of the masters of mathematics. Amongst these long-lived ones he himself now takes an honourable place.

He left Woolwich (for years he occasionally wrote from his house on the Common, over the *nom de plume* "Lani Viventis") in 1870, and for some years was without a professorship. During this time he was much interested in the problems of link-motion, and conversion of motion generally. He wrote several valuable papers, and invented the skew pantigraph. The title of one of his papers of this period is characteristic—"Mode of construction and properties of a new sort of lady's fan, and on the expression of the curves generated by any given system whatever of link work under the form of an irreducible determinant."

He gave a Friday evening lecture at the Royal Institution, entitled "On Recent Discoveries in Mechanical Conversion of Motion."

His acceptance, in the year 1875, of an invitation to become the first Professor of Mathematics in the new Johns Hopkins University at Baltimore, in Maryland, may be regarded as concluding the second period of his career. He could hardly expect to further increase his reputation, which was extraordinarily high, and most of the honours that can fall to the lot of a scientific man had long been in his possession.

In Baltimore he soon founded the *American Journal of Mathematics*, and was surrounded by a knot of enthusiastic students, whose researches he was able to influence, and in some cases to entirely direct. His final investigations in the theory of algebraic invariants, various questions in diophantine analysis, the constructive theory of partitions, the theory of universal algebra, and the commencement of his researches on differential invariants, were principally the outcome of his residence in Baltimore. He was assisted, followed up, and frequently also inspired by his students in an ideal manner. Perhaps the most permanent impress he left on the path of American research was in the subject of universal algebra, the vigorous offspring of Cayley's memoir, of 1858, on matrices. He established the nomenclature of the subject and surveyed the unknown country. He showed the connection between linear transformation and quaternions, and further arrived easily at a generalisation of quaternions. Since then Taber, Metzler, and others in the New World, have made valuable additions to the theory.

In 1883 he was elected to succeed Henry J. Stephen Smith in the chair of the Savilian Professorship of Geometry at Oxford. His inaugural lecture was on the subject of differential invariants, termed by him reciprocants. This work was extensive and important, and its elaboration, with the able assistance of James Hammond, was the last valuable contribution he made to mathematics. With increasing age infirmities came upon him. He suffered from partial loss of sight and memory, and in 1892 he obtained permanent leave from his duties, and the University appointed a deputy professor.

Henceforth he lived for the most part in London, and was a familiar figure in the Athenæum Club, but he was never in good health. At intervals he would go down to Tunbridge Wells and live at the Spa Hotel, but he did no mathematical work, and his frame of mind was not happy. Early in 1896, his condition caused alarm to his friends. In August he quite suddenly became again interested in mathematical subjects, and this appeared to make him calmer and happier. On February 26, whilst working at the theory of numbers, he had a paralytic stroke and never spoke again. He died peacefully at 3.30 a. m. on Monday, March 15, 1897, at 5 Hertford Street, Mayfair.

His work was not so voluminous as that of many of his great contemporaries. It may amount to about 1250 octavo pages and about 1550 quarto pages. Its quality, however, is of a very high order, as he always preferred to labour at difficult questions; problems which for centuries have been a challenge to the human intellect had an especial attraction for him. His last thoughts were concerning the distribution of the prime numbers; the

excellent paper in which he contracted Tchebycheff's limits was a source of great satisfaction to him, and shortly before he died he was hopeful of being able to prove the Goldbach-Euler conjecture that every even number can be partitioned into two primes; but in this he was not successful, although he was able to narrow the issue, and to give a more precise statement of the supposed theorem. At one time he was interested in the construction of tessellated pavements; one anallagmatic design was, through the influence of his friend Colonel Yelverton, put down in the hall of the Junior United Service Club in Charles Street, Haymarket. Some years ago it was unfortunately removed whilst the hall was undergoing repair.

His writings are flowery and eloquent. He was able to make the dullest subject bright, fresh, and interesting. His enthusiasm is evident in every line. He would get quite close up to his subject, so that everything else looked small in comparison, and for the time would think and make others think that the world contained no finer matter for contemplation. His handwriting was bad, and a trouble to his printers. His papers were finished with difficulty. No sooner was the manuscript in the editor's hands than alterations, corrections, ameliorations and generalisations would suggest themselves to his mind, and every post would carry further directions to the editors and printers. His usual custom was to send early notice of his discoveries to the Academy of Sciences in Paris. Subordinate theorems he would despatch at once to the *Educational Times*. He frequently also made announcements in the columns of NATURE. He gave so many names to mathematics that he used playfully to speak of himself as the Mathematical Adam. It has been remarked by Professor Forsyth that he drew almost entirely upon Latin for new names, whilst Cayley as invariably drew upon Greek. In 1870 he published "The Laws of Verse," dedicating it to Matthew Arnold. The composition of sonnets, both in English and Latin, was a relaxation that he much enjoyed; these have been, and no doubt will be, criticised in other places.

He was fond of billiards, whist and chess. He liked occasionally going into the society of ladies, but was never married.

He appears in the series of portraits of Scientific Worthies for the year 1889, to the accompaniment of a sympathetic notice from the pen of Cayley. His portrait in oils, by Elmslie, was exhibited in the Royal Academy a few years ago, and now hangs in the hall of St. John's College, Cambridge. His physiognomy was striking, never failing to impress deeply at a first meeting. Latterly his appearance was venerable and patriarchal.

In this short notice justice cannot be done to his character. His temper was somewhat quick on occasions, but he never cherished angry feelings beyond a very short time; he was anxious to forget and forgive. Only those who understood him were aware that anger or displeasure was with him a transient phenomenon, and that charitableness of feeling and kindness of heart were characteristics deeply engraved upon his nature. To younger men he was sympathetic and generous.

The revival of the mathematical reputation of England, dating from the Queen's accession to the throne, is to a large degree due to his genius; and those who were present on March 19, at the simple, yet impressive ceremony at the Jewish cemetery at Dalston, must have realised that one of the giants of the Victorian era had been laid to rest. The Royal Society and the London Mathematical Society were represented at the funeral by Prof. Michael Foster, Sec. R.S., Major MacMahon, R.A., F.R.S., Prof. Forsyth, F.R.S., Prof. Elliott, F.R.S., Dr. Hobson, F.R.S., Prof. Greenhill, F.R.S., Mr. A. B. Kempe, F.R.S., and Mr. A. H. Love, F.R.S. There were also present Prof. Turner and the Sub-Warden of New College, Oxford.

P. A. MacMahon.

PROFESSOR H. NEWELL MARTIN.

At the ninth annual meeting of the American Physiological Society, held in Boston and Cambridge, December 29 and 30, 1896, Professor W. H. Howell proposed the following resolution regarding the work of the late Professor H. Newell Martin:—

"The members of the American Physiological Society have heard with profound regret of the death of Professor H. Newell Martin. In commemoration of his distinguished services, the Society adopts and places upon its official record the following expression of its appreciation and esteem. In the death of Professor Martin, the Society has lost a member

to whom it owes an especial debt of gratitude. He was actively concerned in its foundation and organization, and during the critical period of its early history he gave much time and thought to its interests. He served for six years as its secretary and treasurer, and strove always with enthusiasm to make a successful beginning of an enterprise which he believed would foster the spirit of scientific research in physiology, and bring its active workers into stimulating fellowship. For its present prosperous condition, and its prospects of future usefulness, the Society feels that it is largely indebted to his wisdom and energy. In a broader field his influence upon the science of physiology has been deeply felt. His own splendid contributions to experimental physiology will have an enduring value, while the stimulus given by him to others has been, and will continue to be, an influential factor in the development of physiological instruction and research in this country. As an investigator and teacher he was distinguished, not only by his originality and ability, but by many noble traits of character. His modesty, his genuine interest in all kinds of biological work, his steady insistence upon the highest ideals of scientific inquiry, his chivalrous conception of the credit due to his fellow workers, and the generous sympathy and affection always felt and shown by him for the work of younger investigators, are some of the qualities which will endear his memory to those who were so fortunate as to be brought into intimate association with him as a teacher or as a friend.'

Professor H. P. Bowditch, in seconding the resolution, said:—

"Probably few of the younger members of the Society are aware of the great debt which we owe to Dr. Martin for establishing the high standard which the Society has always maintained with regard to the qualifications of the members. It was always Dr. Martin's contention that a candidate for admission to our ranks should be required to demonstrate his power to enlarge the bounds of our chosen science, and not merely to display an interest in the subject and an ability to teach text-book physiology to medical students. To his wise counsel in this matter the present prosperity of the Society is, I think, largely to be attributed. I trust that the resolution will be adopted, and placed upon the records of the Society."

The resolution was unanimously adopted.

COMMEMORATION DAY.

The twenty-first anniversary of the Johns Hopkins University was celebrated on Monday, February 22. The public exercises of the day were held in McCoy Hall.

At eleven o'clock, the procession entered the hall. The President of the Trustees and of the University, accompanied by the Governor of Maryland and the Mayor of Baltimore, the Chaplain and the Orator of the day, the Trustees, the Faculty, and invited guests headed the procession and were followed by the alumni and students.

The exercises were opened with a chant, *Benedictus*, sung by a quartette.

Prayer was offered by the Right Rev. Henry Y. Satterlee, D. D., LL. D., Bishop of Washington.

The hymn *Lord of all being! throned afar*, was sung by the assembly under the leadership of the University Glee Club.

The address of the day was then given by the Rev. Francis L. Patton, D. D., LL. D., President of Princeton University. His subject was "The Place which the Theistic Theory holds in Intellectual Inquiry."

The object of the address was to show that all rational thought regarding the universe proceeds upon assumptions and presuppositions that are essentially theistic. The place which the Concept of God has had in the thought of the world, as seen in the great constructive systems of philosophy; the forms which the theistic argument has taken in the hands of Aristotle, Anselm, Descartes, Kant; belief in God as the only possible means of providing a rational basis for science, an intelligible end for history, an adequate authority for morality; the traditional arguments as affected by contemporary scientific and philosophical criticism;—these are some of the points touched upon. The treatment was so lucid and skilful, and the abstractness of the discussion was enlivened by such brilliant and telling wit, that the audience followed the reasoning with delight, and with profound appreciation.

The degree of Doctor of Philosophy was conferred on the following candidates: Samuel E. Forman (A. B., Dickinson College, 1887), who had followed advanced studies in history, historical jurisprudence, and

economics, and whose thesis was on the career of Philip Freneau, the poet of the American Revolution, as a politician and publicist; Charles Francis Woods, Jr. (A. B., Johns Hopkins University, 1891), who had followed advanced studies in German, French and history, and whose thesis was entitled "The Relation of Wolfram von Eschenbach's Willehalm to its Old French Source, Aliscans."

The University song *Veritas Vos Liberabit* was then sung by the Glee Club.

Dr. E. H. Spieker, as chairman of a committee of the present and former pupils of Professor Gildersleeve, presented his portrait, painted by Mr. Louis C. C. Krieger of Baltimore, to the University.

Dr. Spieker, addressing the President of the University, spoke as follows:

During the course of the present academic year the honored head of the department of Greek at this university, Professor Gildersleeve, attained his 65th birthday, having but a short time before completed a period of forty years of active service in the cause of classical philology: twenty years at the University of Virginia and twenty at the Johns Hopkins University.

On the morning of his birthday the committee which now stands before you, quietly and without ostentation, went to his room in McCoy Hall and presented to him in the name of his present and former pupils an engrossed letter of congratulation and good wishes, and at the same time informed him that those whom they represented, in honor of the important combination of events in his life, desired to have his portrait painted and hung at some appropriate place in McCoy Hall. Had the decision rested with Professor Gildersleeve we feel sure that his natural modesty would have prevented our giving any publicity to the matter; but we believed that it was due to us and to him that the final act should be a public one, that all might know that we, who know him best, admire him most and love him best.

It is not our intention to pronounce a eulogy on the man; his record is open to all; the educational and the educated world know it well. To us that record has ever been a joy and an inspiration: as we have seen parts of it developing we have been made to feel that nature endowed him lavishly, making him a man most versatile; but we have also learned that to natural endowments he added an infinite capacity for labor, for toil and application, which makes more men capable than does nature.

The portrait, sir, for which Professor Gildersleeve kindly consented to sit, is now completed, and we take great pleasure in presenting it to you and through you to the Board of Trustees, with the request that you assign to it some fitting place on the walls of this building; that there it may serve not only to recall the career of a great scholar, investigator and writer; but also, and above all, that it may bear witness to the admiration, affection and gratitude of his pupils towards their teacher.

Professor Welch, on behalf of friends and associates of Professor Newcomb, asked that he sit for a portrait to be given to the University. The remarks of Professor Welch were as follows:

The custom which prevails in many foreign universities of celebrating, by some memorial, epochs in the lives of distinguished teachers and investigators connected with the university is one which can only be commended. A similar custom is finding increasing favor within recent years in this country, where so few material honors attend success in university and scientific careers.

The colleagues and other friends of Professor Newcomb desire to manifest their affectionate regard and their high appreciation of his services to science and to this University, and to mark an epoch in his life, by asking him to sit for a portrait to be painted in oil and presented to the Johns Hopkins University. It is just forty years since he left the work of a school teacher in the State of Maryland to engage in the mathematical service of the United States Government. It is twenty years since he became senior professor of mathematics in the United States Navy and editor of the *American Ephemeris and Nautical Almanac.* For many years he held the post of astronomer in the Naval Observatory at Washington. With the Johns Hopkins University he has been closely associated since its foundation. He has been honored in unusual degree by academic distinctions and by election to membership in learned societies both in this country and in Europe. His numerous contributions to science have received the highest possible recognition. This is not the occasion, nor am I the one to attempt to estimate in detail, the significance and the value of these contributions. The judgment of one's own peers is the test of the worth of discoveries in

pure science. The great mathematician, Professor Cayley, has pointed out the rare combination in Professor Newcomb's publications of mathematical skill and power and of good hard work devoted to the furtherance of mathematical science. When the blue ribbon of science, the Copley medal, was conferred upon our colleague by the Royal Society of London, attention was publicly called to the fact that he had won his distinction especially by his contributions to the science of gravitation and that his name was worthy to be remembered in the domain forever associated with the illustrious Isaac Newton.

Professor Newcomb, your friends and colleagues now ask permission to place your portrait by the side of that of your colleague, Professor Gildersleeve, that thus there may be here silent and enduring tokens of the honor which this University bestows upon the man of letters and the man of science.

Professor Newcomb responded briefly acceding to this request, and President Gilman accepted the gifts in behalf of the University.

The announcement was made by the President of the University of the establishment by Mr. J. B. Noel Wyatt, of Baltimore, of an annual course of lectures upon German literature, history or art, to be known as the "Wehrhane Memorial Lectureship" in memory of the late Mr. William H. Wehrhane, of Baltimore.

Postmaster General Wilson and Governor Lowndes were introduced to the assembly and briefly responded.

The exercises were closed by the singing of *Integer Vitae* by the Glee Club.

Orchestral music was rendered at intervals by Wright's Orchestra of fifteen pieces.

In the afternoon, the physical laboratory and the libraries in McCoy Hall were thrown open to the public.

A meeting, in favor of the pending arbitration treaty, was held in McCoy Hall in the afternoon. The Governor of Maryland presided. Mr. Isaac Brooks, Jr., acted as Secretary. Addresses were made by Mr. Joseph Packard, President Gilman, President Patton, and the Hon. John P. Poe, and resolutions were adopted.

MEETINGS OF THE ALUMNI.

The Baltimore Association met in the morning of February 22 in McCoy Hall and selected officers, as follows:—President, John Hemsley Johnson; Secretary, Alfred J. Shriver; Treasurer, Henry O. Thompson; Members of the Executive Committee: George Stewart Brown, James Piper, Albert C. Ritchie, Charles W. L. Johnson, and George Lefevre. The banquet of the association was held at the Hotel Rennert, in the evening, under charge of a committee headed by Mr. George C. Morrison. The President was Dr. Albert Shaw, of New York, editor of the Review of Reviews. Several brief addresses were made, and messages from other associations of the Alumni were read. The music was under the direction of Mr. Edwin L. Turnbull.

The Alumni of the Pacific Coast assembled at Stanford University. A telegram of congratulation signed by Professors Stringham, Lawson, and Lewis, of the University of California, Professors Richardson, Jenkins, Fairclough, Ross, Kriehn, Green, Spencer, and Matzke, of the Leland Stanford University, Professor Hunt, of the University of the Pacific, and Messrs. C. H. Shinn, J. A. Latane, and M. James, was sent to Baltimore.

The Fourth Annual Meeting of the Johns Hopkins University Club of New England was held at the Hotel Nottingham, Boston, on the evening of February 20, 1897. Professor J. F. Jameson presided. Professor Remsen was present as the representative of the University. The following officers were elected to serve for the ensuing year:—President, Prof. William T. Sedgwick, Massachusetts Institute of Technology; Secretary and Treasurer, Dr. Charles F. Painter, 416 Marlborough Street, Boston, Mass.; Executive Committee: Messrs. W. S. Bayley, H. A. Bumstead, W. T. Councilman, C. M. Cone, D. R. Dewey, G. S. Hall, George H. Haynes, Arthur J. Hopkins, Theodore Hough, J. F. Jameson, C. R. Lanman, James I. Peck, Josiah Royce.

The Northwestern Association of the Alumni met at luncheon at the Great Northern Hotel, Chicago, on February 22. Professor C. H. Haskins, of the University of Wisconsin, presided.

The New York Alumni met at dinner at the Arena on West 31st St., New York City. Officers for the ensuing year were elected.

THE JOHNS HOPKINS UNIVERSITY AND THE CITY OF BALTIMORE.

(Reprinted, with a few revisions and additions, from *The Sun*, Baltimore, February 22, 1897.)

The Johns Hopkins University will observe its twenty-first annual commemoration day this morning at 11 o'clock in McCoy Hall.

The university was opened for instruction in the fall of 1876. Judge William A. Fisher, in a recent gathering of friends of the university, referred to the many avenues of city life in which the university's influence had been all-pervading. This suggestion led to some further inquiries by Dr. Jacob H. Hollander, of the Hopkins faculty, who has written much recently upon local history.

Talking yesterday of some of his results in this direction, Dr. Hollander said : " The material development of the city within the period of the university's activity is familiar, but its remarkable growth in many other directions, tending to increasing attractiveness as a city of residence and to increasing influence upon American society, commonly escapes notice.

" The most remarkable development of Baltimore in other than material and industrial affairs within the past twenty years has unquestionably been in the educational field. Without losing any of its distinctive characteristics, the city has become one of the great educational centres of the country, recognized as such in every quarter of the globe, and attracting large bodies of students from widely removed localities.

" The activity of the Johns Hopkins University, coincident in time with the period considered, has doubtless been the paramount force in this development. The story of the institution forms a unique chapter in the history of American higher education. Almost within the years which similar institutions have devoted to mere tentative efforts, Johns Hopkins has attained the front rank among higher institutions of learning. The relation of the university to the city and its residents has throughout been intimate. Academic currents penetrate every stratum of Baltimore society and exercise wide and far-reaching influences upon its intellectual life.

" In the higher education of women the extraordinary growth of the Woman's College has already made Baltimore an important centre for a large section of the country and the source of noteworthy influence upon the educational development of the South.

" Local medical instruction has undergone marked improvement, culminating in the opening of the Johns Hopkins Medical School as a post-graduate department. Ampler facilities for clinical and laboratory work are afforded and a larger and better equipped body of students have been attracted to the city. In law, dentistry and pharmacy local institutions have fully kept pace with scientific advance in methods of instruction and research. Preparation for college has been simplified. A number of well-conducted preparatory schools are in operation, and a link between the public-school curriculum and college matriculation requirements has been formed. The Bryn Mawr School, with its finely equipped building, serves as an admirable preparatory school for girls.

" Almost as remarkable," continued Dr. Hollander, " has been the development of educational apparatus—libraries and library facilities. The past twenty years have witnessed the collection of the library of the Johns Hopkins University, now numbering about 80,000 volumes, gradually and carefully chosen from every department of science and literature and including several noteworthy special collections, as the McCoy library, rich in works illustrating the history of art ; the Bluntschli library, in historical and political science ; and the Dillmann library, in Semitic languages and biblical literature.

" Within the same period the library of the Peabody Institute has grown from 60,000 to a noble collection of more than 125,000 volumes. An admirable catalogue of the library has been printed and better facilities for investigation and research have been afforded.

" The munificence of the late Enoch Pratt has supplanted these two collections by the creation of a well-chosen circulating library of 170,000 volumes. The special libraries of the Maryland Historical Society, the

Bar Association, the Whitridge Library of the Diocese of Maryland, the Medical and Chirurgical Library and the New Mercantile Library have received material accessions and have become more generally accessible.

" President Gilman has estimated that a resident of Baltimore has access, within a circle of half a mile's radius, to nearly half a million volumes, of which at least one-half are often borrowed and adapted to the use of scholars. It seems safe to say that of this entire aggregate at least 350,000 volumes have been brought to Baltimore since 1876.

" Various means of indirect instruction have supplanted the work of formal educational agencies. Long before the so-called University extension' movement had established itself in this country, the Johns Hopkins University had made accessible each winter to the general public certain courses of lectures of a semi-popular character. These opportunities have been gradually extended, and a considerable body of persons have received stimulus and instruction therefrom. Conspicuous in the same direction has been the influence of the annual courses of thirty lectures offered by the Peabody Institute, under the auspices of which many distinguished persons in the world of letters and science have been brought at various times to Baltimore. A recent development of the Peabody lecture system has been the substitution of continuous courses for disconnected, single or brief series of lectures.

" The annual courses of lectures and entertainments of the Public School Teachers' Association, the Young Men's Christian Association, and of various church and other organizations have exerted similar influences for good.

" In close association with these several educational forces is to be mentioned the greater literary productiveness of Baltimore. A bibliography of the other than ephemeral writings of Baltimoreans within the past twenty years would show a result far greater in volume and in content than that of any earlier period. In the office of the president of the Johns Hopkins University a remarkable collection is maintained, containing books published by the university and its officers and by those who have been educated here, and already containing several hundred volumes.

" The humanities as well as the sciences have received noteworthy contributions from Baltimore, and the present activity of a group of gifted writers suggests a conscious acceptance of the heritage of John Pendleton Kennedy, of Severn Teackle Wallis and of Sidney Lanier.

" The University Club has been and continues an important influence in the cultivated life of the city. Although formally organized only ten years ago, it is a direct outgrowth of the old Johns Hopkins University Club organized in 1879, the germ of which in turn were the informal Saturday evening sessions of certain instructors and fellows, dating almost from the opening of the University. The purpose of the University Club has been described by Professor Gildersleeve, its first and only president, as 'the furtherance of social relations and intellectual interchange among those members of the community who are in sympathy with university views and university methods.' In this direction much has been accomplished, even though the results can not be precisely estimated.

" A remarkable development of what might be called ' the larger life' of Baltimore within the past twenty years," Dr. Hollander continued, " has been the greater activity of women in intellectual and practical affairs. The formal expression of this activity is to be found in the growth and influence of such organizations as the Arundell Club, the Women's Literary Club, the Lend-a-Hand Club and the Quadriga Club. At first merely stimulating agencies of self-culture, these bodies are rapidly becoming important influences in the communal life of the city. Indirectly they have aroused and sometimes shaped public opinion in the direction of needed reform, and the growing desire to give women representation upon municipal boards is but one aspect of this influence.

" The activity of the Conservatory of Music of the Peabody Institute has effected marked improvement in musical study and appreciation in Baltimore within the period. Much, very much, remains yet to be accomplished, but it will hardly be denied that musically Baltimore is a very different city from what it was twenty years ago. In the face of ignorance, apathy and active hostility, a corps of talented instructors has persisted in the work of musical education—to a limited student body by direct instruction, to the community at large by series of recitals and concerts.

" If the results thus far attained have been disproportionate to the effort expended, signs are not wanting that the long-delayed musical awakening is in sight. The organization of the graduates of the Peabody Institute,

the erection of the Music Hall, the formation and revival of various musical societies are distinct expressions of this tendency.

"The artistic resources of the city have been notably augmented within the past twenty years," said Dr. Hollander. "The Maryland Institute, inconspicuous, but effective in activity, has been the important educational force in this direction, serving as a local cradle of art. The Rinehart fund for the promotion of the art of sculpture has come into operation under the auspices of the Peabody Institute. Two European scholarships are annually awarded, and at the Maryland Institute, a school of sculpture, under a highly qualified artist, is maintained. The Charcoal Club since its inception has imparted stimulus and inspiration to a maturer class, and has fostered the informal association of artists and art-lovers. Decorative art has been developed by the opportunities afforded by the Decorative Art Society. Access to the superb collections of the Walters Gallery, to the Peabody Institute Gallery and to the public exhibits held periodically under various local auspices have created a larger student body and have done much to develop the artistic sense of the community. As in music, a limitless vista of further opportunity need not prevent recognition of the noteworthy advance already made.

"Little need be said of the marked improvement in the æsthetic aspect of the city within the past twenty years. The business quarter has been virtually reconstructed by the demolition of many of the oldest, and the erection of attractive modern structures. Residential sections have been extended and attractive suburbs have sprung up. Our parks and squares have been carefully developed, and a notable addition has recently been made thereto. The generous gifts of William T. Walters, Robert Garrett, and W. W. Spence have adorned the city with noble expressions of the sculptor's genius.

"In many other directions residence in Baltimore has become more attractive than it was twenty years ago—in the development of its social life, in the incidental features of university activity, in the organization of its charities, in the progress in local journalism. In all these directions the outlook is rich in promise, and it needs no unreasonable optimism to remind us that our own poet Lanier has sung, less, perhaps, as the minstrel than as the seer—

"'a fairer Athens than of yore
In these blest bounds of Baltimore'"

THE TOCQUEVILLE MEDAL.

In Paris there is a Society for the purpose of developing in American universities the study of French civilization. The Society is called *Union Française des Universités d'Amérique.* Among the members of this Society are Paul Bourget, of the French Academy, the Duke de Noailles, the Viscount de Tocqueville, Count de Rochambeau, and the Count Jacques de Pourtalès. M. le Baron Pierre de Coubertin, President of the Union, has offered on its behalf to bestow annually upon a prize essayist of the Johns Hopkins University a medal, to be called "The Tocqueville Medal," in honor of the illustrious Frenchman, Alexis de Tocqueville (1805–1859), author of the well-known historical and political studies, "Ancien Régime" and "Démocratie en Amérique."

The following rules will govern the award:

1. The medal will be given to that student of the Johns Hopkins University who shall have written the best essay on some subject in historical or political science taken from French history or politics from 1815 to 1890. Competitors may select any desirable theme, historical, political, diplomatic, economic, social, or biographical, within the period specified.

2. Students who have left the University, either graduates or not, cannot be admitted to the competition.

3. Essays must be legibly written or typewritten, on one side only of ordinary thesis-paper, unbound. Not less than 8,000 nor more than 16,000 words are desired. Papers must be sent, in completed form, to the Registrar of the University, on or before January 1, 1898.

4. A committee of award will be appointed by the President of the University. If there is a sufficient competition of meritorious essays, the Tocqueville Medal will be publicly awarded, for the first time, on the 22d of February, 1898. The University will withhold the prize if no thesis worthy of it is presented.

H. B. ADAMS,
Professor of American and Institutional History.

PROCEEDINGS OF UNIVERSITY SOCIETIES.

Philological Association.

February 19, 1897.—One hundred and fifty-sixth regular meeting. Professor Gildersleeve in the chair. Fifty members were present.
Papers read:
On English Versification, by J. W. BRIGHT.
On a Passage in the Babylonian Nimrod Epic, by C. JOHNSTON.

March 19.—One hundred and fifty-seventh regular meeting. Professor Gildersleeve in the chair. Forty-two members were present.
Papers read:
The Fable of the Frogs desiring a King, with special reference to the Version of Marie de France, by W. A. NITZE.
The Walpurgisnacht in the Chronology of Goethe's Faust, by C. B. FURST.

April 9.—One hundred and fifty-eighth regular meeting. Professor Gildersleeve in the chair. Forty members present.
Papers read:
Shelley's Nature Poetry, by P. EDGAR.
The Etymology and Meaning of the Root *id*, by J. A. NESS.

Historical and Political Science Association.

January 29.
Chesapeake and Ohio Canal, by G. W. WARD.
The Black Death, by W. T. THOM.
Review of J. C. Ayer's thesis on the Ethics of Joseph Butler, by G. C. LEE.

February 12.
Ancient Coinage, by J. M. VINCENT.
Will Government by the People Endure? by C. M. BROUGH.
English National Character, by J. J. CANTEY.
Bruce's Economic History of Virginia, by J. C. BALLAGH.
Eggleston's Beginners of a Nation, by T. S. ADAMS.
Jevons's Introduction to the History of Religion, by P. L. KAYE.

March.
America as the Political Utopia of Young Germany, by T. S. BAKER.
Representation in Congress from the Seceding States, by C. SNAVELY.
Ratzel's History of Mankind, by J. R. EWING.
Brooks Adams's Law of Civilization and Decay, by E. A. SMITH.
Blackmar's Story of Human Progress, by C. W. SOMMERVILLE.

March 19.
Moral Justification of the State's Authority, by W. W. WILLOUGHBY.
Perrin's thesis on History of Compulsory Education in New England, by E. W. SIKES.
Burgess's Middle Period of American History, by G. W. WARD.
Virginia immediately after the War, by W. T. THOM.

Naturalists' Field Club.

February 9.
Behavior of Ferns toward Light, by C. E. WATERS.
Yoldia, by G. A. DREW.
Treefrogs and Lizards of Jamaica, by M. T. SUDLER.

March 9.
Marsilia, by D. S. JOHNSON.

Physical Seminary.

Papers and Demonstrations:
Galvanometer Design, by C. W. WAIDNER.
Testing of Thermometers, by W. S. DAY.
Measurement of Induction, by T. D. PENNIMAN.
Measurement of Freezing and Boiling Points of Solutions, by H. J. JONES.
Absolute Measurement of the Ohm, by J. F. MERRILL.

Young Men's Christian Association.

Friday until Sunday, February 19–21.—Twenty-fifth Convention of Young Men's Christian Associations of Maryland, West Virginia, District of Columbia, and Delaware, at Frederick, Md.

Thursday, March 18.—Reception to Dr. Lyman Abbott, Levering Lecturer for 1897.

OBITUARY.

DR. GUSTAV ADOLPH LIEBIG died in Brooklyn, N. Y., February 10, 1897, in the thirty-sixth year of his age. Dr. Liebig was connected with this University from 1880 to 1890, receiving the degree of Bachelor of Arts in 1882 and that of Doctor of Philosophy in 1885. He was a Fellow in Physics from 1883 to 1885, a Fellow by Courtesy from 1885 to 1887, and during the next three years Assistant in Electricity. For several years past he had been engaged in electrical and chemical work.

MR. EZRA CARL BREITHAUPT died at his home in Berlin, Ontario, January 27, 1897, aged 31 years. Mr. Breithaupt graduated at Northwestern College, Illinois, in 1887, and in 1890 entered the Johns Hopkins University as a graduate student. In June, 1892, he was granted a Certificate of Proficiency in Applied Electricity, and since then he has been engaged in electrical work at his home in Canada.

MR. EDWARD PAYSON MANNING, died at his home in Judson, Mass., February 15, 1897, in the thirty-second year of his age. Mr. Manning graduated as a Bachelor of Arts of Brown University in 1889, and entered the Johns Hopkins University in October, 1890. He held successively the posts of University Scholar, Fellow, and Fellow by Courtesy, and received the degree of Doctor of Philosophy in June, 1894, in the department of Mathematics. In September, 1894, he entered upon his duties as Instructor in Mathematics at St. Lawrence University, New York, but failing health compelled him to give up his work after a few weeks, and the past eighteen months were spent in the Adirondack Mountains.

LECTURES OF PROFESSOR BRUNETIÈRE

ON THE PERCY GRAEME TURNBULL MEMORIAL FOUNDATION.

Professor F. Brunetière gave the last of a brilliant course of lectures on French Poetry, Friday, April 9. This course has been followed by an audience of several hundred persons. The lectures were given in French. The special subjects were:

La Poésie Épique du Moyen Age; La Poésie Courtoise; La Poésie Chevaleresque—Romans de la Table Ronde et Amadis; De Ronsard à Malherbe; La Poésie Dramatique—Corneille, Racine, Molière; De Voltaire à Chateaubriand; La Poésie Romantique; Le Combat du Romantisme et du Naturalisme dans la Poésie du 19⁰ siècle; Le Symbolisme et les Tendances Actuelles de la Poésie.

Carefully prepared abstracts of the lectures were printed in the *Baltimore News.*

The following letter is reprinted from *The Critic,* New York, March 20:

M. FERDINAND BRUNETIÈRE.

(By Th. Bentzon.)

You ask me to write an article on M. Brunetière, who has been invited to give this year's series of lectures on poetry at Johns Hopkins University. Will you permit me to reply in the epistolary form, and thus avoid giving this paper the importance of a biography, as M. Brunetière is almost as well known in America as in France? The mere fact of his having been chosen to speak in one of your great universities sufficiently proves this. It is probable that everyone knows that he was born at Toulon in 1849, and that this native of Provence has pure Brittany blood in his veins, which accounts for the compound of ardor and steadfastness, conscience and passion to be found in him; that he intended to devote himself to teaching, but turned towards literature, and that as far back as 1875 he became an assiduous, as well as admired, collaborator of the *Revue des Deux Mondes.* His power for work is prodigious, as he proved from the outset, when, as assistant editor, he really managed that most important publication, long before he bore the title of director. In 1886 he was appointed Maître de Conférences on French language and literature, at the École Normale. In 1887 he received the Order of the Legion of Honor, and entered the French Academy, while still very young. All this can be found in any encyclopedia.

What is more interesting is the account of his writings, such as his Critical Studies on the History of French Literature, in which one of the strongest, most original and most logical minds is mirrored. He is, by far, the leading critic of the day, notwithstanding that, in France, this is pre-eminently the age of criticism. I will add that he is besides, among all the writers and lecturers of our country, the one who has the greatest number of reasons for appealing to the sympathy of Americans. His enemies themselves—for he has some, and boasts of the fact, as he has never courted popularity,—his very enemies, as well as his friends, have to acknowledge that he has one master quality—authority. He always knows exactly what he is saying, as well as all that pertains to what he says, and this rests on solid principles and so extensive an erudition that it seems to include every branch of human knowledge. All others seem shallow by comparison. No historical, philosophical or other question is strange to him, and this enormous wealth is classified with scrupulous precision in a mind that, by merely filtering them, knows how to give to the most abstract subjects the limpidity of a crystal spring. This incomparable perspicuity seems to me the first condition for success in a foreign country, even when one's audience is composed of a perfectly prepared *élite,* understanding French as well as it can be understood when it is not one's mother-tongue.

And the French that M. Brunetière speaks in his distinct, incisive and ringing voice has all the classic purity, a rare thing at times go! There are no neologisms, and yet there is nothing insipid or antiquated about it. I assure you, instead, you will find a rare felicity of expression—although he does not tax the resources of the vocabulary,—dash, brilliant paradox, and an indefinable something whose sharpness and spiciness stimulate, and will give an American audience the impression of humor, at times even of grim, Puritan humor. For there is a tart flavor in both the eloquence and the writings of M. Brunetière. His contempt for all the humbug, snobbishness and affectation in the judgments dictated by fashion, easily finds vent in the most original and fiery manner. Triviality and conventionality are equally hateful to him. Far from fearing combat, he seeks it, and knows how to give his adversaries a thorough shaking-up, whilst observing the utmost politeness.

Who are those adversaries? The adepts of a certain mannerism which nowadays is trying to pass current as talent—impressionists, worshippers of the Japanesque, and unwholesome minds that seek their inspiration in strange or ignoble subjects. All of these, even Goncourt or Baudelaire, have felt his clutch. He is free from the superstition of great names and established reputations. He spoke his mind to Victor Hugo himself, and went to the very bottom of things, stripping him on the way, exactly as he does with the new man. In a fine book on the realistic novel, he has lashed the imitators of Flaubert and Zola, which, however, does not mean that he refuses to recognize that the former brought new and most precious elements into novel-writing, nor that he does not appreciate the almost epic breadth of the latter; but he makes his reservations even when analysing a masterpiece like "Madame Bovary," and the uncompromising lovers of art for art's sake will never forgive him this. Still, I believe they will do more than forgive it in America, where readers of the best English literature have always thought, as he would have everyone think, that a work is not great merely by the talent of its author, but by the quality of the ideas it brings forward and the interest of the persons portrayed.

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In French literature, M. Brunetière loves the seventeenth century best, because it was the highest expression of good taste and good sense, which does not signify that he systematically shuts himself up in the artificially clipped gardens of Versailles and refuses to taste the charm of woods, or even hazardous paths. He does not shut himself up anywhere; even the big word cosmopolitanism does not frighten him. He knows as much about foreign literature as about everything else, and at times admits it unhesitatingly to the pages of the *Revue.* But he is never carried away, either by impulse or by infatuation, and when people talk about daring forms and subjects, he easily proves that Racine, Pascal and Molière were more audacious than many another. Comparing classical authors with those of our day, he will take the occasion to show you that the former are at least as truthful, as bold and as passionately human as the latter, without adding that most of them were perfectly familiar with matters now considered recent psychological discoveries.

Jules Lemaître, the sceptic, the very antipodes of M. Brunetière, having for his gift as a writer a languid and subtle charm, while M. Brunetière's share is power, has said something witty about the latter, as is, in fact, nearly all he says:—"His orthodoxy is as bold and defiant as heresy." This orthodoxy refers to literary matters alone, and in M. Brunetière's case merely signifies, I believe, the contempt of a healthy and robust intelligence for morbid fancies, hysteria and nonsense. Nevertheless, this admirer of Renan, this follower of Darwin, for he has undertaken a vast work, on the Evolution of Species in the History of Literature, in which Darwinian principles are applied to literary productions—this very free mind, in short, looks upon Bossuet as the great genius of the period he considers the greatest. He has published an annotated edition of Bossuet's selected sermons, whence it must not be inferred that his dogmatism, if he has any from a scholarly point of view, extends to religion; he does not profess to belong to any church, although he has the deepest respect for divine things, and the conviction that all the science in the world will never make up for it.

Those who have only read M. Brunetière will be surprised to notice how his very peculiar style, with its long and elaborately constructed phrases, which keep attention on the alert, bends to the requirements of speech and the familiarity of conversation. He is a dazzling talker. It is always interesting to read him, but it is delightful to hear him. Both men and women prove this to demonstration by rushing in crowds to his lectures. He holds his audiences spell-bound. I heard him speak, a short time ago, on the utility of lectures as the best and surest way to spread general ideas. "This," he said, "is for those who listen, but we must also consider the necessary satisfaction it gives to men who are born with the need and vocation to speak."

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M. Brunetière is, before all else, powerfully and intrepidly individual. He is a moralist, a thinker, a philosopher, an historian, a writer, a lecturer. He is (and everyone agrees on this point, as well as on his talents as an orator) a critic of the highest order. But first and foremost he is a character.

PARIS, *February,* 1897.

ENUMERATION OF CLASSES, SECOND HALF-YEAR, 1896-97.

Mathematics and Astronomy. (67 Students).

Classes meet in the Physical Laboratory, unless otherwise stated.

Fuchsian Functions and Linear Differential Equations:
Professor Craig. Wednesday and Friday, 9 a. m., Room 26. (3).

Hardy.	Pattillo.	Pell.

Partial Differential Equations of the Second Order: Professor Craig. Monday, Tuesday, Thursday, 9 a. m., Room 26. (4).

| Hardy. | Mitchell, S. A. | Pattillo. | Pell. |

Geodesic Lines and Deformation of Surfaces: Professor Craig. Monday, Tuesday, Thursday. 10 a. m., Room 26. (4).

| Hardy. | Lovett. | Pattillo. | Pell. |

Theoretical Mechanics: Dr. Chessin. Monday and Tuesday, 12 m., Room 26. (3).

| Clutz. | Mitchell, S. A. | Pell. |

Elliptic Functions, with Applications: Dr. Chessin. Thursday, 12 m., Room 26. (7).

| Clutz. | Harrison, C. N. | Pell. | Schenck, C. C. |
| Hardy. | Mendenhall. | Saunders, F. A. | |

Elementary Theory of Functions: Dr. Chessin. Monday and Tuesday, 11 a. m., Room 26. (10).

Church, W. H.	Horner.	Newcomer.	Wallis.
Devol.	Marine.	Schenck, C. C.	Wilhelm.
Harrison, C. N.	Merrill.		

Theory of Substitutions: Dr. Hulburt. Wednesday, Thursday, Friday, 10 a. m., Room 27. (6).

| Hardy. | Pattillo. | Rabinovitch. | Wilhelm. |
| Horner. | Pell. | | |

Theory of Invariants: Dr. Cohen. Monday and Wednesday, 4 p. m., Room 26. (5).

| Hardy. | Pell. | • Wallis. | Wilhelm. |
| Harry, S. C. | | | |

The Geometry of Lie's Contact Transformations: Dr. Lovett. Monday, 5 p. m., Room 26. (6).

| Cohen. | Hardy. | Pattillo. | Pell. |
| Devol. | Mitchell, S. A. | | |

Differential Equations: (*Undergraduate Elective*): Dr. Hulburt. Monday and Tuesday, 10 a. m., Room 27. (6).

| Church, W. H. | Gassman. | Marine. | Weglein. |
| Devol. | Horner. | | |

Theory of Equations; Modern Analytic Geometry; Analytic Geometry of Three Dimensions: (*Major Course*): Dr. Cohen. Daily, except Monday, 9 a. m., Room 27. (11).

Armstrong, J. R. C.	Devol.	Horner.	Pender.
Beenwkes.	Everett.	Lucke.	Rabinovitch.
Blackman.	Fitzgerald.	Naylor.	Swaine.
Church, W. H.	Fowler.		

Calculus: (*Minor Course*): Dr. Hulburt. Daily except Friday, 1 p. m., Room 26. (23).

Barrows.	Ford, C. E.	Lawson.	Seth.
Bestor.	Haulenbeck.	Rabinovitch.	Smith, F. W.
Blackman.	Judge.	Reusen, C. M.	Straus.
Case.	Kalb, J. A.	Reynaua.	Winston.
Cloud.	King, T. H.	Ridgely.	Wooldridge.
Curtis.	Kleinschmidt.	Roath.	

Trigonometry; Elementary Analytic Geometry: Dr. Cohen. Monday, 9 a. m., Tuesday, 10 a. m., Wednesday, 11 a. m., Thursday, 12 m., Room 7, McCoy Hall. (8).

| Bouchelle. | Emery. | Kaufman, H. | Small. |
| Breed. | Jungbluth, K. | Smith, W. L. | Stephens, C. G. |

Advanced Theoretical Astronomy: Dr. Poor. Wednesday, Thursday, Friday, 11 a. m., Room 34. (2).

| Clutz. | Mitchell, S. A. |

Theory and Use of Astronomical Instruments; Theoretical Astronomy: Dr. Poor. Tuesday and Wednesday, 12 m., Room 34. (7).

| Church. | Gassman. | Newcomer. | Wallis. |
| Devol. | Mendenhall. | Penniman. | |

Observatory Work: Dr. Poor. Daily, 8 p. m. (13).

Church.	Harry, S. C.	Mitchell, S. A.	Waidner.
Clutz.	Hoffman, S. V.	Newcomer.	Wallis.
Devol.	Mendenhall.	Penniman.	Wilhelm.
Gassman.			

Descriptive Astronomy: (*Undergraduate Elective*): Dr. Poor. Thursday, 12 m., Friday, 1 p. m., Room 34. (2).

| Dohme. | Edmunds. |

Physics. (101 Students).

Classes meet in the Physical Laboratory.

Electricity and Magnetism: Professor Rowland. Daily, except Wednesday, 10 a. m. (17).

Brackett.	Mather.	Newcomer.	Saunders, F. A.
Dorsey.	Mendenhall.	Penniman.	Schenck.
Harrison, C. N.	Merrill.	Rhoads.	Spencer.
Humphreys, W. J.	Mixter.	Rothermel.	Waidner.
Mallory.			

Journal Meeting: Professor Rowland and Dr. Ames. Wednesday, 11 a. m. (24).

Brackett.	Jones, H. C.	Mixter.	Rothermel.
Day, W. S.	Mallory.	Newcomer.	Saunders, F. A.
Dorsey.	Marine.	Penniman.	Schenck.
Gassman.	Mather.	Reid, H. F.	Spencer.
Harrison, C. N.	Mendenhall.	Rhoads.	Waidner.
Humphreys, W. J.	Merrill.	Ridgely.	Wallis.

Physical Seminary: Dr. Ames. Saturday, 9 a. m. (15).

Brackett.	Humphreys, W. J.	Merrill.	Saunders, F. A.
Day, W. S.	Mallory.	Penniman.	Schenck.
Dorsey.	Mather.	Rhoads.	Waidner.
Harrison, C. N.	Mendenhall.	Rothermel.	

Electrical Oscillations and Waves: Dr. Ames. Thursday and Friday, 11 a. m. (22).

Brackett.	Marine.	Penniman.	Schenck.
Dorsey.	Mather.	Rhoads.	Spencer.
Gassman.	Mendenhall.	Ridgely.	Stephens, J. C.
Harrison, C. N.	Merrill.	Rothermel.	Waidner.
Humphreys, W. J.	Mixter.	Saunders, F. A.	Wallis.
Mallory.	Newcomer.		

Physics: (*Major Course*): Dr. Ames. Daily, except Thursday, 12 m. (18).

Adams, H. H.	Edmunds.	Howard, S. F.	Ridgely.
Beenwkes.	Everett.	Naylor.	Swaine.
Blackman.	Haldeman.	Rabinovitch.	Verplanck.
Cloud.	Hancock.	Reese, H. M.	Weglein.
Diaz-Leenna.	Horner.		

Physics: (*Minor Course*): Dr. Ames. Daily, except Tuesday, 10 a. m. (44).

Armstrong, W. E. F.	Fischer, J. S.	Homer.	Pender.
Barrows.	Fitzgerald.	Kalb, J. A.	Smith, F. W.
Bestor.	Fraps.	Keidel, A.	Smith, R. M.
Bowlus.	Ford, C. E.	King, J. H.	Straus.
Byers.	Fowler.	King, T. H.	Tavean.
Case.	Greenbaum.	Lazenby.	Thomas, R. H.
Cator.	Harwood, L.	Lucke.	Tobin.
Church.	Haskell.	McComas.	Werber.
Cloud.	Haulenbeck.	McFadden.	Williams, C. B.
Crawford.	Hirshberg.	Morgan.	Wright.
Ferguson.	Hoggard.	Muller.	Young.

Applied Electricity: (*Second year*): Dr. Duncan. Monday and Tuesday, 9 a. m. (6).

| Allen, W. H. | Eisenbrandt. | Mixter. | Pindell. |
| Bowman. | Merrill. | | |

Applied Electricity: (*First year*): Dr. Duncan. Thursday and Friday, 9 a. m. (10).

Allen, W. H.	Gorsuch.	Keidel, F. B.	Merrill.
Bartell.	Haldeman.	Kershner.	Spencer.
Eisenbrandt.	Hodges, W. L.		

Electrical Measurements: Mr. Hering. Wednesday, 10 a. m., Thursday, 12 m. (9).

Allen, W. H.	Gorsuch.	Hodges, W. L.	Kershner.
Bartell.	Haldeman.	Keidel, F. B.	Spencer.
Eisenbrandt.			

Electrical Seminary: Dr. Duncan, Mr. Hering, Mr. Geer. Wednesday, 9 a. m. (12).

Allen, W. H.	Eisenbrandt.	Hodges, W. L.	Merrill.
Bartell.	Gorsuch.	Keidel, F. B.	Pindell.
Bowman.	Haldeman.	Kershner.	Spencer.

Steam and Hydraulic Engineering: Mr. Geer. Wednesday, Thursday, Friday, 11 a. m. (4).

| Allen, W. H. | Bowman. | Eisenbrandt. | Pindell. |

Mechanics of Engineering: Mr. GEER. Monday and Tuesday, 11 a. m. (9).

Allen, W. H.	Gorsuch.	Hodges, W. L.	Naylor.
Bartell.	Haldeman.	Kershner.	Spencer.
Eisenbrandt.			

Laboratory Work: Professor ROWLAND, Dr. DUNCAN, Dr. AMES, Mr. HERING, Mr. GEER, Dr. BLISS. Daily, 9 a. m. to 5 p. m. (94).

Adams, H. H.	Fraps.	Kershner.	Reese, H. M.
Allen, W. H.	Ford, C. E.	King, J. H.	Rhoads.
Armstrong, W. E. F.	Fowler.	King, T. H.	Ridgely.
Barrows.	Gassman.	Lazenby.	Rothermel.
Bartell.	Ghio.	Lucke.	Saunders, J. A.
Beenakers.	Gorsuch.	Maddren.	Schenck.
Bester.	Greenbaum.	Mallory.	Smith, E. W.
Blackman.	Haldeman.	Marine.	Smith, R. M.
Bosley.	Hamman.	Mather.	Spencer.
Bowman.	Hancock.	McFadden.	Stephens, J. C.
Brackett.	Harrison, C. N.	McKeough.	Straus.
Byers.	Harwood, L.	Mendenhall.	Swaine.
Cator.	Haskell.	Merrill.	Tavean.
Church.	Haulenbeck.	Mixter.	Thomas, R. H.
Cloud.	Hirshberg.	Morgan.	Toban.
Comer.	Hodges, W. L.	Mulherin.	Verplanck.
Day, W. S.	Hoggard.	Muller.	Waidner.
Dorsey.	Homer.	Naylor.	Wallis.
Edmunds.	Horner.	Newcomer.	Weglein.
Eisenbrandt.	Howard, S. F.	Pender.	Werber.
Everett.	Humphreys, W. J.	Penniman.	Williams, C. B.
Ferguson.	Kalb, J. A.	Pindell.	Wright.
Fischer, J. S.	Keidel, A.	Rabinovitch.	Young.
Fitzgerald.	Keidel, F. B.		

Special Course for Students looking towards Medicine: Mr. HUMPHREYS. Recitations twice a month. (7).

Bosley.	Ghio.	Maddren.	Mulherin.
Comer.	Hamman.	McKeough.	

Chemistry. (111 Students).

Classes meet in the Chemical Laboratory, unless otherwise stated.

Organic Chemistry: (For Graduate Students): Professor REMSEN. Daily, except Monday, 9 a. m. (36).

Alleman.	Cloud.	King, S. H.	Ryland.
Arbuckle.	Cook, C. G.	Lawson.	Scott, C. C.
Barrows.	Crane.	Linthicum.	Smith, E. S.
Berkeley.	Curtis.	Maddren.	Stoddard.
Bowlus.	Fraps.	Mattern.	Waters.
Byers.	Griffith.	Nakaseko.	Wilcox.
Case.	Henderson.	Norris.	Williams, C. B.
Caspari.	Howard, S. F.	Ragland.	Wilson, F. D.
Chambliss.	Jones, W. A.	Reid, E. E.	Winston.

Journal Meeting: Professor REMSEN. Saturday, 9–10.30 a. m. (40). The instructors in Chemistry and the following students:

Alleman.	Curtis.	Lawson.	Ryland.
Arbuckle.	Fraps.	Linthicum.	Smith, E. S.
Berkeley.	Griffith.	Magruder.	Stoddard.
Bowlus.	Henderson.	Mattern.	Waters.
Byers.	Horner.	Nakaseko.	Wilcox.
Case.	Howard, S. F.	Norris.	Williams, C. B.
Chambliss.	Jones, W. A.	Ragland.	Wilson, F. D.
Cook, C. G.	King, S. H.	Reid, E. E.	Winston.
Crane.			

Analytical Chemistry: Professor MORSE. Monday, 9 a. m. (26).

Alleman.	Crane.	Lawson.	Reid, E. E.
Arbuckle.	Curtis.	Linthicum.	Ryland.
Barrows.	Fraps.	Magruder.	Scott, C. C.
Bowlus.	Griffith.	Nakaseko.	Waters.
Byers.	Henderson.	Norris.	Williams, C. B.
Caspari.	Horner.	Ragland.	Wilson, F. D.
Chambliss.	King, S. H.		

Special Course in Physical Chemistry: Dr. H. C. JONES. Monday and Tuesday, 12 m. (11).

Bowman.	Gorsuch.	Merrill.	Pindell.
Chamberlain.	Hodges, W. L.	Mixter.	Spencer.
Eisenbrandt.	Kershner.	Nakaseko.	

Organic Chemistry: (Major Course): Professor MORSE and Dr. RANDALL. Daily, except Monday, 9 a. m. (25).

Ballard.	Fischer, J. S.	McKeough.	Scholl.
Bosley.	Francis.	Mulherin.	Straus.
Cator.	Gassman.	Myers.	Turner.
Comer.	Ghio.	Palmer, E. L.	Weglein.
Dohme.	Hamman.	Reese, H. M.	Wooldridge.
Duffy.	Hoggard.	Renouf, V. A.	Young.
Ferguson.			

General Chemistry: Professor RENOUF, Dr. RANDALL, Dr. GILPIN. Daily, except Monday, 9 a. m., Hopkins Hall. (37).

Armstrong, W. E. F.	Haulenbeck.	Lazenby.	Routh.
Bouchelle.	Hirshberg.	Levy, W. S.	Smith, R. M.
Breed.	Homer.	Marine.	Smith, W. L.
Bruce.	Jenkins.	McFadden.	Stanley.
Emery.	Jones, A. D.	Miller, F. O.	Tavean.
Ford, C. E.	Jungbluth, M.	Morgan.	Thomas, R. H.
Greenbaum.	Keidel, A.	Muller.	Tobin.
Guggenheimer, C. S.	Kennard.	Remsen, C. M.	Werber.
Harry, P. W.	King, T. H.	Robinson, G. C.	Wright.
Haskell.			

Laboratory Work: Professor REMSEN, Professor MORSE, Professor RENOUF, Dr. RANDALL, Dr. GILPIN, Dr. H. C. JONES, Dr. REESE. Daily, 9 a. m. to 5 p. m. (104).

Alleman.	Ford, C. E.	King, T. H.	Robinson, G. C.
Arbuckle.	Francis.	Lawson.	Routh.
Armstrong, W. E. F.	Fraps.	Lazenby.	Ryland.
Ballard.	Gassman.	Levy, W. S.	Scholl.
Barrows.	Ghio.	Linthicum.	Scott, C. C.
Berkeley.	Greenbaum.	Maddren.	Smith, E. S.
Bosley.	Griffith.	Magruder.	Smith, R. M.
Bouchelle.	Guggenheimer, C. S.	Marine.	Smith, W. L.
Bowlus.	Hamman.	Mattern.	Stanley.
Breed.	Harry, P. W.	McFadden.	Stoddard.
Bruce.	Haskell.	McKeough.	Straus.
Byers.	Haulenbeck.	Miller, F. O.	Tavean.
Case.	Henderson.	Morgan.	Thomas, R. H.
Caspari.	Hirshberg.	Mulherin.	Tobin.
Cator.	Hoggard.	Muller.	Turner.
Chambliss.	Homer.	Myers.	Waters.
Cloud.	Horner.	Norris.	Weglein.
Comer.	Howard, S. F.	Palmer, E. L.	Werber.
Cook, C. G.	Jenkins.	Palmer, E. L.	Wilcox.
Crane.	Jones, A. D.	Ragland.	Williams, C. B.
Curtis.	Jones, W. A.	Reese, H. M.	Wilson, F. D.
Dohme.	Jungbluth, M.	Reid, E. E.	Winston.
Duffy.	Keidel, A.	Remsen, C. M.	Wooldridge.
Emery.	Kennard.	Renouf, V. A.	Wright.
Ferguson.	King, S. H.	Rhoads.	Young.
Fischer, J. S.			

Geology. (23 Students).

Classes meet in the Geological Laboratory.

General Geology: Professor CLARK, Dr. REID, and Dr. MATHEWS. Daily, except Friday, 12 m.; laboratory work, Wednesday, 2 to 5 p. m.; excursions in April and May. (22).

Abbe.	Duffy.	Linthicum.	Scott, C. C.
Ballard.	Glenn.	McLaughlin.	Shattuck.
Bibbins.	Graham.	Mitchell, J. A.	Stoddard.
Caspari.	Hartzell.	O'Harra.	Straus.
Chambliss.	Jones, W. A.	Palmer, J. H.	Wilson, F. D.
Cook, C. G.	King, F. P.		

Stratigraphic and Structural Geology: Mr. WILLIS. Tuesday and Thursday, 4 p. m. (9).

Abbe.	Hartzell.	McLaughlin.	O'Harra.
Bibbins.	King, F. P.	Mitchell, J. A.	Shattuck.
Glenn.			

Palaeontology: (Lectures): Professor CLARK. Wednesday and Thursday, 11 a. m. (8).

Abbe.	Glenn.	King, F. P.	Mitchell, J. A.
Bibbins.	Hartzell.	McLaughlin.	O'Harra.

Palaeontology: (Laboratory Work): Professor CLARK and Dr. BAGG. Daily, 9 a. m. to 5 p. m. (9).

Abbe.	Hartzell.	McLaughlin.	O'Harra.
Bibbins.	King, F. P.	Mitchell, J. A.	Shattuck.
Glenn.			

Petrography: (Lectures): Dr. MATHEWS. Monday, Tuesday, Wednesday, 10 a. m. (7).

Abbe.	Bibbins.	Mitchell, J. A.	Shattuck.
Berkeley.	King, F. P.	O'Harra.	

Petrography: (Laboratory Work): Dr. MATHEWS. Daily, 9 a. m. to 5 p. m. (8).

Abbe.	Bibbins.	King, F. P.	O'Harra.
Berkeley.	Glenn.	McLaughlin.	Shattuck.

Map Drawing: Mr. GEER. Monday, 2 to 5 p. m. (9).

Abbe.	Hartzell.	McLaughlin.	O'Harra.
Bibbins.	King, F. P.	Mitchell, J. A.	Shattuck.
Glenn.			

Journal Club: Professor CLARK, Dr. REID, and Dr. MATHEWS. Saturday, 9 a. m. (9).

Abbe.	Hartzell.	McLaughlin.	O'Harra.
Bibbins.	King, F. P.	Mitchell, J. A.	Shattuck.
Glenn.			

Biology. (100 Students).

Classes meet in the Biological Laboratory.

Zoology: (Advanced Course): Professor BROOKS. Daily, 10 a. m. (11).

Berger.	Drew.	Lefevre.	Sizerfoos.
Clark, H. L.	Grave.	Moore, C. L.	Sadler.
Conant.	Hartzell.	Richardson.	

Zoological Journal Club: Professor BROOKS, Dr. ANDREWS, Dr. HUMPHREY. Friday, 11 a. m. (16).

Barton.	Conant.	Harrison, B. G.	Moore, C. L.
Berger.	Drew.	Johnson, D. S.	Richardson.
Bowlus.	Grave.	Lefevre.	Sizerfoos.
Clark, H. L.	Greene, C. W.	Metcalf.	Sadler.

Zoological Seminary: Professor BROOKS. Thursday, 11 a. m. (15).

Andrews.	Conant.	Humphrey, J. E.	Richardson.
Barton.	Drew.	Johnson, D. S.	Sigerfoos.
Berger.	Grave.	Lefevre.	Sadler.
Clark, H. L.	Harrison, R. G.	Moore, C. L.	

Physiological Seminary: Professor HOWELL. Monday, 9 a. m. (6).

Berger.	Dreyer.	Greene, C. W.	Kemp.
Briggs, E.	Grave.		

Physiological Journal Club: Professor HOWELL. Tuesday, 12 m. (5).

Berger.	Grave.	Greene, C. W.	Kemp.
Dreyer.			

Animal Physiology: Professor HOWELL. Wednesday, Thursday, Friday, 12 m. (47).

Graduate Students.

Beatty.	Greene, C. W.	Moore, C. L.	Norris.
Crane.			

Medical Students.

Akerman.	Dancy.	Kyes.	Rand.
Allen, H. W.	Eggers.	Lewis.	Reed, D. M.
Austin.	Evans, H. C.	Little, H. W.	Rusk.
Beale.	Fairbank.	Lowell.	Sabin.
Bettman.	Fisher, A. L.	MacCallum, J. B.	Sowers.
Briggs, E.	Fisher, W. A., Jr.	Marvell.	Stone, E. A.
Brülle.	Fletcher.	Meltzer.	Thayer, L. H.
Burnam.	Flint.	Mosher.	Warren, M.
Chace.	Healy.	Myrick.	West, J. M.
Chittenden.	Hendrickson.	Odell.	Woolley.
Christian.	Kellogg.		

General Physiology and Vertebrate Histology: (*Major Course*): Dr. DREYER. Daily, except Monday, 9 a. m.; Monday and Tuesday, 2–5 p. m. (4).

Belknap.	Shuter.	Stearns.	Warfield.

General Biology: Dr. ANDREWS. Thursday and Friday, 10 a. m., 2–5 p. m. (31).

Baetjer.	Fisher, F. C.	Longcope.	Slemons.
Bogue, H.	Ghio.	Maddren.	Stearns.
Bosley.	Glenn.	McKeough.	Steinfeld.
Chamberlain.	Grave.	Mulherin.	Sadler.
Chambers.	Hamman.	Murkland.	Warfield.
Comer.	Harwood, S. P.	Nelson.	Winne.
Cook, H. W.	Kaufman, H. M.	Renouf, V. A.	Wooldridge.
Dohme.	Lehr.	Scholl.	

Osteology: Dr. ANDREWS. Monday and Wednesday, 10 a. m. (31).

Baetjer.	Fisher, F. C.	Longcope.	Slemons.
Bogue, H.	Ghio.	Maddren.	Stearns.
Bosley.	Glenn.	McKeough.	Steinfeld.
Chamberlain.	Grave.	Mulherin.	Sadler.
Chambers.	Hamman.	Murkland.	Warfield.
Comer.	Harwood, S. P.	Nelson.	Winne.
Cook, H. W.	Kaufman, H. M.	Renouf, V. A.	Wooldridge.
Dohme.	Lehr.	Scholl.	

Vegetable Morphology: Dr. HUMPHREY. Monday and Wednesday, 11 a. m., 2–5 p. m., Room 21. (7).

Beatty.	Boyer.	Lefevre.	Waters.
Bowlus.	Johnson, D. S.	Moore, C. L.	

Zoology: (*Elective Course*): Dr. ANDREWS. Tuesday, 2–4 p. m. (2).

Gardner.	Miller, F. O.

Laboratory Work: Professor BROOKS, Professor HOWELL, Dr. ANDREWS, Dr. DREYER, Dr. HUMPHREY, Mr. SIGERFOOS. Daily, 9 a. m. to 5 p. m. (99).

Akerman.	Cook, H. W.	Johnson, D. S.	Norris.
Allen, H. W.	Crane.	Kaufman, H. M.	Odell.
Austin.	Dancy.	Kellogg.	Rand.
Baer.	Dawson.	Kemp.	Reed, D. M.
Baetjer.	Dohme.	Kyes.	Renouf, V. A.
Beale.	Drew.	Latimer.	Richardson.
Beatty.	Eggers.	Lefevre.	Rusk.
Belknap.	Emerson.	Lehr.	Sabin.
Berger.	Evans, H. C.	Lewis.	Scholl.
Bettman.	Fairbank.	Little, H. W.	Shuter.
Bogue, H.	Fisher, A. L.	Longcope.	Slemons.
Bosley.	Fisher, F. C.	Lowell.	Sowers.
Bowlus.	Fisher, W. A., Jr.	MacCallum, J. B.	Stearns.
Boyer.	Fletcher.	Maddren.	Steinfeld.
Briggs, E.	Flint.	Marshall.	Stone, E. A.
Brülle.	Gardner.	Marvell.	Sadler.
Burnam.	Ghio.	McKeough.	Thayer, L. H.
Chace.	Glenn.	Meltzer.	Warfield.
Chamberlain.	Grave.	Miller, F. O.	Warren, M.
Chambers.	Greene, C. W.	Moore, C. L.	Waters.
Chittenden.	Hamman.	Mosher.	West, J. M.
Christian.	Hartzell.	Mulherin.	Winne.
Clark, H. L.	Harwood, S. P.	Murkland.	Wooldridge.
Comer.	Healy.	Myrick.	Woolley.
Conant.	Hendrickson.	Nelson.	

Greek. (36 Students).

Classes meet in McCoy Hall.

Greek Seminary: (*Attic Orators*): Professor GILDERSLEEVE. Monday and Wednesday, 10 a. m., Room 14. (20).

Basore.	Haggett.	Maguire.	Peppler.
Foushee.	Hamilton.	Milden.	Robinson, C. A.
Fraser.	Jones, T. M.	Montgomery.	Sanders, H. N.
Gill.	Kern.	Ness.	Savage.
Green, E. L.	Kingsbury.	Penick.	Sutphen.

Greek Syntax: Professor GILDERSLEEVE. Thursday, 10 a. m., Room 14. (22).

Basore.	Haggett.	Milden.	Robinson, C. A.
Foushee.	Hamilton.	Montgomery.	Saffold.
Fraser.	Jones, T. M.	Ness.	Sanders, H. N.
Gill.	Kern.	Penick.	Savage.
Goodwin.	Kingsbury.	Peppler.	Sutphen.
Green, E. L.	Maguire.		

Greek Rhetoric: Professor GILDERSLEEVE. Tuesday, 10 a. m., Room 14. (19).

Basore.	Haggett.	Maguire.	Robinson, C. A.
Fonshee.	Hamilton.	Milden.	Saffold.
Fraser.	Jones, T. M.	Montgomery.	Sanders, H. N.
Gill.	Kern.	Ness.	Savage.
Green, E. L.	Kingsbury.	Penick.	

Greek Lyric Poetry: Professor GILDERSLEEVE. Friday, 10 a. m., Room 14. (20).

Basore.	Haggett.	Maguire.	Robinson, C. A.
Foushee.	Hamilton.	Milden.	Saffold.
Fraser.	Jones, T. M.	Montgomery.	Sanders, H. N.
Gill.	Kern.	Ness.	Savage.
Green, E. L.	Kingsbury.	Penick.	Sutphen.

Auxiliary Reading: Dr. MILLER. Tuesday and Thursday, 9 a. m. (11).

Foushee.	Hamilton.	Milden.	Robinson, C. A.
Green, E. L.	Kern.	Montgomery.	Sanders, H. N.
Haggett.	Kingsbury.	Penick.	

Elegiac, Melic, and Iambic Poets; Sophocles, *Ajax:* Dr. SPIEKER. Monday, Tuesday, Wednesday, 12 m., Room 10. (5).

Hodges, C. S.	Miller, R. D.	Pyle.	Smith, V. E.
McCurdy.			

Homer, *Odyssey:* ***Euripides,*** *Alcestis:* Dr. SPIEKER. Tuesday, Wednesday, Thursday, 1 p. m., Room 10. (10).

Bogue, H.	French.	McCurdy.	Spilman.
Chambers.	King, J. H.	Murkland.	Werber.
Fisher, F. C.	Land.		

Prose Composition: Dr. SPIEKER.

Major Course: Friday, 12 m., Room 10. (5).

Foushee.	Kingsbury.	Miller, R. D.	Smith, V. E.
Hodges, C. S.			

Minor Course: Monday, 1 p. m., Room 10. (9).

Bogue, H.	French.	McCurdy.	Spilman.
Chambers.	King, J. H.	Murkland.	Werber.
Fisher, F. C.			

Herodotus and Prose Composition: Dr. MILLER. Wednesday, Thursday, Friday, 10 a. m., Room 8. (1).

Kaufman, H.

Latin. (74 Students).

Classes meet in McCoy Hall.

Latin Seminary: (*Vergil*): Dr. SMITH. Tuesday and Friday, 11 a. m., Room 15. (16).

Basore.	Green, E. L.	Kingsbury.	Robinson, C. A.
Daniel.	Hamilton.	Long.	Saffold.
Foushee.	Jones, T. M.	Maguire.	Savage.
Gill.	Kern.	Milden.	Sutphen.

The Roman Hexameter: (*Lectures*): Dr. SMITH. Thursday, 11 a. m., Room 15. (19).

Basore.	Haggett.	Long.	Robinson, C. A.
Daniel.	Hamilton.	Maguire.	Saffold.
Foushee.	Jones, T. M.	Milden.	Savage.
Gill.	Kern.	Penick.	Sutphen.
Green, E. L.	Kingsbury.	Peppler.	

The Roman Epic: (*Lectures*): Dr. SMITH. Monday, 11 a. m., Room 15. (17).

Basore.	Hamilton.	Long.	Robinson, C. A.
Daniel.	Jones, T. M.	Maguire.	Saffold.
Foushee.	Kern.	Milden.	Savage.
Gill.	Kingsbury.	Montgomery.	Sutphen.
Green, E. L.			

Lucan: Dr. SMITH. Wednesday, 11 a. m., Room 15. (16).

Basore.	Green, E. L.	Kingsbury.	Robinson, C. A.
Daniel.	Hamilton.		Saffold.
Foushee.	Jones, T. M.	Maguire.	Savage.
Gill.	Kern.	Milden.	Sutphen.

Journal Club: Dr. SMITH. Alternate Wednesdays, 12 m., Room 15. (15).

Basore.	Green, E. L.	Kingsbury.	Robinson.
Daniel.	Hamilton.	Long.	Saffold.
Foushee.	Jones, T. M.	Maguire.	Sutphen.
Gill.	Kern.	Milden.	

Selections from Martial and Petronius: Dr. SMITH. Thursday, 12 m., Friday, 9 a. m., Room 15. (7).

Kurrelmeyer, W.	Schulz.	Sioussat.	Williams, T. D.
Ness.	Schunck.	Spragins.	

Plautus, Captivi ; Terence, Phormio: Dr. WILSON. Wednesday, Thursday, Friday, 10 a. m., Room 10. (6).

Blake.	Hodges, C. S.	Miller, R. D.	Pyle.
Harry, P. W.	Lyon, C. E.		

Horace: (*Selections*): Dr. WILSON. Wednesday, Thursday, Friday, 9 a. m., Room 12. (34).

Bestor.	Fosnocht.	Jones, T. D.	Krebs.
Bogue, H.	Frank.	Joyner.	Kurrelmeyer, H.
Bogue, R. H.	French.	Jungbluth, K.	Levering.
Chambers.	Gaddess.	Kalb, J. A.	Mullen.
Clunet.	Gemmill.	King, J. H.	Murkland.
Davidson.	Grimes, R. H.	Kleinschmidt.	Reymann.
Downes.	Guggenheimer, C. M.	Knapp.	Small.
Fisher, F. C.	Hammond.	Krager.	Spilman.
Fooks.	Hanna.		

Roman Literature: Dr. SMITH. Tuesday, 9 a. m., Room 11. (24).

Bogue, R. H.	Frank.	Jones, T. D.	Krebs.
Clunet.	Gaddess.	Joyner.	Kurrelmeyer, H.
Davidson.	Grimes, R. H.	Jungbluth, K.	Levering.
Downes.	Guggenheimer, C. M.	Kleinschmidt.	Mullen.
Fooks.	Hammond.	Knapp.	Reymann.
Fosnocht.	Hanna.	Krager.	Small.

Ovid (*Selections*): *Vergil, Georgics ; Prose Composition:* Dr. WILSON. Monday, Thursday, Friday, 11 a. m., Room 10. (7).

Breed.	Emery.	Routh.	Stephens, C. G.
Denmead.	Kaufman, H.	Smith, W. L.	

Prose Composition:

Major Course: Dr. SMITH. Monday, 10 a. m., Room 10. (6).

Blake.	Hodges, C. S.	Miller, R. D.	Pyle.
Harry, P. W.	Lyon, C. E.		

Minor Course: Dr. WILSON. Tuesday, 9 a. m., Room 12. (10).

Bestor.	Fisher, F. C.	Kalb, J. A.	Murkland.
Bogue, H.	French.	King, J. H.	Spilman.
Chambers.	Gemmill.		

Sanskrit and Comparative Philology. (34 Students).

Classes meet in Room 19, McCoy Hall.

Vedic Seminary: (*The Atharva-Veda*): Professor BLOOMFIELD. Wednesday, 4–5.30 p. m. (5).

Bolling.	Kingsbury.	Ness.	Sutphen.
Green, E. L.			

Language and Literature of the Avesta: Professor BLOOMFIELD. Wednesday, 11 a. m. (1).

Ness.

Elementary Sanskrit: (*Whitney's Grammar ; Lanman's Reader*): Professor BLOOMFIELD. Tuesday, 4 p. m., Thursday, 12 m. (8).

Basore.	Foushee.	Kern.	Sanders, H. N.
Blake.	Hamilton.	Milden.	Savage.

Readings from the Hitopadeça and Manu: Mr. NESS. Tuesday, 3 p. m. (1).

Kingsbury.

Comparative Philology: (*Lectures*): Professor BLOOMFIELD. Monday, 4 p. m. (23).

Basore.	Heald.	Milden.	Sommerville.
Edgar.	Kaye.	Ness.	Spragins.
Foushee.	Knipp.	Robinson, C. A.	Stearns.
Gardiner.	Lee.	Sanders, H. N.	Thom.
Gassman.	Maguire.	Schulz.	Williams, T. D.
Hamilton.	McCurdy.	Schunck.	

Comparative Grammar of Greek, Latin, and Sanskrit: Professor BLOOMFIELD. Thursday, 4 p. m. (18).

Basore.	Gill.	Maguire.	Robinson, C. A.
Blake.	Green, E. L.	Milden.	Sanders, H. N.
Daniel.	Hamilton.	Montgomery.	Savage.
Eckels.	Kern.	Ness.	Sommerville.
Foushee.	Kingsbury.		

Oriental Seminary. (26 Students).

Classes meet in the Dillmann Library, Room 18, McCoy Hall.

Old Testament Literature : (*Lectures*): Dr. JOHNSTON. Thursday, 5 p. m. (16).

Browne, B. B.	Grimm.	Lee.	Sioussat.
Caldwell.	Kaufman, H.	Motley.	Sommerville.
Callahan, J. M.	Kaye.	Schnee-kebler.	Sumwalt.
Cantey.	Land.	Sikes.	Thom.

Elementary Hebrew : Professor HAUPT. Wednesday, 3–5 p. m. (10).

Blake.	Knipp.	McCurdy.	Sommerville.
Grimm.	Land.	Schunck.	Stearns.
Hirshberg.	McComas.		

Hebrew : (*Second Year's Course ; Cursory Reading of the Books of Samuel*): Dr. JOHNSTON. Thursday, 11 a. m. (3).

Grimm.	Land.	Sumwalt.

Hebrew Exercises : (*Historical Books*): Dr. JOHNSTON. Thursday, 9 a. m. (3).

Grimm.	Land.	Sumwalt.

Hebrew Prose Composition : (*Translation from English into Hebrew*): Professor HAUPT. Monday, 3 p. m. (4).

Grimm.	Land.	Sommerville. Sumwalt.

Comparative Hebrew Grammar: Professor HAUPT. Tuesday, 4 p. m. (8).

Caldwell.	Grimm.	Rosenau.	Sommerville.
Guttmacher.	Land.	Schanfarber.	Sumwalt.

Messianic Psalms : Professor HAUPT. Tuesday, 5 p. m. (8).

Caldwell.	Grimm.	Rosenau.	Sommerville.
Guttmacher.	Land.	Schanfarber.	Sumwalt.

Post-Biblical Hebrew : (*Abodah Zara, ed. Strack*): Mr. ROSENAU. Wednesday, 2 p. m. (2).

Grimm.	Land.

Biblical Aramaic : Professor HAUPT. Tuesday, 3 p. m. (8).

Caldwell.	Grimm.	Rosenau.	Sommerville.
Guttmacher.	Land.	Schanfarber.	Sumwalt.

Syriac : (*Rödiger's Chrestomathy*): Dr. JOHNSTON. Friday, 9–11 a. m. (3).

Grimm.	Land.	McComas.

Ethiopic : (*The Book of Baruch*): Professor HAUPT. Monday, 5 p. m. (5).

Guttmacher.	Land.	Rosenau. Schanfarber.
Grimm.		

Elementary Arabic : (*Socin's Grammar*): Dr. JOHNSTON. Tuesday, 9 a. m. (5).

Blake.	Grimm.	McComas. Sumwalt.
Caldwell.		

Arabic Prose Composition : (*Translation from English into Arabic*): Professor HAUPT. Monday, 3.30 p. m. (6).

Grimm.	Land.	Schanfarber. Sumwalt.
Guttmacher.	Rosenau.	

Assyrian Historical Texts : (*Meissner's Chrestomathy*): Dr. JOHNSTON. Tuesday, 10–12. (3).

Grimm.	Land.	Rosenau.

Sumerian : Professor HAUPT. Monday, 4 p. m. (6).

Grimm.	Land.	Schanfarber. Sumwalt.
Guttmacher.	Rosenau.	

German. (122 Students).

Classes meet in McCoy Hall.

(*Advanced Courses.*)

German Seminary : *Wolfram's Parzival:* Professor WOOD. Tuesday, Wednesday, Thursday, 9 a. m., Room 4. (12).

Barr.	Brown, G. D.	Hofmann, J.	Nitze.
Becker.	Campbell.	Hugenin.	Prettyman.
Briggs, W. D.	Griffin, N. E.	Kurrelmeyer, W.	Wharey.

Germanic Society : Professor WOOD. Fortnightly, Friday, 8 p. m., Room 4. (21).

Arnold.	Edgar.	Hugenin.	Ness.
Barr.	Furst.	Jones, T. M.	Nitze.
Becker.	Goodwin.	Knapp.	Prettyman.
Brown, G. D.	Griffin, N. E.	Kurrelmeyer, W.	Wilkens.
Brush.	Hofmann, J.	McBryde, J. M.	Woods, C. F.
Campbell.			

Gothic: Professor Wood. Tuesday and Thursday, 10 a. m., Room 4. (9).

Arnold.	Briggs, W. D.	Hofmann, J.	Ness.
Barr.	Brown, G. D.	Kurrelmeyer, W.	Wharey.
Becker.			

Old Norse: Professor Wood. Wednesday, 10 a. m., Friday, 9 a. m., Room 3. (4).

Arnold.	Barr.	Campbell.	Prettyman.

Old High German: Dr. Vos. Monday, 9 a. m., Room 6. (7).

Arnold.	Hofmann, J.	Kurrelmeyer, W.	Prettyman.
Griffin, N. E.	Huguenin.	Ness.	

Old Saxon: Dr. Vos. Wednesday, 12 m., Room 12. (6).

Arnold.	Huguenin.	Ness.	Prettyman.
Hofmann, J.	Kurrelmeyer, W.		

" Das Junge Deutschland :" Dr. Baker. Friday, 12 m., Room 12. (2).

Jones, T. M.	Prettyman.

(*Major Course.*)

Goethe, *Faust*: Professor Wood. Monday and Friday. **Scherer,** *History of German Literature*: Dr. Vos. Wednesday. **Prose Composition:** Professor Wood and Dr. Baker. Thursday, 10 a. m., Room 6. (12).

Ballard.	Dieffenbach.	Heald.	Müller, F. O.
Chinet.	Foshoeht.	Jenkins.	Parham.
Davidson.	Graham.	Kurrelmeyer, H.	Spilman.

(*Minor Course A.*)

Prose Composition: Professor Wood. Monday. **Prose Readings:** Dr. Vos. Tuesday. **Classics:** Dr. Vos. Thursday and Friday, 11 a. m., Room 11. (31).

Armstrong, W. E. F.	Guggenheimer, C. M.	Krebs.	Pyle.
Chambers.	Hanna.	Lazenby.	Remsen, C. M.
Downes.	Haskell.	Lucke.	Robinson, G. C.
Duffy.	Hodges, C. S.	McComas.	Slemons.
Fooks.	Homer.	Morgan.	Talty.
Gaddess.	Jones, T. D.	Mullen.	Taveau.
Gemmill.	Joyner.	Palmer, E. L.	Thomas, R. H.
Grimes, R. H.	Krager.	Palmer, J. H.	

(*Minor Course B.*)

Goethe, *Egmont*. Tuesday and Friday. **von Moser,** *Der Bibliothekar.* Monday. **Prose Composition:** Thursday, 11 a. m., Room 8. Dr. Baker. (14).

Blackman.	Harry, P. W.	Maddren.	Smith, V. E.
Bruce.	Howard.	Miller, R. D.	Williams, C. B.
French.	Jones, R. H.	Mulherin.	Wright.
Greenbaum.	Knapp.		

Elementary German: (*Thomas's Practical German Grammar; Buchheim's German Reader, Part I*): Mr. Prettyman. Tuesday, Wednesday, Friday, 1 p. m., Room 6. (5).

Carroll.	Moore, C. L.	Stephens, C. G.	Verplanck.
Kaye.			

German Conversation: Dr. Hofmann. Monday, 5 p. m., Room 6. (7).

Bestor.	Gassman.	Jones, T. M.	Wharey.
Cook, H. W.	Greenbaum.	Pender.	

(*Elective Course.*)

Contemporary Literature, in Rapid Readings: (Ebner-Eschenbach, *Miterlebtes*; Sudermann, *Die Schmetterlingsschlacht*): Dr. Baker. Monday, 9 a. m., Tuesday, 10 a. m., Room 8. (14).

Adams, H. H.	Dohme.	Longcope.	Underhill.
Baetjer.	Guggenheimer, C. S.	Sioussat.	Warfield.
Beatty.	Kaufman, H. M.	Slemons.	Wilson, H. M.
Belknap.	Levy, W. S.		

(*Special Course.*)

Historical German: Dr. Vos. Wednesday and Friday, 5 p. m., Room 8. (6).

Basore.	Foushee.	Parham.	Ward.
Callahan, J. M.	Kern.		

Scientific German: (von Helmholtz, *Über Goethe's naturwissenschaftliche Arbeiten*): Dr. Baker. Monday and Thursday, 5 p. m., Room 8. (16).

Armstrong, J. R. C.	Ghio.	Leary.	Shuter.
Bosley.	Glenn.	Maddren.	Slemons.
Everett.	Hamman.	Myers.	Wallis.
Gassman.	Hancock.	Reese, H. M.	Winne.

Oral Exercises: Dr. Hofmann. Tuesday, 5 p. m., Room 6. (12).

Callahan, J. M.	Greenbaum.	Jones, T. M.	Wharey.
Dieffenbach.	Heald.	Pender.	Wilson, H. L.
Fischer, J. S.	Jones, A. D.	Sommerville.	Young.

English. (121 Students).

Classes meet in McCoy Hall.

English Seminary: (*Selected topics in Middle English Literature*): Professor Bright. Tuesday and Thursday, 3–5 p. m., Room 4. (18).

Arnold.	Butler.	Huguenin.	Prettyman.
Barr.	Campbell.	Krapp.	Thom.
Becker.	Edgar.	McBryde, J. M.	West, H. S.
Briggs, W. D.	Furst.	Parham.	Wharey.
Brown, G. D.	Griffin, N. E.		

History of English Sounds and Inflections: (*Lectures*): Professor Bright. Wednesday, 4 p. m., Room 12. (16).

Arnold.	Brown, G. D.	Furst.	McBryde, J. M.
Barr.	Butler.	Griffin, N. E.	Parham.
Becker.	Campbell.	Huguenin.	Prettyman.
Briggs, W. D.	Edgar.		Wharey.

Interpretation of Texts: (The Anglo-Saxon *Guthlac*): Professor Bright. Tuesday and Thursday, 12 m., Room 12. (17).

Arnold.	Butler.	Griffin, N. E.	Parham.
Barr.	Campbell.	Huguenin.	Prettyman.
Becker.	Edgar.	Krapp.	Thom.
Briggs, W. D.	Furst.	McBryde, J. M.	Wharey.
Brown, G. D.			

Journal Club. Alternate Fridays, 8–10 p. m., Room 12. Professor Bright. (19).

Arnold.	Butler.	Huguenin.	Shipley.
Barr.	Campbell.	Krapp.	Thom.
Becker.	Edgar.	McBryde, J. M.	West, H. S.
Briggs, W. D.	Furst.	Parham.	Wharey.
Brown, G. D.	Griffin, N. E.	Prettyman.	

Anglo-Saxon: (*Major Course*): Professor Bright. Monday and Wednesday, 12 m., Room 8. (5).

Blake.	Parham.	Stearns.	Thom.
Heald.			

The " Classical" School of the 18th Century: Professor Browne. Wednesday, 11 a. m., Room 8. (15).

Becker.	Edgar.	Huguenin.	Prettyman.
Belser.	Furst.	Krapp.	Thom.
Briggs, W. D.	Griffin, N. E.	Parham.	Wharey.
Callaghan, J.	Hines.	Pell.	

English Literature: (*Major Course*): Professor Browne. Tuesday and Friday, 12 m., Room 8. (7).

Belser.	Callaghan, J.	Hines.	Thom.
Blake.	Heald.	Stearns.	

English Literature: (*Minor Course*): Professor Browne. Daily, except Friday, 1 p. m., Room 6. (8).

Browne, B. B.	Foshocht.	Harwood, L.	Kaufman, H. M.
Davidson.	Frank.	Hoggard.	Kurrelmeyer, H.

History and Theory of Rhetoric: Professor Greene. Friday, 12 m., Room 9. (4).

Barr.	Furst.	Griffin, N. E.	Krapp.

English Literature: (*Undergraduate Elective*): Professor Greene. Thursday, 12 m., Friday, 1 p. m., Room 9. (6).

Hines.	Lyon, C. E.	Steinfeld.	Winne.
Knipp.	Slemons.		

English Literature: Professor Greene. Monday, 9 a. m., Tuesday, 10 a. m., Wednesday, 11 a. m., Room 11. (43).

Armstrong, J. R. C.	Ferguson.	Kennard.	Robinson, E. A.
Ballard, Z. M.	Fischer, J. S.	Lehr.	Scholl.
Bestor.	Fitzgerald.	Levering.	Smith, F. W.
Bogue, R. H.	Fowler.	Lucke.	Smith, R. M.
Brent.	Francis.	McIntosh.	Smith, V. E.
Carroll.	Hammond.	Miller, R. D.	Stewart, W. P.
Clarke, G. M.	Harwood, S. P.	Palmer, E. L.	Straus.
Clunet.	Hirshberg.	Palmer, J. H.	Ulman.
Cook, H. W.	Hodges, C. S.	Pender.	Wooldridge.
Dieffenbach.	Hubner.	Pyle.	Young.
Duffy.	Jones, R. H.	Renouf, V. A.	

Rhetoric and English Composition: Professor Greene. Monday, Tuesday, Wednesday, 12 m., Room 11. (46).

Armstrong, W. E. F.	Greenbaum.	Keidel, A.	Muller.
Bestor.	Grimes, R. H.	King, J. H.	Murkland.
Bruce.	Guggenheimer, C. M.	Kleinschmidt.	Remsen, C. M.
Davidson.	Hanna.	Knapp.	Reymann.
Dennis.	Harry, P. W.	Krager.	Robinson, G. C.
Downes.	Haskell.	Krebs.	Small.
Fisher, F. C.	Haudenbeek.	Kurrelmeyer, H.	Spilman.
Foshocht.	Hoggard.	Lazenby.	Talty.
Frank.	Homer.	Lehr.	Taveau.
French.	Jones, T. D.	Morgan.	Thomas, R. H.
Gaddess.	Joyner.	Mullen.	Werber.
Gemmill.	Kalb, J. A.		

Romance Languages. (104 Students).

Classes meet in McCoy Hall.

(Advanced Course.)

Romance Seminary: Professor Elliott. Tuesday, 11 a. m. to 1 p. m., Room 2. (10).

Armstrong, E. C.	Brownell, G. G.	Frein, P. J.	Ogden.
Baxter.	Brush.	Nitze.	Thieme.
Bonnotte.	Frein, F. P.		

French Dialects: Professor Elliott. Monday, 11 a. m., Room 2. (7).

Baxter.	Clark, C. C.	Holden.	Thieme.
Brush.	Frein, P. J.	Nitze.	

Old French Philology: Dr. Menger. Wednesday, 10 a. m., Thursday and Friday, 11 a. m. (10).

Clark, C. C.	Huguenin.	Ogden.	Shaw.
Edgar.	Kurrelmeyer, W.	Post.	Thieme.
Hofmann, J.	Nitze.		

Old French Readings: Dr. De Haan. Monday and Wednesday, 3 p. m., Room 2. (8).

Briggs, W. D.	Edgar.	Huguenin.	Post.
Clark, C. C.	Hofmann, J.	Kurrelmeyer, W.	Shaw.

Origins of French Lyric Poetry: Dr. F. M. Warren. Monday, 9 a. m., Tuesday and Wednesday, 11 a. m., Thursday and Friday, 10 a. m., Room 2. (During February.) (10).

Armstrong, E. C.	Clark, C. C.	Nitze.	Shaw.
Baxter.	Frein, F. P.	Ogden.	Thieme.
Brush.	Frein, P. J.		

French Drama: Dr. F. M. Warren. Monday, Wednesday, Friday, 5 p. m., Tuesday, 12 m. (During February.) (10).

Armstrong, E. C.	Clark, C. C.	Nitze.	Shaw.
Baxter.	Frein, F. P.	Ogden.	Thieme.
Brush.	Frein, P. J.		

Carolingian Epic: Dr. Keidel. Thursday, 3 p. m., Room 2. (13).

Armstrong, E. C.	Frein, F. P.	Kurrelmeyer, W.	Post.
Baxter.	Frein, P. J.	Nitze.	Shaw.
Brush.	Hofmann, J.	Ogden.	Thieme.
Clark, C. C.			

French Poetry: Mr. Thieme. Thursday, 1 p. m., Room 2. (8).

Baxter.	Brush.	Hofmann, J.	Post.
Brownell, G. G.	Clark, C. C.	Kurrelmeyer, W.	Shaw.

Provencal: Dr. De Haan. Friday, 11 a. m., Room 2. (4).

Baxter.	Brush.	Nitze.	Ogden.

Popular Latin: Professor Elliott. Monday, 12 m., Room 2. (8).

Brush.	Frein, P. J.	Ogden.	Shaw.
Clark, C. C.	Holden.	Post.	Thieme.

Dante: Professor Elliott. Wednesday, 12 m., Room 2. (5).

Brush.	Ogden.	Post.	Shaw.
Clark, C. C.			

Italian Philology: Dr. Menger. Thursday and Friday, 10 a. m., Room 2. (5).

Armstrong, E. C.	Frein, P. J.	Post.	Shaw.
Clark, C. C.			

Old Italian Readings: Dr. Menger. Thursday, 9 a. m., Room 2. (9).

Armstrong, E. C.	Clark, C. C.	Nitze.	Post.
Baxter.	Frein, P. J.	Ogden.	Shaw.
Brush.			

Origins of Italian Prose: Dr. Menger. Thursday, 12 m., Room 2. (8).

Baxter.	Clark, C. C.	Nitze.	Post.
Brush.	Frein, P. J.	Ogden.	Shaw.

Cervantes: Dr. De Haan. Thursday, 10 a. m., Room 2. (6).

Armstrong, E. C.	Brownell, G. G.	Nitze.	Thieme.
Baxter.	Brush.		

Spanish Novel of the Nineteenth Century: Dr. De Haan. Monday, 10 a. m., Room 2. (7).

Armstrong, E. C.	Brownell, G. G.	Frein, P. J.	Thieme.
Baxter.	Brush.	Ogden.	

Spanish Seminary: Dr. Marden. Monday, 9 a. m., Room 2. (3).

Brownell, G. G.	Frein, F. P.	Thieme.

Old Spanish Readings: Dr. Marden. Friday, 10 a. m., Room 2. (3).

Brownell, G. G.	Frein, F. P.	Thieme.

Spanish Philology: Dr. Marden. Monday, 10 a. m., Room 2. (1).

Holden.

Romance Club: Professor Elliott. Wednesday, 11 a. m. (13).

Armstrong, E. C.	Brush.	Frein, P. J.	Post.
Baxter.	Clark, C. C.	Nitze.	Shaw.
Bonnotte.	Frein, F. P.	Ogden.	Thieme.
Brownell, G. G.			

Phonetics and French Pronunciation (with Practical Exercises): Dr. Rambeau. Monday, 9 a. m., Room 7. (7).

Clark, C. C.	Hofmann, J.	Krapp.	Parham.
Goodwin.	Jones, A. D.	Kurrelmeyer, W.	

(Undergraduate Courses.)

Italian: (Minor Course): Dr. Rambeau. Daily, except Monday, 9 a. m., Room 7. (9).

Clutz.	Harwood, S. P.	Lyon, C. L.	Stolman.
Cook, H. W.	Longcope.	Steinfeld.	Warfield.
Hancock.			

Spanish: (Minor Course): Dr. De Haan. Daily, except Monday, 9 a. m., Room 8. (8).

Browne, B. B.	Hubner.	Leary.	Thomson.
Gordon.	Kalb, C. W.	Radcliffe.	Underhill.

Spanish: (Undergraduate Elective): Dr. De Haan. Tuesday, 10 a. m., Friday, 1 p. m., Room 6. (7).

Blake.	Loenecht.	Nelson.	Stolman.
Clark, C. C.	Frein, P. J.	Post.	

French: (Major Course): Dr. Rambeau. Daily, except Tuesday, 10 a. m., Room 7. (5).

Browne, B. B.	Kennard.	Leary.	Parham.
Jones, A. D.			

French: (Minor Course A): Dr. Rambeau. Daily, except Thursday, 12 m., Room 7. (30).

Bondelle.	Fischer, J. S.	McComas.	Schulz.
Bowlus.	Francis.	Myers.	Seth.
Breed.	Gordon.	Pender.	Smith, W. L.
Clarke, G. M.	Hirshberg.	Renouf, V. A.	Stephens, C. G.
Denmead.	Jungbluth, K.	Robinson, E. A.	Stolman.
Dieffenbach.	Jungbluth, M.	Routh.	Ulman.
Dohme.	Kalb, C. W.	Scholl.	Young.
Emery.	Levering.		

French: (Minor Course B): Dr. Marden. Daily, except Thursday, 12 m., Room 6. (27).

Alleman.	Fowler.	Keidel, F. B.	Smith, F. W.
Bartell.	Gardner.	Knipp.	Smith, B. M.
Brough.	Ghiu.	McIntosh.	Spragins.
Brent.	Grave.	McKeough.	Stanley.
Callahan, J. M.	Hamman.	Motley.	Stewart, W. P.
Ewing, J. R.	Harwood, S. P.	O'Harra.	Williams, T. D.
Ferguson.	Jones, R. H.	Schunck.	

French: (Undergraduate Elective): Dr. De Haan. Monday, 4.30 p. m., Thursday, 12 m., Room 8. (4).

Cook, H. W.	Hammond.	Radcliffe.	Wooldridge.

French Elements: Dr. Marden. Tuesday, Wednesday, and Friday, 9 a. m., Room 10. (1).

Kaufman, H.

French Conversation: Dr. Bonnotte.

Section A: Wednesday, 1 p. m., Room 2. (11).

Cook, H. W.	Hammond.	Scholl.	Ulman.
Guggenheimer, C. M.	Hirshberg.	Soussat.	Underhill.
Hamilton.	Renouf, V. A.	Sommerville.	

Section B: Wednesday, 5 p. m., Room 2. (6).

Blake.	Kurrelmeyer, W.	Wooldridge.	Young.
Clark, C. C.	Ogden.		

History, Economics, and Politics. (110 Students).

Classes meet in McCoy Hall.

Historical Seminary: Professor Adams. Alternate Fridays, 8-10 p. m., Room 25. (20).

Adams, T. S.	Forman.	Neill.	Smith, E. A.
Brough.	Kaye.	Reizenstein.	Snavely.
Callahan, J. M.	Kennedy.	Butler.	Sommerville.
Cantey.	Lee.	Schmeckebier.	Thom.
Ewing, J. R.	Motley.	Sikes.	Ward.

Institutional History: Professor Adams. Wednesday and Thursday, 11 a. m., Room 24. (15).

Brough.	Kaye.	Sikes.	Sommerville.
Callahan, J. M.	Lee.	Soussat.	Thom.
Cantey.	Motley.	Smith, E. A.	Ward.
Ewing, J. R.	Schmeckebier.	Snavely.	

Educational Conference: Professor Adams. Friday, 11 a. m., Room 24. (18).

Brough.	Kaye.	Butler.	Snavely.
Callahan, J. M.	Kennedy.	Schmeckebier.	Sommerville.
Cantey.	Lee.	Sikes.	Thom.
Ewing, J. R.	Motley.	Smith, E. A.	Ward.
Forman.	Reizenstein.		

History of Civilization: Professor ADAMS. Monday and Tuesday, 11 a. m., Room 24. (35).

Browne, R. B.	Hammond.	Miller, F. O.	Snavely.
Brent.	Hirshberg.	Motley.	Sommerville.
Clarke, G. M.	Hubner.	Muller.	Stanley.
Cook, H. W.	Kalb, C. W.	Myers.	Stearns.
Diefenbach.	Kaye.	Parham.	Stewart, W. P.
Ewing.	Keidel, A.	Robinson, E. A.	Sumwalt.
Fitzgerald.	Kennard.	Seth.	Thom.
Gordon.	Lehr.	Shaw.	Ulman.
Graham.	McIntosh.	Sioussat.	

Historical Conference: Dr. VINCENT. Wednesday, 12 m., Room 23. (7).

Kaye.	Schmeckebier.	Thom.
Lee.	Sikes.	Sommerville.
	Snavely.	

Reformation: Dr. VINCENT. Tuesday and Thursday, 10 a. m., Room 23. (15).

Callahan, J. M.	Kennedy.	Schmeckebier.	Sumwalt.
Cantey.	Lee.	Sikes.	Thom.
Ewing, J. R.	Motley.	Snavely.	Ward.
Kaye.	Schloegel.	Sommerville.	

European History: Dr. VINCENT. Thursday and Friday, 11 a. m., Room 23. (21).

Brent.	Graham.	Kennard.	Seth.
Browne, R. B.	Hammond.	McIntosh.	Stanley.
Clarke, G. M.	Hubner.	Miller, F. O.	Stearns.
Diefenbach.	Kalb, C. W.	Muller.	Stewart, W. P.
Fitzgerald.	Keidel, A.	Robinson, E. A.	Ulman.
Gordon.			

Mediaeval and Modern History: Dr. VINCENT. Monday and Wednesday, 10 a. m., Room 24. (23).

Adams, H. H.	Francis.	Myers.	Spragins.
Armstrong, J. R. C.	Gardner.	Palmer, E. L.	Stidman.
Belknap.	Hancock.	Palmer, J. H.	Underhill.
Carroll.	Jones, R. H.	Schulz.	Williams, T. D.
Duffy.	Jungbluth, M.	Shuter.	Wilson, H. M.
Edmunds.	Knipp.	Smith, V. E.	

Greek and Roman History: Dr. BALLAGH. Daily, except Tuesday, 10 a. m., Room 20. (23).

Bogue, R. H.	Gemmill.	Joyner.	Levering.
Denmead.	Grimes, R. H.	Jungbluth, K.	Mullen.
Downes.	Guggenheimer, C. M.	Kleinschmidt.	Reymann.
Fooks.	Hammond.	Knapp.	Small.
Frank.	Hanna.	Krager.	Talty.
Gaddess.	Jones, T. D.	Krebs.	

Economic Seminary: Dr. SHERWOOD. Alternate Fridays, 8–10 p. m., Room 23. (16).

Adams, T. S.	Kaye.	Rutter.	Snavely.
Brough.	Motley.	Schmeckebier.	Sommerville.
Callahan, J. M.	Neill.	Sikes.	Thom.
Cantey.	Reizenstein.	Smith, E. A.	Ward.

Transportation: Dr. SHERWOOD. Thursday and Friday, 9 a. m., Room 24. (13).

Adams, T. S.	Motley.	Rutter.	Snavely.
Brough.	Neill.	Schmeckebier.	Sommerville.
Cantey.	Reizenstein.	Smith, E. A.	Ward.
Kaye.			

American Economics: Dr. SHERWOOD. Friday, 3–5 p. m., Room 21. (6).

Adams, T. S.	Neill.	Rutter.	Smith, E. A.
Brough.	Reizenstein.		

Economic Thought before Adam Smith: Dr. HOLLANDER. Tuesday and Wednesday, 9 a. m., Room 24. (12).

Adams, T. S.	Neill.	Schloegel.	Snavely.
Brough.	Reizenstein.	Schmeckebier.	Sommerville.
Cantey.	Rutter.	Smith, E. A.	Thom.

Recent Economic Theories: (*Undergraduate Elective*) Dr. SHERWOOD. Thursday, 12 m., Friday, 1 p. m., Room 21. (8).

Adams, T. S.	Hirshberg.	Kalb, C. W.	Stanley.
Brough.	Jump.	Smith, E. A.	Thomson.

Elements of Economics: Dr. HOLLANDER. Thursday and Friday 10 a. m., Room 24. (37).

Adams, H. H.	Gately.	Myers.	Smith, V. E.
Armstrong, J. R. C.	Gordon.	Palmer, E. L.	Spragins.
Belknap.	Hancock.	Palmer, J. H.	Stewart, W. P.
Brent.	Hubner.	Radcliffe.	Stidman, A. G.
Carroll.	Jones, R. H.	Robinson, E. A.	Ulman.
Clarke, G. M.	Jungbluth, M.	Schneck.	Underhill.
Duffy.	Knipp.	Schulz.	Verplanck.
Edmunds.	McCurdy.	Seth.	Williams, T. D.
Francis.	McIntosh.	Shuter.	Wilson, H. M.
Gardner.			

Tariff: Transportation: Dr. MOORE. Monday and Wednesday, 10 a. m., Room 19. (13).

Brent.	Gordon.	Radcliffe.	Seth.
Clarke, G. M.	Hubner.	Robinson, E. A.	Stewart, W. P.
Ewing, J. R.	McIntosh.	Schneck.	Ulman.
Gately.			

Federal State in Theory and Practice: Dr. WILLOUGHBY. Wednesday and Friday, 10 a. m., Room 20. (14).

Adams, T. S.	Ewing, J. R.	Schmeckebier.	Snavely.
Callahan, J. M.	Kaye.	Sioussat.	Sommerville.
Church, W. H.	Kennedy.	Smith, E. A.	Ward.
Cantey.	Lee.		

American Political and Constitutional History: Dr. STEINER. Wednesday and Friday, 12 m., Room 24. (14).

Baetjer.	Jump.	Radcliffe.	Walker, M. B.
Guggenheimer, C. S.	Levy.	Sioussat.	Wilson, H. M.
Harwood, L.	Nelson.	Thomson.	Winne.
Jenkins.	Nyce.		

English Constitutional Law and History: Mr. LEE. Monday and Tuesday, 12 m., Room 20. (21).

Baetjer.	Harwood, L.	Levy.	Sioussat.
Butler.	Jenkins.	Nelson.	Thomson.
Callahan, J. M.	Jones, A. D.	Nyce.	Walker, M. B.
Church, W. H.	Jump.	Radcliffe.	Ward, G. W.
Gately.	Kennedy.	Sikes.	Wilson, H. M.
Guggenheimer, C. S.			

Municipal Sociology: Dr. GOULD. (Six lectures.) Friday, 4 p. m., Donovan Room (10 students and about 60 hearers); Saturday, 9 a. m., Room 24. (10).

Adams, T. S.	Lee.	Schmeckebier.	Sommerville.
Brough.	Reizenstein.	Smith, E. A.	Thom.
Ewing.	Rutter.		

Law of Personal Property: Professor SCHOULER. (Twenty-five lectures.) Daily, except Friday, 4 p. m., Donovan Room. (7 students and a number of hearers).

Adams, T. S.	Ewing.	Sikes.	Sioussat.
Cantey.	Lee.	Schmeckebier.	

Science of Government: Professor WOODROW WILSON. (Twenty-five lectures.) Daily, 5 p. m., Donovan Room. (21 students and about 60 hearers).

Adams, T. S.	Ewing.	Rutter.	Snavely.
Brough.	Kaye.	Schmeckebier.	Sommerville.
Brown, G. D.	Kurrelmeyer, H.	Schneck.	Thom.
Callahan, J. M.	Lee.	Sikes.	Thomson.
Cantey.	Motley.	Smith, E. A.	Verplanck.
Church.			

Philosophy. (44 Students).

Classes meet in Room 12, McCoy Hall.

History of Philosophy: Professor GRIFFIN. Friday, 4 p. m. (16).

Adams, T. S.	Grimm.	Motley.	Sommerville.
Cantey.	Hofmann, J.	Schmeckebier.	Wilhelm.
Harry, S. C.	McCurdy.		

Deductive and Inductive Logic: until December 24; **Psychology:** December 24 to April 1; **Ethics:** after April 1: Professor GRIFFIN. Daily, 11 a. m. **Outlines of the History of Philosophy:** Tuesday, 10 a. m. (34).

Adams, H. H.	Heald.	Nelson.	Steinfeld.
Baetjer.	Jenkins.	Radcliffe.	Thomson.
Belknap.	Kaufman, H. M.	Reese, H. M.	Underhill.
Blake.	Knipp.	Schulz.	Warfield.
Edmunds.	Leary.	Schneck.	Weglein.
Gardner.	Levy.	Shuter.	Williams, T. D.
Guggenheimer, C. S.	Longcope.	Slemons.	Wilson, H. M.
Hancock.	Lyon, C. E.	Spragins.	Winne.
Harwood, L.	McCurdy.		

Drawing. (76 Students).

Classes meet in the front building, Rooms 9 and 18.

Freehand Drawing: Mr. WHITEMAN. Tuesday and Thursday, 2–5 p. m. (49).

Armstrong, W. E. F.	Grimes, R. H.	Kleinschmidt.	Routh.
Bouchelle.	Guggenheimer, C. M.	Knapp.	Smith, V. E.
Breed.	Hanna.	Krager.	Smith, W. L.
Bruce.	Harry, P. W.	Krebs.	Small.
Davidson.	Haskell.	Kurrelmeyer, H.	Spilman.
Denmead.	Haulenbeck.	Lazenby.	Stearns.
Downes.	Jones, T. D.	Lehr.	Stephens, C. G.
Emery.	Joyner.	Miller, R. D.	Talty.
Ford, C. E.	Kaufman, H.	Morgan.	Taveau.
Fisher, F. C.	Keidel, A.	Muller.	Thomas, R. H.
Frank.	King, J. H.	Murkland.	Werber.
French.	King, T. H.	Reymann.	Wright.
Gaddess.			

Special Instruction: Mr. WHITEMAN. Tuesday and Thursday, 2–5 p. m. (4).

Bogue, R. H.	Hoggard.	Moore, C. L.	Tobin.

Mechanical Drawing: Mr. GEER. Monday and Tuesday, 2–5 p. m. (16).

Allen, W. H.	Berkeley.	Gorsuch.	Naylor.
Armstrong, J. R. C.	Bowman.	Hodges, W. L.	Pindell.
Bartell.	Eisenbrandt.	Keidel, F. B.	Spencer.
Beeuwkes.	Everett.	Kershner.	Swaine.

Special Instruction: Mr. GEER. Wednesday, 2–5 p. m. (7).

Abbe.	Glenn.	McLaughlin.	Shattuck.
Bagg.	King, F. P.	O'Harra.	

HOURS FOR LECTURES AND RECITATIONS, SECOND HALF-YEAR, 1896-97.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
A.M. 9	Partial Differential Equations. (Craig.) Analytical Chemistry. (Morse.) Old High German. (Vos.) Anal. Geometry Elem. (Cohen.) Electricity. (Duncan.) Physiological Seminary. (Howell.) English Literature. (Greene.) German Readings. (Baker.) Spanish Seminary. (Marden.)	Partial Differential Equations. (Craig.) Chem. Minor. (Renouf, Randall & Gilpin.) Organic Chemistry. (Renson.) Chemistry Major. (Morse & Randall.) Latin Composition. (Wilson.) German Seminary. (Wood.) Italian Minor. (Rambeau.) Anal. Geom. Adv. (Cohen.) Electrical Sem. (Duncan.) Biology Major. (Dreyer.) Roman Literature. (Smith.) Greek Readings. (Miller.) Arduet: Elem. (Johnston.) French: Elem. (Marden.)	Freshman Functions. (Craig.) Chem. Minor. (Renouf, Randall & Gilpin.) Organic Chemistry. (Renson.) Chemistry Major. (Morse & Randall.) German Seminary. (Wood.) Italian Minor. (Rambeau.) Anal. Geom. Adv. (Cohen.) Electrical Sem. (Duncan, Hering, Geer.) Biology Major. (Dreyer.) Spanish Minor. (De Haan.) French: Elem. (Marden.)	Partial Differential Equations. (Craig.) Chem. Minor. (Renouf, Randall & Gilpin.) Organic Chemistry. (Renson.) Chemistry Major. (Morse & Randall.) German Seminary. (Wood.) Italian Minor. (Rambeau.) Anal. Geom. Adv. (Cohen.) Electricity. (Duncan.) Biology Major. (Dreyer.) Greek Readings. (Miller.) Spanish Minor. (De Haan.) Hebrew Exercises. (Johnston.) Old Italian Readings. (Menger.)	Freshman Functions. (Craig.) Chem. Minor. (Renouf, Randall & Gilpin.) Organic Chemistry. (Renson.) Chemistry Major. (Morse & Randall.) Old Norse. (Wood.) Italian Minor. (Rambeau.) Anal. Geom. Adv. (Cohen.) Electricity. (Duncan.) Biology Major. (Dreyer.) Lectures. (Sherwood.) Spanish Minor. (De Haan.) French: Elem. (Marden.)	Chemistry Journal Meeting. (9-10.30 pm.) Physical Seminary. (Ames.) Geology Journal Meeting.
10						
11						
M. 12						
P.M. 1						
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RECENT PUBLICATIONS.

The Street Railway System in Philadelphia.

By Frederic W. Speirs, Ph. D.,

Professor in the Drexel Institute, Philadelphia.

(*In the Johns Hopkins University Studies in Historical and Political Science*, 1897.)

This work narrates the circumstances under which the railways of Philadelphia (the most extensive street railway system in America) were introduced, and traces the process through which the lines have been welded into a single system. It describes the financial development of the railways, and analyzes their purchase and lease operations. It explains the various forms of special taxation imposed upon the companies, and discusses the nature and scope of public control, etc.

123 pp. octavo. Price \$1.00, bound in cloth.

Contemporary American Opinion of the French Revolution.

By Charles Downer Hazen, Ph. D., *Professor of History, Smith College.*

This essay attempts to study and depict the opinions of Americans with reference to a revolution which they followed with the most intense interest—an interest shown in a a multitude of ways: by the politics of the country, which were largely Gallican or Anglican for a number of years; by the writings of our ministers to France Jefferson, Morris, and Monroe; by the literary productions of the period, whose themes and thoughts betray on every page the influence of the Revolution; by the utterances of the pulpit, which resounded with political sermons; by the plays on the stage, which quickly caught up the new ideas and gave them utterance; by the extraordinary celebrations in honor of the military victories of the French Republic; by conscious and widespread imitation of the French.

It is these varied manifestations of public opinion, and the reasons for them, that the author attempts to portray after an extensive study of the newspapers, correspondence, memoirs, travels, literature, and social life of the time—an opinion to some extent evanescent, yet with a most profound and durable influence also, for it deepened the lines of party division, greatly encouraging the rising Republicans in their way of thinking, and confirming the Federalists forever in theirs.

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The Journal of Experimental Medicine.

The May (Vol. II, No 3) number of this Journal is now ready.

The contents of Volume Two as far as published are as follows:—

Young, H. H. On the Presence of Nerves in Tumors and of Other Structures in them as Revealed by a Modification of Ehrlich's Method of "Vital Staining" with Methylene Blue. Plate I.

Magrath, G. B. and Kennedy, H. On the Relation of the Volume of the Coronary Circulation to the Frequency and Force of the Ventricular Contraction in the Isolated Heart of the Cat. Plates II–III.

Mayhew, David P. On the Time of Reflex Winking. Plates IV–VIII.

Pfaff, F. and Balch, A. W. An Experimental Investigation of some of the Conditions Influencing the Secretion and Composition of Human Bile. Plate IX.

Livene, P. A. The Influence of Phloridzin on the Bile and Lymph.

Van Name, Willard G. The Gelatin from White Fibrous Connective Tissue.

Wood, H. C. and Carter, Wm. S. A Research upon Anaesthesia.

Hunt, Reid. Experiments on the Relation of the Inhibitory to the Accelerator Nerves of the Heart.

Pfaff, Franz. On the Active Principle of Rhus toxicodendron and Rhus venenata. Plate X.

Flexner, Simon. The Histological Changes produced by Ricin and Abrin Intoxications. Plates XI–XIV.

Woodward, George. Chemistry of Colostrum Milk: a Report of six cases.

Cushny, Arthur R. On the Action of Substances of the Digitalis Series on the Circulation in Mammals. Plates XV–XXII.

Eshner, Augustus A. A Graphic Study of Tremor. Plates XXIII–XXX.

Howell, W. H. A Contribution to the Physiology of Sleep based upon Plethysmographic Experiments. Plate XXXI.

Volume Two will be issued bi-monthly and will contain over six hundred pages with numerous illustrations.

Volume One (1896) is now complete. It includes 728 pages, large octavo, with 36 plates and 17 figures in the text. The price of this volume, bound in cloth, is placed at ten dollars.

Dissertations for the Degree of Doctor of Philosophy.

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Kinard, J. P. A Study of Wulfstan's Homilies: their style and sources.

Fairclough, H. R. The Attitude of the Greek Tragedians toward Nature.

The American Journal of Mathematics.

The April number (Vol. XIX, No. 2), is now ready. It contains the following papers:—

Emory McClintock. On the Most Perfect Forms of Magic Squares, with Methods for their Production.

C. Chree. Isotropic Elastic Solids of nearly Spherical Form.

W. F. Osgood. Non-Uniform Convergence and the Integration of Series Term by Term.

E. W. Davis. A Note on the Factors of Composition of a Group.

R. D. Bohannan. Simple Proof of a Fundamental Theorem in the Theory of Functions.

The American Chemical Journal.

The April number (Vol. XIX, No. 4), is now ready. It contains:—

Contributions from the Chemical Laboratory of the Case School of Applied Science: XXIII. On the Butanes and Octanes in American Petroleum. By Charles F. Mabery and Edward J. Hudson.

Contributions from the Chemical Laboratory of Cornell University: Naphthalene Tetrabromide, $C_{10}H_8Br_4$. By W. R. Orndorff and C. B. Moyer.

Contributions from the Chemical Laboratory of Harvard College: XCVIII. On Hydrocobaltocobalticyanic Acid and Its Salts. By C. Loring Jackson and A. M. Comey.

On the Analogies in Composition of the Salts of Calcium, Strontium and Barium. By J. H. Kastle.

Contributions from the Chemical Laboratory of the University of Illinois: Action of Mercaptides on Quinones. By H. S. Grindley and J. L. Sammis.

Contributions from the Kent Chemical Laboratory of the University of Chicago: The Action of Sodium Ethylate on Amide Bromides. By S. E. Swartz.

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