ANNUAL REPORT

OF THE

PROVOST

OF THE

UNIVERSITY OF PENNSYLVANIA,

INCLUDING

REPORTS OF DEPARTMENTS AND ABSTRACT OF THE TREASURER'S REPORT

For the Year ending October 1, 1887.

PRINTED FOR THE UNIVERSITY.

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REPORT OF THE PROVOST.

To the Honorable, the Board of Trustees of the University of Pennsylvania:

The report which I have now the honor of submitting deals with the period from October, 1885, to October, 1887, inclusive. Unavoidable causes prevented the preparation of separate reports for each of these years. This period has been one of unprecedented prosperity, both as regards the general interests of the University and the development of the several Departments. The particulars of the more important matters will be found in the body of the report, and in the various appendices which have been kindly prepared at my request by the officers in charge of the respective Departments. There must be recorded, however, several serious losses by death both among your own members and in the teaching forces of the University.

Mr. J. B. Lippincott, a brief notice of whose death was made as the last report was going through the press, became a Trustee in 1876, and for the remainder of his life gave valuable service to the University. The sagacity in business affairs that was so conspicuous in his own enterprises made him in request on the boards of corporations, and much of his time and thought was devoted to railroad and banking interests. But there was another side to his nature, and his activity in the Society for the Prevention of Cruelty to Animals indicated the feeling which led him, as a friend of the University, to found and foster by his gifts the Veterinary Department. A memorial tablet has been placed upon the walls of the Chapel to commemorate this beneficent foundation, and to perpetually connect his name with what is destined to become a strong and successful Department.

The Hon. John Welsh, LL.D., became a Trustee in 1861. That such a man should esteem the office as he did, and devote to it so much of the care and munificence of a life consecrated to
the highest welfare of his fellows might well inspire his colleagues and the friends of the University with confidence in the loftiness of its purposes and the importance of its work. Assiduously attentive to the details of its business affairs, and broadly liberal in his views of its scholastic development, whether as Chairman of the Committee on Ways and Means, or as a member of Department Committees, his sagacity, his prudence, and, above all, the essential nobility of his nature gave him a commanding influence in the councils of the Trustees. For twenty-five years he exercised those qualities in the service of the University, which, when devoted for as many months to the service of his fellow-citizens in the celebration of the National Centennial, impelled them to the grateful tribute of $50,000, to be disposed of as he would. Amid all the claims of religion, charity, and public beneficence that were always present to him, he chose the University to be the recipient of the gift, and the John Welsh Centennial Professorship of History and English Literature so endowed will remain forever one of the monuments to the memory of his pre-eminently pure and useful life.

The Rt. Rev. William Bacon Stevens, D.D., LL.D., succeeded Bishop Alonzo Potter in the Trusteeship as in his Episcopate, and like all his predecessors in that line, took active part in the affairs of the University. His personal qualities, his learning, his piety, and his singularly wide experience in life, all combined to make him a most prominent and useful member of the Board. Large and catholic in his views, calm and dispassionate in his judgment, of unfailing kindliness and courtesy, his example and influence were worthy of his high office in the church.

The Rev. Richard Newton, D.D., was another highly honored member of the Board. Graduating in the University in 1836, he entered the ministry, and, while possessing the full average of influence among adults, finally acquired the enviable reputation of being the most effective preacher and teacher of the age in ministrations to childhood and youth. His fame in this respect has gone throughout the world; his sermons are read in many tongues. The sympathies which made him strong and effective in this work marked him as a fit man for the Trusteeship, and his many years of service in the Board won for him the sincere affection and respect of his colleagues.
A full account of the changes in the teaching force of the University will be found in Appendix No. I., at p. 28.

Before proceeding to speak of the Departments of the University a brief allusion may be made to some matters of general interest. Unquestionably the most urgent need at present is that of a Library Building. The space available for library purposes in the College building is far outgrown. The accumulation of valuable books, pamphlets, and journals progresses rapidly, but it has long been impossible to provide shelf-room so that they might be accessible to students. A rich and well-arranged library is as necessary to the growth and activity of a university as is an active circulation to the health of the body. The university life centres in it; every teacher and every student draw from it facts, knowledge, and inspiration. The use made of a library is a good index of the condition of a university, and of the extent to which it is discharging its duty of stimulating thought, inquiry, and research as well as that of merely affording instruction. There is no complaint to be made on this score at the University. The difficulty is that the rich collections in her possession are from want of space inaccessible to the rapidly increasing number of eager readers. Clearly it is not only the University, but the entire community, which suffers from this, since every argument tells in favor of opening such a library to the public as a free library of reference. There is such general appreciation of the necessity in Philadelphia of increase in library facilities that there should be no difficulty in securing the amount required for the building, and for a fund for the current expenses of a great University library conducted on the above basis. The proposal should appeal to all, and might reasonably receive substantial aid from the municipal government. The total amount required is not less than $150,000 for the fireproof building; and from $150,000 to $250,000 as a fund, the income of which would be used for maintenance and extension. So numerous and valuable are the gifts of printed matter that it is clear that, when a safe and spacious building is provided, an extraordinary growth will follow. The report of the Librarian, Mr. Gregory B. Keen, which is given in Appendix No. II., at page 35, contains so many facts of the most interesting character concerning the growth and needs of the library that its careful perusal is urgently recommended. Encouraging progress
has been made towards securing the needed fund; the amount
subscribed up to the present time being $150,000.

In 1881 the Board of Trustees adopted resolutions establishing
the Central Committee of the Alumni. This action was taken
in recognition of the fact that the alumni of an institution are
those most responsible for its success and development. This
responsibility will not be duly felt unless there is associated with
it the possession of some power and privilege, and invariably the
possession of such proper power stimulates to a keener sense of
duty and responsibility. The privileges accorded by the Board
of Trustees to the Central Committee of the Alumni are as
great as could be given without alteration of the University
Charter, and it is apparent that they will be so exercised as to
promote the best interests of the institution. A vigorous activ-
ity has sprung up among our graduates everywhere, and is
manifesting itself in all ways expressive of pride in and affec-
tion for their Alma Mater. The most important expression of
this has been the formation of the association of our graduates
living in New York City and State. The first annual dinner
of this association was eaten at Delmonico's, November 23, 1886.
The Executive Committee visited the University in November,
1887, and there is every reason to hope for an active and useful
career for this, the pioneer of our non-resident Alumni Associa-
tions. It is proposed to effect similar organizations in various
places, and experience indicates that they will be found sources
of pleasure and also of advantage to both the Alumni and the
University. This strengthening bond between the University
and her graduates is to be further cemented by the erection of
a hall out of funds contributed by the Alumni, so that for all
future time there shall be a building which in a special sense
belongs to the Alumni, and to which they will always look as
to their own home. (See Appendix III., p. 39.)

In May, 1887, the Seybert Commission presented to the Trus-
tees a preliminary report on the Investigation of Modern Spirit-
ualism. As it may be a long time before a subsequent report is
made, and as the results now given foreshadow the probable nature
of later conclusions, it seems proper to reprint their report here as
an Appendix (see Appendix IV., p. 40), necessarily omitting
the interesting personal statements which accompany the official
report. My friend and relative, Mr. Henry Seybert, who had many conversations with me as to the exact intentions of his gift, was far from being a blind believer in Spiritualism. He was deeply interested in the subject, and regarded certain phenomena as supernatural, but he was equally aware of the large element of delusion and fraud which is apparently inseparable from the subject. He had no wish to have the claims of Spiritualism vindicated. His desire was to have a fair, searching, and, as far as possible, scientific examination of these claims, and he would have been equally willing to have them repudiated or established, according to the evidence adduced. The burden of proof lies with the Spiritualists. Your Commission has collected all the evidence thus far accessible. The conclusions reached can be read and criticised by all in the published report. It should be here stated that the special fund of $20,000 left by Mr. Seybert to be used at the discretion of his executors in furthering the study of Spiritualism has thus far been kept intact, and its income alone has been used, partly in forming the Henry Seybert Library of Spiritualism and Psychology, and partly in contributing to the salary of the recently appointed lecturer in Psycho-Physics, Dr. James McK. Cattell.

I am able to report the successful completion of another interesting investigation, which has been prosecuted during the past three years, under the auspices of the University. In 1884 it was represented to the Trustees that Mr. Eadweard Muybridge, so well known as the pioneer in the photography of animal motion, was desirous of pursuing these investigations on a greatly extended scale, and that certain friends of the University were willing to advance the needed funds if the work should be placed under a University Commission so as to insure its thoroughness and scientific character. The investigation proved to be an extensive and costly one. Over three years passed before it was completed, and the outlay for lenses, apparatus, and other purposes has exceeded $30,000. The value of the immense number of photographs obtained is so great, from an artistic, as well as from a scientific standpoint, as to fully justify the labor and expenditure incurred. In connection with the photographs, the Commission has published a volume of text containing a paper on the mechanism employed, by Wm. D. Marks, Whitney Pro-
fessor of Dynamical Engineering, one on the Laws of Animal Motion as illustrated by the Photographs, by Harrison Allen, M.D., Emeritus Professor of Physiology, and one by Dr. F. X. Dercum, Instructor in Nervous Diseases, on Some Normal and Abnormal Movements.

Another notable event of general interest was the performance by students of the University of the Acharnians of Aristophanes. The preparations for the play, and the performance itself, were under the immediate supervision of Dr. Morton W. Easton, Professor of Comparative Philology, and Dr. William H. Klapp (M.D., 1876, and A.M. causa honoris, 1886), Greek and Latin Master in the Episcopal Academy. The music was composed specially for the occasion by H. A. Clarke, Professor of Music. The performances at the Academy of Music, in Philadelphia, were brilliantly successful, and met with the most favorable criticisms from eminent scholars from various parts of the country. So widespread were the interest and approval elicited by these performances that a communication signed by representatives of twelve Colleges, was forwarded to the Board of Trustees, urgently requesting that an additional performance should be given in New York. This was done with similar success, and the sum of $1378.09 was returned as profits, which was devoted to the funds of the American School of Classical Studies at Athens. The innocent pleasure derived from the performances was the least of the benefits resulting. Deep interest was aroused in Greek literature, and a distinct stimulus was imparted to classical study. An excellent exhibition was made of the results attainable among undergraduates by discipline and hearty co-operation; and opportunity was afforded for exhibiting that sympathy between Colleges in support of intellectual or educational projects which, if fostered, may lead to highly important results. The memory of the Greek Play of 1887 will long be cherished among the happy traditions of the University. A copy of the correspondence above alluded to and of the action of the Managing Committee of the American School taken subsequent to the New York performance will be found in Appendix V., at page 50.

Attention has been drawn to the desirability of extending the number and variety of public lectures given at the University. The public interest in such courses shows clearly that they are
of actual educational value, while at the same time they stimulate the interest of the students and benefit the University by helping to place her in her proper position as the intellectual centre of the community. Especial mention may be made of the highly successful course by Comm. Prof. Rodolfo Lanciani on the Archaeology of Rome. In order to enlarge the scope of these lectures and to render them as useful as possible, an organization known as the University Lecture Association has been effected (Appendix VI., p. 53). It will be seen that the appointments for 1887-8, which are also given in the Appendix, are numerous and important.

An event of no small interest and significance, which occurred during the present year, was the Banquet which closed the Centennial Celebration of the Adoption of the Constitution in 1787. It was desired that in some conspicuous manner there should be included in this celebration an exhibition of the progress and results of American education during the past century. It was comparatively easy to place before the world the evidences of our material prosperity and our marvellous progress in all the branches of industry and of applied science. No better way suggested itself of illustrating the influence which education has exerted under our Constitution than such united action of our leading institutions of learning as would show the position, prestige, and power attained during a single century by these bodies representing in a single city the great interests of education. An invitation extended by the University was accepted by the American Philosophical Society, the Historical Society of Pennsylvania, the College of Physicians of Philadelphia, the Franklin Institute of the State of Pennsylvania, the Academy of Natural Sciences of Philadelphia, the Pennsylvania Academy of the Fine Arts, and the Law Academy of Philadelphia. The Commissioners of the Centennial Celebration gave all possible official recognition to the banquet which it was proposed should be given by these associated institutions to the distinguished guests who then honored Philadelphia by their presence. The result was in every way gratifying, and the end sought was apparently attained. An account of the banquet, with full report of the speeches there made, is in course of preparation for publication.

It has long been apparent that among the most serious problems connected with the elevation of the standard of college education
and the insistence upon thorough and serious work by the under graduates, is the want of better and more uniform preparation of students by the schools fitting them for College. Equally apparent is it that much of this defective preparation results from the great variety, inequality, and even unreasonableness, in the requirements for admission exacted by the Colleges. Simplification and an approach to uniformity in these would enable a higher standard to be maintained with far more general success. Such results can be secured only by organized effort, by organization of the fitting schools for the purpose of discussing the best methods of school education, the relation of the school to the College, and all cognate questions; by organization of the Colleges for similar consideration of the numberless subjects of importance involved in our higher education, and by occasional conferences between committees of these two allied organizations. Although the conclusions arrived at could possess no binding force, it cannot be doubted that such conferences would exert a powerful and wholesome influence in promoting mutual confidence and co-operation, and in the correction of abuses.

Encouraging progress has been made in this direction since my last report. An association was formed in 1886, which includes the masters of the leading schools in Pennsylvania, and will, it is hoped, be extended to embrace those of the Middle States also. The first meeting was held at the University of Pennsylvania, and was largely attended by schoolmasters from Pennsylvania and adjoining States. The papers and discussions were of marked value, and the success of the meeting fully justified the expectations which had been formed.

Subsequently steps were taken toward the formation of an association of the Colleges in Pennsylvania, which resulted in a meeting of organization at Lancaster, on July 5, 1887, at which a large number of these Colleges were represented. A permanent organization was effected, and the interest manifested, and the value of the addresses and discussions were so great as to indicate the reality and importance of the work awaiting the organization.*

* A call has been issued for the first conference between committees of these two bodies, so that the machinery has been created and put into operation for securing the beneficial results which may reasonably be expected from closer and more cordial relations between the schools and Colleges.
Substantial benefit has continued to be received from the operations of the Athletic Association. The equipment of the gymnasium and the condition of the grounds have been improved; increasing interest and proficiency have been manifest in all parts of the work; and convincing evidence has been furnished of the value of properly regulated gymnastic exercises and athletic sports in forming a higher standard of manly feeling, and of personal conduct among College students. Unquestionably there are other causes which have contributed powerfully to the production of this happy result; but I believe that no one who is intimately familiar with College life will dissent from the view I have expressed. The organization of the Department of Physical Education is highly satisfactory, but as the interesting report of the Assistant Director, Dr. A. H. P. Leuf (see Appendix VII., p. 56), shows clearly, there are urgent needs which must be supplied before the equipment of the Department can be considered effective. Of these needs the most important is that of a large gymnasium erected on the land adjoining the athletic grounds, which has been specially reserved as a site for that purpose.

The increased requirements for admission to this Department, and the increase of the fee charged for the last two years in the scientific sections exerted an unfavorable influence on the number of students applying for admission, which has not yet been overcome.

This effect will be but temporary, however, while the influence upon the public and private schools which prepare students for the University is most beneficial. The establishment of the City Prize Scholarships is producing the happy effect anticipated. The administration of this important trust has been conducted by the University in the most liberal manner, and in entire accord with the views of the Board of Public Education. On several occasions the number of students on this foundation has exceeded considerably the fixed limit; but the authorities of the University have felt that every possible indulgence should be extended, which would conduce to the great object in view, the establishing of closer organic connection between the various parts of our educational system. Owing to the various trusts from State and City accepted and faithfully executed by the Board of Trustees, the University has become the organic centre of this entire sys-
tem, and is in a position to aid powerfully its extension and improvement.

To remove all obstacles to the free passage of deserving students from the Grammar School through the High School, and to their University degree, it has been resolved that graduates of the High School may be admitted to the Freshman class of the University without examination, unless a course is chosen in which Greek enters; or in case they bring certificates of unusual proficiency, they may be admitted in the same manner to advanced standing on satisfying the members of the Faculty of their readiness to profit by the studies of such advanced year.

Similar privilege has been extended to the graduates of the Philadelphia Manual Training School, with the condition attached that they must secure such special proficiency in the required languages as shall satisfy the members of the Faculty. At the present time renewed study is being given to the important question of the desirability of distributing these scholarships between the various Departments of the University.

It is apparent that the entire community has a vested interest in the University, and should aid its authorities in the administration of this great trust, so as to derive from it the important and lasting benefit it will yield to our educational system.

I regret to be obliged to dwell especially upon the urgent needs of the Towne Scientific School.

The wise and munificent benefaction of John Henry Towne, Esq., the only condition attached to which was, that its income should go to increase the salaries in the Scientific Department, was made the occasion of expanding that Department of the University into an elaborate and comprehensive school of Science and Technology, which was fitly named after its distinguished benefactor. When the present College building was occupied in the year 1872, the space and equipment provided for the various sections of chemistry, physics, civil and mechanical engineering seemed ample.

It was confidently expected that the obvious advantages of such a school to this community would speedily attract further benefactions. But since that time the efforts to keep abreast with the demands upon this Department have been insufficient. Thoroughly equipped and well-endowed scientific and technological
schools have been established at various points, while several of the older scientific schools have received large gifts, which have enabled them to develop vigorously. With the exception of the endowment of the Whitney Chair of Dynamical Engineering and the Thomas A. Scott Chair of Mathematics, there have been no considerable additions to the resources of the Towne Scientific School, while the increased number of students and the subdivision of branches of study demanded by the development of applied science have made both the original space and the original endowment inadequate. An extension of Laboratory accommodations for students in Chemistry and Engineering is urgently needed. No less imperative is the need of increased equipment, especially in the direction of Applied Organic Chemistry and of Electrical and Mining Engineering.

There is certainly no city whose prosperity is more closely dependent upon the great processes of applied science than is that of Philadelphia. Nowhere can wealth be more indebted to the cooperation of highly trained experts in all of these processes. It would seem that the most natural object of pride to Philadelphia would be the possession of a scientific school whose scope, endowment, and equipment should be unsurpassed, even if equalled. The munificent bequest of Mr. John Henry Towne enabled the Trustees to lay the broad foundations of such a school, and all have seen the admirable results. This bequest is steadily growing more and more productive under the wise provisions of the will. But the full endowment of the Scientific Department of the University will require not less than $1,500,000, and those who appreciate the splendid results that would then be accomplished should see to it that its largest requirements are satisfied.

The actual work done in the Scientific School has been most satisfactory. In order to enable those students who elect one of the scientific courses without intending a professional career to leave the University before the fifth year, it was last year decided that the degree of Bachelor of Science should be given at the end of the Senior year. This is eminently just and judicious. It eliminates from the Post-senior year all but those students who are devoting themselves seriously to the preparation for their professional work, and insures for these latter the close personal
supervision and instruction of the able professors in charge of their advanced studies. Of the students in the scientific sections of the class of 1887, numbering in all 47, no less than 35, or 74\frac{1}{2} per cent., have returned to complete their Post-senior year, and to acquire a professional degree. The work done this year by these students is described briefly in the reports of their professors (see Appendix VIII., p. 60). Careful examinations of the results will show the high standards of requirements, both theoretical and practical, attained by our students before they receive the professional degree. Thus, gradually the Towne Scientific School is approaching that to which it would seem destined—that of a strictly graduate school, with courses of practical training during two years, based on a College Department in which are provided various elective scientific courses preparatory to the subsequent advanced professional studies.

The Biological School has an organic connection with the College Department, and is properly considered here. Its work has been in the highest degree satisfactory, as may be gathered from the report of the Secretary (see Appendix IX., p. 65). To this is subjoined a highly interesting account by C. J. Dolly, Professor of Biology, of the results of an excursion to the Bahamas during the summer of 1887. I cannot forbear mention of the devotion and constant liberality shown by the Secretary, Dr. Horace Jayne, to whom the establishment and extension of this school are chiefly due. The accommodations and equipment are now all that could be desired. Facilities are extended to original investigators for the prosecution of their researches. Students are received who desire to take only a partial course, including Biological studies. These interesting studies have also been assigned a place among the electives, and it is hoped that a constantly increasing number of students will come to recognize their value both for the training and the knowledge they impart. A more complete course, extending over four years, and known as the course in philosophy for undergraduates (see Catalogue, 1887–8, p. 56), is provided with special reference to the needs of students intending to enter the Medical School. It is strictly a course preparatory to the Study of Medicine; and when the curriculum of the Medical Department has reached its full expansion, and extends over four years,
it will be eminently proper to allow those students who have taken this or an equivalent course in another institution to enter directly the second year of the Medical Department. A more full discussion of this important question will be given later (p. 20). Finally, just as there has been introduced among the elective studies in the college department a considerable range of Natural History studies, they have been fully recognized in the Department of Graduate Study, and a number are offered in the Biological School, either as major or minor branches, to candidates for the degree of Doctor of Philosophy. There is no want of compatibility between these and the older branches of graduate and undergraduate studies. The admirable drill they afford in acute and accurate observation and in correct reasoning on the relations of the phenomena observed, will render the influence of the Natural Sciences valuable to many students preparing for after-work which does not seem to need the special knowledge they impart. It may be confidently predicted that an increasing importance will attach to these branches in all comprehensive systems of education.

Although the practical working of the Wharton School of Finance and Economy has led to some modification of the original plan, these have been slight, and it is evident that the special work undertaken by this School meets the needs of an important class of students, and that it admits of the largest expansion in the lines of financial, political, and sociological study. The truth of this is shown no less by the gratifying number of students attracted by the courses offered in this school than by the earnest spirit of study and original investigation manifested by all connected with it. The admirable report which has been kindly prepared by Prof. E. J. James, Secretary of the Faculty, discuss so fully the work already accomplished and the possibilities and needs of the future that it is unnecessary to do more than call attention to Appendix X., p. 73, where it is presented.

As the development of the American University system progresses, more and more importance attaches to the needs of advanced students. The peculiar conditions of our National life call for a universal system of college education with very numerous collegiate institutions scattered over the country. Expressions of regret are heard at the strong tendency to the multipli-
cation of such establishments in America. But it seems not improbable that this tendency arises from something much deeper and better than personal vanity on the part of those who with their wealth found new institutions instead of aiding to strengthen older foundations. It may well be that it accords best with the genius of our people, favors independence, stimulates local interest and pride in education, and opposes centralization and exclusiveness. But this is true for the present only of undergraduate work. Advanced students and original investigators must still repair to the older seats of learning whose rich collections and large corps of special teachers afford the needed facilities. No class of students equal these in importance, for they will become the educators, the scientists, the literary workers of the future. Their number is increasing with gratifying rapidity, so that upon the basis of the American college there is growing up a true University system. The needs of these graduate students should be met with special care and with abounding liberality. Endowed halls of residence with fellowships attached; endowed professorships, which will attract and maintain teachers eminent in important specialties; special libraries, special laboratories, special funds for the publication of the results of investigations;—these are the conditions essential to effective graduate work. At the University of Pennsylvania they are even approached only in one Department, the Medical. Even there, there is, as will be seen, much yet to be supplied. But there is no more attractive and fruitful field open to the patrons of good education than the graduate Departments of our great colleges.

The graduate work at the University of Pennsylvania is under the control of the Faculty of Philosophy. The subjects taught in this Faculty and the rules under which special courses, or regular courses leading to the degree of Doctor of Philosophy may be taken, are given in Appendix XI. (p. 78).

As an example of the large and almost unsuspected demand which exists for the highest grade of instruction in important specialties, I would call especial attention to the Department of Semitic Languages. This began with the offer of Hebrew as a voluntary study by Rev. John P. Peters, Ph.D. (Yale), Professor of Hebrew in the Philadelphia Divinity School, who was elected Professor of Hebrew in the University of Pennsylvania on Octo-
ber 5, 1886, and the study was then made elective. The subsequent election of the Rev. H. V. Hilprecht, Ph.D. (Leipzig), as Professor of Assyrian, was followed by that of Morris Jastrow, Jr., Ph.D. (Leipzig), as Professor of Arabic and Rabbinical Literature. Despite the brief interval that has elapsed since courses were offered in these subjects, there are during the current year (1887–8) no less than 32 students in attendance on the courses of these three Professors.

In connection with the subject of Post-graduate degrees it may be here stated that under carefully guarded usage from the earliest days the composition of the Board of Trustees is non-sectarian and represents the leading religious denominations. While this freedom from sectarian character deprives an institution of a certain partisan support which is not uncommonly both active and liberal, it is well-nigh essential to the largest and freest development of the University idea. No attempt has been made, therefore, to form at the University of Pennsylvania a Department of Theology, which would necessarily assume some denominational character. It is, however, eminently proper and desirable that college graduates who have the degree of Bachelor of Arts should receive that of Bachelor of Divinity on the completion of an adequate course of Theological study. It was therefore decided by the Trustees in 1887 that—

"A Bachelor of Arts of this University may apply for the degree of Bachelor of Divinity under the following conditions:—

"He shall present to the Board of Trustees, through the Provost, at least ten days before the June Commencement, a written application to proceed to the degree, accompanied by a Diploma or Certificate duly signed and sealed by the proper officers of some incorporated Theological School or Seminary, testifying that he has pursued a full three years’ course of Theological studies, and has satisfactorily passed the required examinations therein. Upon such application the Board may, at its discretion, order the degree of Bachelor of Divinity to be conferred upon the said applicant at the annual commencement in June."

This action, as it will be seen, is applicable as yet only to our own graduates, whose undergraduate work in some of the branches essential to Theological training is well-known to, and has been approved by us. But there will be no difficulty, if it
be found desirable, in extending its operation so as to cover any Divinity School or Theological Seminary whose curriculum complies with reasonable requirements, and whose Faculty may request us to appoint assessors at their examinations. The establishment of this degree (B. D.) is in accord with the practice of the University from its earliest days of conferring the degree of Doctor of Divinity (D. D.), and renders complete and harmonious her relations with the entire range of studies, both graduate and undergraduate.

The propriety and practical wisdom of the extensive changes made in the curriculum of the Medical Department have been fully confirmed by steadily increasing success. The quality, as well as the number of students, has risen, and there has been an especially marked increase in the number of those who have received a good preliminary education. The equipment of the Medical School now leaves scarcely anything to be desired. The clinical facilities are unsurpassed in all respects, save one, the possession of a maternity or lying-in hospital where the most advanced students should, under the strictest rule and supervision, acquire a practical familiarity with the great process of parturition. The interesting report of Prof. James Tyson, Secretary of the Medical Faculty (see Appendix XII., page 82), presents a full account of the actual operation and urgent requirements of this important department.

It is true that at present the time and attention of the students are fully occupied by the required studies. Indeed, it may safely be asserted that better results would be obtained if the same work now done in three years were distributed over four sessions of equal length. Substantial as has been the improvement in medical education effected by a prolongation of the course of study to the limit now set by the University, it is manifest that still further extension is demanded. It has been shown that medical students can be supplied under the new system of teaching, not only with theories and facts, and a certain familiarity with the appearance of things, but with trained powers of observation, with dexterous skill in manipulation, and practical experience in all the applications of remedial art. So equipped, he is ready to assume, as soon as he is licensed, the gravest responsibilities of his profession. But the very excellence of the system of
teaching permits and requires all branches of medical science to be included and demonstrated. No one who considers the extent and diversity of the field of study, and the magnitude of the powers acquired with the medical diploma, will contend that the entire period devoted to its acquisition should be less than four years. Even this, which would be a maximum in America, is less than the ordinary period exacted in many countries. Nor are the age and qualifications of our students on admission even equal to those of students abroad when they enter on the more protracted course of study. We must, however, deal with facts as they here exist. It is very desirable that as many as possible of those who intend to study medicine shall take a previous college course, and acquire the degree of A. B. or B. S. The advances in the requirements for admission to our leading colleges have raised the average age of students at entrance up to seventeen or eighteen years. The requirement of four years' study in the medical course would, under existing arrangements, defer the receipt of the medical diploma by the college graduate to an average age of twenty-five or twenty-six. Any one familiar with the circumstances of the great majority of our College and Medical students will admit that it is impossible to expect them to defer until so late a period the entrance on remunerative life work. The difficulty seems aggravated when we remember that there is no obstacle to entrance on medical practice at the age of twenty-one years, after a course of medical study embracing but two sessions of five or six months each. This statement indicates the severe competition encountered by the few schools which have established a prolonged and graded course. The increasing success of the Medical Department of the University, in spite of this competition, is due not only to the excellence of her teachers, and of her equipment, but equally to the noble resolution of the Medical profession that they will support loyally those schools which subordinate self-interest to the promotion of medical science and sound education. This professional support has been aided powerfully by an intelligent appreciation on the part of the community that higher medical education is the true interest of all. The same support may be confidently relied upon to encourage the further advances which are generally conceded to be necessary to place the best medical education of the country on its
proper plane. All recognize that at medical schools where diplomas can be secured in two years some of the most important features of medical education are of necessity omitted. But it is equally true that in schools where the equipment exists for teaching thoroughly all portions alike, it is found impossible to cover the ground satisfactorily, in even three sessions of seven months each. The students are overtaxed, and full advantage cannot be taken of the ample facilities for acquiring the practical knowledge and experience so necessary for success in after life. Careful investigation of the careers of our own graduates since the new system of education was adopted shows conclusively that they meet with far more than an average amount of success, and that their superior qualifications are promptly recognized by the profession and by the public. Even more would this be the case had they pursued a still longer course of study, covering four years—embracing preliminary subjects of great importance, such as Botany and Zoology, and later on, such subjects as Hygiene, Medical Jurisprudence, and above all, the thorough practical study of Medicine, of Surgery, of Obstetrics, and of Gynaecology.

It would be eminently proper in establishing such a course to provide that the first year might be passed in any College or High School where adequate instruction is given in Botany, general Chemistry, Physics, Physiology, Comparative Anatomy, and Histology. Such a course is strictly preparatory to, and indeed is a part of the study of Medicine. A student who had profited by it would be fairly entitled to enter the second year of a four years' graded Medical Course. I may refer here to what is said on page 14 of the course preparatory to Medicine in our Biological School. What is conspicuously true of this admirable school, and of the work done at some other leading colleges, would soon come to be true of all institutions called on to prepare students for the best Medical schools; so that the introduction of a simple provision of this kind would encourage to a college course many who intend subsequently to study medicine, would relieve the strain on the Medical class of the first year, would provide a thorough medical education for those who took the full four years' course without previous college study, and thus would secure an increasing number of physicians thoroughly and scientifically educated.
As, however, there would necessarily be a certain proportion of students of the first rank as regards ability, but who would be unable to bear the added expense of a fourth year, it would be extremely desirable that an increased number of prize scholarships should be established in the Medical Department. The fact is apt to be lost sight of that already the Medical Faculty maintain at their own expense 18 such scholarships, 6 of which are awarded annually by competitive examination. An extension of the course of study, such as has been advocated, would involve more teachers, longer terms of service for all demonstrators, and increased running expenses. It is not improbable that there might be a temporary falling off in the receipts from students' fees, so that it is but reasonable that a guarantee or contingent deficiency fund should be pledged, covering a period of five years at least in order that this important change might be instituted permanently. Doubtless the guarantee fund would be more readily raised if coupled with a promise that additional scholarships should be established, to the endowment of which should go subsequently such portions of the fund as had not been required to meet deficiencies. Started upon this safe basis it seems that a sure success would attend a carefully graded course of medical instruction extending over four years, the first two of which should embrace general and medical chemistry, human and comparative anatomy and histology, botany, materia medica, physiology, hygiene, physical diagnosis and general clinical instruction; while the last two would be devoted to the study of pathology, therapeutics, the practice of medicine, surgery, obstetrics, and all the important specialties. The post-mortem room, the laboratory, the hospital ward, and the lying-in chamber would be the daily resort of every student during two full sessions, and as a consequence each graduate would have had the practical training now had only by those who enjoy hospital residence after graduation.

The wisdom of the Trustees and of the Medical Faculty in establishing the Dental Department has been amply attested by its increasing success, despite the high standard of education there maintained. The students enjoy the benefit, not only of the able dental professors, but of the medical professors, whose branches enter into the curriculum of the Dental Department, and enjoy
also the admirable advantages in practical anatomy and chemistry provided for the medical school. Dentistry is thus recognized as a surgical specialty, and they who have followed a thorough and comprehensive course of study, in order to acquire the dental degree (D.D.S.), should evidently be recognized as constituting a section of the medical profession. In this sense, we may view with approval the recent action of the American Medical Society, in creating a dental section in that organization. But it is not hard to foresee that if the letter and spirit of the strict rule adopted be not adhered to, this arrangement will work injuriously both to the dental and medical professions, and to dental and medical education. This must be the effect of anything which tends to dignify and encourage inferior systems of teaching, such as have for years afflicted the medical profession. The equipment of the Dental Department of the University has been further improved by the reorganization of the laboratory of mechanical dentistry, so that it now more nearly reaches the standard of excellence already attained by that of operative dentistry, and both seem admirably adapted to the needs of the established curriculum. An interesting statement of the operation of this Department is given in the report of the Secretary of its Faculty, Prof. James Truman, in Appendix XIII., p. 90.

The Law Department has met with serious loss in the death of the dean, Prof. E. COPPEE MITCHELL, LL.D., as elsewhere reported. The services rendered by this eloquent teacher and able administrator cannot be overestimated. His death left vacant the chair of Real Estate, Conveyancing, and Equity Jurisprudence. It was decided to somewhat modify the curriculum and the distribution of subjects among the several chairs, before the vacancy was filled. Thus modified, the Faculty contains five chairs. A number of applicants, eminent as teachers and practitioners of law, presented themselves, and Mr. A. Sydney Biddle, and Mr. C. Stuart Patterson, were elected to the vacant professorships. The Faculty is at present thus constituted:—

Hon. J. I. Clark, LL.D., Professor of the Institutes of Law, including, inter alia, International, Constitutional, and Commercial Law.

James Parsons, A.M., Professor of the Law of Personal Relations and Personal Property.
George Tucker Bispham, A.M., Professor of Equity Jurisprudence.

C. Stuart Patterson, A.M., Professor of the Law of Real Estate and Conveyancing.

A. Sydney Biddle, A.M., Professor of Practice, Pleading, and Evidence at Law and Criminal Law.

The enlargement of the Faculty has rendered it possible to increase the amount of instruction given, and it is gratifying to report that, although the annual tuition fee was raised from $80 to $100, the number of the students in the Department is greater than at any previous time. An occurrence of great interest, and one which will exert a strong influence in the future of the law school, was the presentation of the valuable library of Benjamin Harris Brewster, Esq., by the immediate family of the late George Biddle, Esq. The Law Faculty proposed, in order to insure the proper maintenance and growth of this library, that a sum equal to twelve per cent. of the gross receipts of the school, and not less than $1300 per annum, should be devoted to this purpose. The Trustees in accepting the gift determined that it should be known as the George Biddle Memorial Law Library of the University of Pennsylvania, and adopted the above proposal of the Faculty as one of the conditions of the trust. Thus has been supplied, in the most gratifying manner, one of the most urgent needs of this Department. Hitherto the students have been enabled by the liberality of the Bar Association to avail themselves of its fine library. But the increasing use of that library by the members and the increasing number of students resorting to it have made it clear that this generous permission could not much longer be extended. A more important question has, however, risen naturally in this connection. While it is true that the Law School has prospered in the past, it has often been doubted whether its prosperity would not be further promoted by having the instruction given at a point more accessible to the courts and the great law libraries, than at the University buildings in West Philadelphia. To the student of law the courts and these libraries are what laboratories and hospitals are to the medical student. And just as in the case of medical education the old didactic method has given way to the modern practical method, so it seems probable that the best and most successful law
school will be that which combines with thorough instruction in the leading principles of the law the greatest amount of practical teaching by leading specialists, and the best opportunities for observing the actual conduct of business in court and office. It has been felt, therefore, that as soon as the fundamental need of independent and adequate library facilities were supplied, a great expansion in the scope and activity of the law school could be obtained by securing a suitable building, convenient to the courts and law offices, and affording accommodations for a large and growing library, and for large classes of students in both general and special courses. The fact that the mode of legal procedure varies in different states affords no sufficient reason why a law school may not attain a national influence and draw students from all parts of the country. The example of the law schools of Columbia College, of Harvard, and of Michigan demonstrates this. The prosperity of our own school, although steadily increasing, is largely dependent on Pennsylvania support. It is the opinion of competent judges that the classes can speedily be doubled if a building with ample library facilities, and in a suitable location, be secured, and if an extended curriculum, embracing courses of lectures on important specialties, be provided. After mature consideration the Board of Trustees of the University has adopted the programme above indicated, and has appointed a committee with power to prepare and issue an appeal to the legal profession and to the public, to consider sites and plans, and to prepare and submit a scheme of enlarged instruction. The arguments embodied in this appeal seem unanswerable, and it only remains for those who are interested in or responsible for the status of legal education and of the legal profession to contribute the moderate amount needed to make our law school a national power, as our medical school long has been, for the maintenance of the highest education, and for the elevation of the profession whose interests it represents.

The operations of the Veterinary Department during the past year, when for the first time the full curriculum has been in effect with three classes in attendance, furnish convincing proof of the admirable basis on which this school has been established. It is attracting earnest students of an excellent class who obtain an education in this branch of science unsurpassed in thorough-
ness and comprehensiveness, and who will be fitted to assume the responsible duty of advising the community upon questions gravely affecting our national prosperity, and who will thus aid in giving the practice of Veterinary Medicine its proper place in popular esteem. The report, which has been kindly prepared by the Dean, Dr. R. S. Huidekoper, speaks in terms of justifiable satisfaction of the practical working of this Department. (Appendix XIV., p. 92.) It speaks also of the large needs which its very success render imperative. It is self-evident that no such system of serious scientific study can be sustained, save by ample endowment. The liberal gift of Joseph E. Gillingham, Esq., and the large and repeated benefactions of your colleague, the late J. B. Lippincott, Esq., and more recently of the members of his immediate family, set examples to the community which should certainly secure ere long the endowment needed.

This report would be incomplete without a reference to the Hospital work which has been carried on for a number of years in connection with the University. The general Hospital, which now forms an indispensable and prominent part of the system of practical medical teaching, was founded by a happy conjunction of State, Municipal, and private benevolence. The funds which constitute its permanent endowment are held as a special trust by the Board of Trustees. The income is paid over to a Board of Managers, upon whom devolves the entire conduct of the Institution. Under their judicious administration and fostering care the Hospital has advanced in usefulness and prosperity more rapidly than the most sanguine ventured to predict. The obligation assumed in return for the liberal gifts of the State and City have been met with unexpected promptness; and it is evident that in the near future the return made for this timely aid will greatly exceed what was promised.

In a subsequent report I hope to give more full details of this interesting Department of the University. The past two years have been peculiarly important ones in its history. They have witnessed the establishment, through the liberality of valued friends of the University, of an admirably equipped Training School of Nurses, and the installation of efficient female superintendence and nursing. During last winter a comprehensive course of lectures on nursing was given by members of the Hospital Staff.
The lectures were largely attended, and have certainly contributed to awaken public interest in, and to diffuse much valuable knowledge upon, this highly important subject. A summary of the financial position of the Hospital will be embraced in the abstract of the Treasurer's Report furnished in Appendix XVI., p. 124.

Having alluded with more or less detail to the several Departments of the University, it only remains to add, as an evidence of the way in which it also discharges the important function of producing, no less than that of distributing knowledge, a list of the publications of those officially connected with it during the period covered by this Report. It will be observed that while by far the larger number of the titles there reported are those of technical and professional publications, indicating the incessant activity in original research to which our teaching force is stimulated by ample library and laboratory facilities, the purely literary titles are neither few nor unimportant. The publications range from the brief review to the extensive work which represents the labors of a lifetime and stands an enduring monument of the intellectual activity of the age. While it is believed that the list is far from complete, it gives abundant evidence that all departments of literature and of science are being explored and illustrated by active workers connected with our staff. This will be found in Appendix XV., p. 94.

A summary of the Treasurer's Report which is given in Appendix XVI., p. 123, shows the steady advance which is being made in the realty, and in the amount of invested funds belonging to the University. It also illustrates the truth, by the scrupulous care with which special funds are administered, that in no way can a donor or a testator so surely secure the strict and permanent realization of his intentions as by confiding the necessary funds under suitable conditions to the Trustees of an Institution of broad powers and established reputation. It may be pointed out that in the case of the University of Pennsylvania, as in that of all our older colleges, the most pressing need is for larger additions to the unrestricted general funds, since it is only by the possession of adequate strength in this direction that a sound educational policy can be steadily pursued. It was one of the most admirable features of the great benefactions of the late Mr.
Towne that, as the sums bequeathed became available under the operation of his will, their application was unrestricted save by the condition that they should go to increase the salaries in the Scientific Department. The operations of the extensive scientific school, fitly named in honor of this distinguished patron of education, have resulted in a considerable annual deficit. It is true that for some years this has been met by the voluntary contributions of members of the Board of Trustees. But, as already stated in speaking of the present needs of the Scientific School, it is certainly high time that the great services rendered by it to the community, and the special need of Philadelphia for the most comprehensive and advanced technical instruction, should secure large additional endowments for this department of the University's work.

WILLIAM PEPPER,

Provost.
APPENDIX I.

DEATHS.

Nov. 13, 1886.  Joseph G. Richardson, M.D., Professor of Hygiene.
Jan. 25, 1887.  E. Coppée Mitchell, LL.D., Professor of Real Estate and Conveyancing.
May 9, 1887.  Elliott Richardson, M.D., Lecturer on Obstetrics.
Aug. 21, 1887.  N. Archer Randolph, M.D., Professor of Hygiene.

RESIGNATIONS.

Jan. 5, 1886.  J. P. Lesley, LL.D., as Professor of Geology and Mining.
Mar. 2, 1886.  Fairman Rogers, as Trustee.
June 1, 1886.  Henry F. Keller, B.S., as Assistant in Chemistry.
Sept. 7, 1886.  Benjamin Sharp, M.D., as Professor of Invertebrate Morphology.
Oct. 5, 1886.  Herman B. Allyn, M.D., as Assistant Demonstrator of Histology.
Nov. 2, 1886.  Andrew J. Parker, M.D., as Professor of Zoology and Comparative Anatomy.
Dec. 7, 1886.  Luther H. Graves, D.D., as Demonstrator of Dentistry.
Feb. 1, 1887.  James G. Barnwell, A.M., as Librarian.
June 7, 1887.  John J. Reese, M.D., as Professor of Medical Jurisprudence in Law Faculty.
June 7, 1887.  John B. Webster, M.D., as Clerk of the College Faculty.
July 5, 1887.  Albert S. Bolles, Ph.D., as Professor of Mercantile Law and Practice.

APPOINTMENTS.

GENERAL.

Jan. 5, 1886.  J. Peter Lesley, LL.D., to be Emeritus Professor of Geology and Mining.
May 4, 1886. Joseph D. Potts, to be Trustee.
" " Henry Reed, to be Trustee.
" " Samuel W. Pennypacker, to be Trustee.
Feb. 1 1887. Gregory B. Keen, A.M., to be Librarian.

Unlimited, or for a period of more than three years.

COLLEGE DEPARTMENT.

Oct. 5, 1886. George A. Koenig, Ph.D. (Heidelberg), to be Professor of Mineralogy and Metallurgy.
Mar. 1, 1887. Morton W. Easton, Ph.D., to be Adjunct Professor of Greek.
" " Samuel P. Sadler, Ph.D. (Göttingen), to be Professor of Organic and Industrial Chemistry.
May 3, 1887. Rev. George Stewart Fullerton, A.M., B.D., to be Professor of Intellectual and Moral Philosophy.

DEPARTMENT OF MEDICINE.

April 27, 1886. Edward T. Reichert, M.D., to be Professor of Physiology.
Oct. 5, 1886. J. William White, M.D., to be Professor of Genito-Urinary Diseases in the University Hospital.
June 7, 1887. William F. Norris, M.D., to be Honorary Professor of Ophthalmology.

DEPARTMENT OF BIOLOGY.

Oct. 5, 1886. John A. Ryder, to be Professor of Comparative Embryology.
Jan. 4, 1887. William Powell Wilson, M.D., to be Professor of the Anatomy and Physiology of Plants.

DEPARTMENT OF LAW.

May 3, 1887. C. Stuart Patterson, A.M., to be Professor of Real Estate and Conveyancing.
" " A. Sydney Biddle, A.M., to be Professor of Practice, Pleading and Evidence at Law, and Criminal Law.

DEPARTMENT OF PHILOSOPHY.

Nov. 2, 1886. Daniel G. Brinton, M.D., to be Professor of American Archeology and Linguistics.
Dec. 7, 1886. Rev. Hermann V. Hilprecht, Ph.D., to be Professor of Assyrian.

Jan. 4, 1887. Morris Jastrow, Jr., Ph.D., to be Professor of Arabic and Rabbinical Literature.

Annual, or for a period not exceeding three years.

COLLEGE DEPARTMENT.

Edward Martin, M.D., to be Assistant in Physical Education.

J. Foster Kirk, A.M., to be Lecturer on History.

Frederick A. Genth, Jr., M.S., to be Assistant Professor of Chemistry.

Edwin S. Crawley, B.S., to be Instructor in Mathematics.

Edward P. Cheney, A.M., to be Instructor in History.

Felix E. Schelling, A.M., to be Instructor in English.

Hugo A. Rennert, B.S., to be Instructor in French and German.

Arthur W. Goodspeed, B.A., to be Instructor in Physics.

Samuel Brown Wylie, A.M., to be Instructor in Mathematics.

D. Neil Harper, B.S., to be Instructor in Analytical Chemistry.

Samuel S. Evans, B.S., C.E., to be Instructor in Civil Engineering.

Benjamin Franklin, B.S., C.E., to be Instructor in Civil Engineering.

Henry A. Wasmuth, E.M., to be Instructor in Mining.

Charles S. Dolley, M.D., to be Instructor in Biology.

Andrew J. Parker, M.D., to be Instructor in Physiology.

N. Archer Randolph, M.D., to be Instructor in Physiology.

Edwin Alanson Kelley, to be Assistant in Anatomy.

Charles Herman Haupt, B.S., to be Assistant in Civil Engineering.

Charles Gilpin, Jr., A.M., to be Instructor in Bookkeeping.
Nov. 2, 1886. Morris Jastrow, Jr., Ph.D., to be Lecturer on Arabic and Assyrian.

Nov. 2, 1886. Rev. Herman V. Hilprecht, Ph.D., to be Lecturer on Egyptology.

Nov. 2, 1886. James McKeon Cattell, Ph.D., to be Lecturer on Psycho-Physics.

May 3, 1887. George Flowers Stradling, A.B., to be Tyndale Fellow in Physics.

Oct. 4, 1887. A. H. P. Leuf, M.D., to be Assistant Director of Physical Education.

MEDICAL DEPARTMENT.

Oct. 6, 1885. Carl H. Reed, M.D., to be Assistant Demonstrator of Morbid Anatomy.

June 1, 1886. Roland G. Curtin, M.D., to be Lecturer on Physical Diagnosis.

July 5, 1887. Charles K. Mills, M.D., to be Lecturer on Mental Diseases.

" " Adolph W. Miller, M.D., to be Lecturer on Materia Medica and Pharmacy, and Instructor in Practical Pharmacy.

" " De Forest Willard, M.D., to be Lecturer on Orthopaedic Surgery.

" " Elliott Richardson, M.D., to be Lecturer on Clinical Obstetrics, and Demonstrator of Practical Obstetrics.

" " John Marshall, M.D., to be Demonstrator of Practical Chemistry.

" " J. William White, M.D., to be Demonstrator of Surgery.

" " Harry R. Wharton, M.D., to be Instructor in Clinical Surgery.

" " John B. Deaver, M.D., to be Demonstrator of Anatomy.

" " Henry F. Formad, M.D., to be Demonstrator of Morbid Anatomy and Pathological Histology, Lecturer on Experimental Therapeutics, and Librarian of the Stillé Medical Library.

" " George A. Piersol, M.D., to be Demonstrator of Normal Histology.

" " Richard H. Harte, M.D., to be Demonstrator of Osteology, and Assistant Demonstrator of Surgery.
July 5, 1887. Thomas R. Neilson, M.D., to be Assistant Demonstrator of Anatomy and Surgery, and Instructor in Venereal Diseases.

“ “ Edmund W. Holmes, M.D., to be Assistant Demonstrator of Anatomy.

“ “ Albert L. A. Tobolt, M.D., to be Assistant Demonstrator of Pharmacy.

“ “ Judson Daland, M.D., to be Instructor in Clinical Medicine.


“ “ Washington H. Baker, M.D., to be Assistant to the Professor of Obstetrics.

“ “ George E. de Schweinitz, M.D., to be Prosector to the Chair of Anatomy.

“ “ Samuel D. Risley, M.D., to be Instructor in Ophthalmology.

“ “ W. M. L. Ziegler, M.D., to be Instructor in Otology.

“ “ Carl Seiler, M.D., to be Instructor in Laryngology.

“ “ Francis X. Dercum, M.D., to be Instructor in Nervous Diseases.

“ “ J. Hendrie Lloyd, M.D., to be Instructor in Electrotherapeutics.

“ “ A. Sydney Roberts, M.D., to be Instructor in Orthopedic Surgery.

“ “ Henry W. Stelwagen, M.D., to be Instructor in Dermatology.

“ “ William E. Hughes, M.D., to be Assistant in Physical Diagnosis.

“ “ Hobart A. Hare, M.D., to be Assistant in Physical Diagnosis, and Assistant Demonstrator in Experimental Therapeutics.

“ “ William L. Taylor, M.D., to be Instructor in Gynecology.

“ “ Gwyllym G. Davis, M.D., to be Assistant Demonstrator of Surgery.

“ “ Carl H. Reed, M.D., to be Assistant Demonstrator of Morbid Anatomy, and Pathological Histology.

“ “ W. Frank Haehnlen, M.D., to be Assistant Demonstrator of Normal Histology.

“ “ Herman B. Allyn, M.D., to be Assistant Demonstrator of Normal Histology.
July 5, 1887. John K. Mitchell, M.D., to be Instructor in Clinical Medicine.

July 6, 1886. Edward Martin, M.D., to be Instructor in Venereal Diseases, 4th year.

July 5, 1887. Harry R. Wharton, M.D., to be Lecturer on the Surgical Diseases of Children.

July 5, 1887. George H. Chambers, M.D., to be Assistant Demonstrator of Normal Histology.


" " George F. Kemp, M.D., to be Demonstrator of Physiology.

Nov. 2, 1886. Edward Martin, M.D., to be Assistant Demonstrator of Surgery.

July 5, 1887. James K. Young, M.D., to be Assistant Demonstrator of Surgery.

July 5, 1887. David D. Richardson, M.D., to be Assistant Demonstrator of Anatomy.

May 3, 1887. Thomas J. Neilson, M.D., to be Lecturer on the Anatomy of the Joints.

May 3, 1887. Edward Martin, M.D., to be Lecturer on Minor Surgery.

July 5, 1887. J. P. Crozer Griffith, M.D., to be Assistant to the Professor of the Theory and Practice of Medicine.

July 5, 1887. Hobart A. Hare, M.D., to be Instructor in Experimental Therapeutics.

July 5, 1887. Robert P. Robins, M.D., to be Instructor in Physical Diagnosis.

July 5, 1887. William M. Powell, M.D., to be Instructor in Physical Diagnosis.


Oct. 4, 1887. Barton C. Hirst, M. D., to be Lecturer on Chemical and Operative Obstetrics.

Oct. 4, 1887. Henry W. Cattell, M.D., to be Assistant Demonstrator of Chemistry.

DEPARTMENT OF DENTAL SURGERY.

June 1, 1886. James E. Loder, D.D.S., to be Assistant Demonstrator of Operative Dentistry.


June 1, 1886. William Diehl, D.D.S., to be Demonstrator of Operative Dentistry.

June 1, 1886. J. Judson Edwards, D.D.S., to be Demonstrator of Mechanical Dentistry.

June 1, 1886. George G. Milliken, D.D.S., to be Assistant Demonstrator of Operative Dentistry.


June 1, 1886. James E. Loder, D.D.S., to be Assistant Demonstrator of Operative Dentistry.

““ Ambler Tees, Jr., D.D.S., to be Assistant Demonstrator of Mechanical Dentistry.


““ John Marshall, M.D., Sc.D., to be Demonstrator of Practical Chemistry.

““ John B. Deaver, M.D., to be Demonstrator of Anatomy.

Auxiliary Department of Medicine.

Nov. 3, 1885. John J. Reese, M.D., to be Professor of Medical Jurisprudence and Toxicology.

Nov. 2, 1886. Samuel B. Howell, M.D., to be Professor of Mineralogy and Geology.

Nov. 3, 1885. Joseph T. Rothrock, B.S., M.D., to be Professor of Botany.

Nov. 2, 1886. Joseph G. Richardson, M.D., to be Professor of Hygiene.

Nov. 3, 1885. Andrew J. Parker, M.D., Ph.D., to be Professor of Comparative Anatomy and Zoology.

Nov. 2, 1886. Joseph Leidy, M.D., LL.D., to be Professor of Comparative Anatomy and Zoology.

Dec. 7, 1886. N. Archer Randolph, M.D., to be Professor of Hygiene.

Oct. 4, 1887. Samuel G. Dixon, M.D., to be Professor of Hygiene.

Biological Department.

Nov. 2, 1886. Edwin Alanson Kelley, to be Assistant in Mammalian Anatomy.

Oct. 4, 1887. Hobart A. Hare, M.D., to be Instructor in Physiology.

Oct. 4, 1887. Milton W. Greenman, to be Instructor in Biology.
William Pepper, M.D., LL.D., Provost.

Dear Sir: The present report of the Librarian is designed to cover, in a summary manner, the period from July 15, 1885 (the date of the last printed report), to the close of January, 1888, and includes the last year and a half of the administration of his predecessor and the past twelve months of his own.

Mention was made, in the former report, of a circular issued in June, 1885, to graduates and other persons presumed to be interested in the University, requesting gifts of pamphlets and books. This was followed by another, similar in character, in June, 1886. Neither appeal cost anything to the University, the expense of each being borne by the generous Chairman of the Library Committee of the Board of Trustees. Both were eminently successful, adding as many as 58,000 pieces of reading matter to the Library, and attracting attention to its needs, which is yielding fruit in many ways. The storing of these acquisitions required the construction of more shelves, and, when all space in our general reading-rooms was exhausted, necessitated the removal of public documents to the Wharton School.

This collection, always valuable and dating from the institution of the Federal Government, has been very considerably increased since October, 1886, when, through the kind interest of our Senator, the Hon. John I. Mitchell, our Library was designated as a depository of public documents at large for the State of Pennsylvania. During the present month a fine addition has been made to it by the gift from the Historical Society of Pennsylvania of their duplicate copies of such works numbering three hundred volumes, many of which were needed to supply deficiencies.

Our State and City documents have received great accessions in response to letters addressed, last February, to the Secretaries of State of our several States and Territories, and, last April, to the Mayors of fifty-six of the principal cities of our country.

The Library is indebted to Major-General Samuel Wylie Crawford, M.D., LL.D., for a handsome donation of miscellaneous books, including dictionaries, grammars, encyclopedias, magazines, histories, and classics, numbering three hundred and fifty-three volumes, many of them possessing the additional personal interest of having been the property of his father, the Rev. Samuel Wylie Crawford, D.D., so long Principal of the Academy.
Last March, D. B. McCartee, M.D., a graduate in the Department of Medicine in 1840, who has resided since then in China and Japan, presented nine hundred and fifty volumes of standard works in history, literature, and science, in the Chinese and Japanese languages, and two hundred, relating to those subjects, in French and English and other European tongues—a collection designated, in accordance with the resolution of the Board of Trustees of the University, as the McCartee Library.

Professor Fairman Rogers has continued to make valuable additions to the Evans Rogers Library from time to time, particularly in subscribing for scientific periodicals, and has just made the University a present of over six hundred bound volumes and seven hundred unbound volumes and pamphlets, half of which are incorporated in that library, the remainder belonging to various departments of history, literature, and art.

Two classes of the College Department have exhibited their interest in the Library by important gifts. The class of 1865, inspired by their fellow, Mr. John C. Sims, Jr., member of the Library Committee of the Board of Trustees, and personally a liberal benefactor of the Library, contributed some useful works of reference; and the class of 1887, immediately after graduation, presented two hundred and eighty well-selected volumes of English literature and science.

Two hundred and twenty-four volumes have been added by purchase with the Tobias Wagner Library Fund, embracing a variety of topics, including a choice collection of works on Assyrian.

The Henry Seybert Library of Modern Spiritualism has been created, and numbers already five hundred and seventy books and pamphlets on that and cognate subjects.

Recently, the Society of the Alumni of the College Department, with the sanction of the Board of Trustees of the University, testified their regard for the late Vice-Provost, the Rev. Charles P. Krauth, D.D., by appropriating a sum exceeding one thousand dollars, the interest only to be used, for the purchase of books in the Departments of Intellectual and Moral Philosophy, to be known as the Krauth Collection, and it is hoped that the many friends of the deceased professor will take pleasure in increasing the fund.

A very noteworthy acquisition of the past year was the magnificent gift from the family, and in memory of the late George Biddle, Esq., of the unrivalled collection, in forty-two hundred volumes, of American, English, Scotch, and Irish Reports of Cases, formerly the property of the Hon. Benjamin H. Brewster. These books, which are under the charge of the Law Department, have been stored in a place of safety,
until provision can be made for the display of so great a treasure in a suitable edifice.

The Librarian of the Stillé Medical Library reports the receipt of many valuable works, making the present total over six thousand bound volumes, and about as many unbound volumes, pamphlets, and periodicals. The Library has been open three times weekly (during the winter sessions in the evenings), and has been made good use of by the students, whose comfort was also much increased by the fitting up of the spacious reading-room in the summer of 1885.

The Secretary of the Biological Department reports the constant growth of the Library in the Laboratory Building since its initiation in 1884. It contains already about thirteen hundred bound volumes of books and journals, twelve hundred bound pamphlets, one thousand unbound pamphlets, and one hundred unbound journals and books. The Library is indebted to Professor Joseph Leidy, M.D., for many important works and an exceedingly valuable collection of pamphlets. All the volumes are properly arranged and conspicuously numbered, and the author card catalogue, covering books, journals, and pamphlets, is complete. A subject catalogue, giving the contents of the journals, is in course of preparation, and already includes several of the principal works.

The cataloguing of the Library in the College Department, begun by the late Librarian, was sedulously prosecuted by him, and between July 15, 1885, and February 1, 1887, when he retired from office, 23,826 cards were written, representing 6092 volumes. Since then 29,474 cards have been written, representing 7913 volumes, comprising 9962 works. The total number of volumes catalogued to date is 20,328, represented by 71,656 cards. Advantage was taken of the last summer vacation to paste book-plates in the Colwell and Carey Libraries, and these works, with others treating of political economy and allied subjects, were labelled and arranged in order on the shelves. The cards for them have been distributed in two series, one of authors, the other of titles, arranged by subjects. They are accessible to professors and students, being placed in the drawers of a handsome cabinet presented by the Chairman of the Library Committee of the Board of Trustees.

In the past two months a considerable task was accomplished in the assorting of the large collection of magazines and reports of societies, institutions, corporations, etc., which had accumulated in response to the appeals referred to at the beginning of this report. These have all been classified, the duplicate copies separated, and the rest tied together in volumes, as far as practicable, ready for binding, when funds are provided for that purpose. Both in this and in the cataloguing of the
books, the Librarian takes pleasure in expressing his indebtedness to the zealous cooperation of two excellent assistants, one of whom had been for some time aid to his predecessor, and the other came to the University last March, with knowledge obtained through long experience in a large public library.

It gives him satisfaction to be able to record the constantly increasing use made of the Library, and the appreciative welcome accorded all accessions to our shelves. To render these more apparent, special cases have been appropriated for the reception of new books, in which, likewise, plates are inserted denoting the sources from whence they are derived. And in order to afford still greater opportunity for consulting our treasures, since last October the rooms have been kept open two hours later than formerly, viz., from 9 A.M. to 5 P.M.

The chief need of our Library is well understood by you to be a suitable edifice for the accommodation of our books, which amount, at present, to over forty thousand bound volumes, and considerably more than that number of unbound volumes and pamphlets. Besides the two rooms known as the Library in the College Department, ten others, having no connection with these, and distributed on all four floors of the building, at great distances from each other, have been called into requisition for the storage of books, which are thus partially removed from the supervision of the Librarian, and rendered more or less inaccessible to professors and students. The necessity, therefore, of a new Library building is immediate and urgent, and every contribution towards that object is a gift not merely to this or that Department but to the whole University.

Another need, only less pressing, is a larger fund for the purchase of books. Our Library comprises several very valuable collections of works on special subjects, but these were made some years ago, and require to be brought down to the present time. Other topics, not less important, are scarcely represented on our shelves. Donations of books do not suffice to fill all gaps. These are always heartily acceptable, but they should be supplemented, at least, by the annual expenditure of a considerable sum of money, to give completeness to each Department, as opportunity occurs.

Finally, a smaller fund is needed for the binding of books, pamphlets, and periodicals, which are accumulating, unbound, in great numbers on our shelves, and are deteriorating in value every day for lack of such protection.

Respectfully submitted,

GREGORY B. KEEN,
Librarian.
APPENDIX III.

At a meeting of the Central Committee of the Alumni of the University of Pennsylvania, held in June last, a motion was introduced, proposing that the Alumni of the University erect a Hall in connection with the new Library that the Trustees are about to build on the campus of the University, and for which they propose to break ground in the coming spring. The time has come when such a building is imperatively demanded, especially for all University Commencements, which should be held within University walls, and their dignity and importance thereby enhanced. If this Hall is erected by the Alumni of all Departments, as is proposed, it will be a common meeting-ground, and will also afford an appropriate place where the various Alumni Societies and class organizations may have their annual reunions; and in it all Commencements and other University celebrations will be held.

This building, if erected now in conjunction with the Library, will cost about $75,000, a far less sum than it could possibly be built for independently, as by this means, the cost of walls, extended frontage, etc., will be avoided. It will have a seating capacity of nearly two thousand and will be handsomely furnished.

This proposal was warmly received by the Central Committee, and the Committee named below was appointed to endeavor to carry out the scheme. It is proposed, and it is deemed entirely practicable, to raise the amount named above from the Alumni all over the country, by a large number of comparatively small subscriptions and a few large ones.

Let it be borne in mind that this plan originated with the Alumni and will be their work entirely, and that the Board of Trustees heartily approve of the scheme.

COMMITTEE.

R. Dale Benson, '60
Beauvoir Borie, '65
Henry Budd, '68
Chas. E. Cadwalader, M.D., '58
Rev. George S. Fullerton, '79
H. Laussat Geyelin, '77
Alfred C. Harrison, '64
Herbert M. Howe, M.D., '65
Charles H. Hutchinson, '52

H. LaBarre Jayne, '79
William H. Klapp, M.D., '76
Charles A. Lagen, '71
Thomas McKean, '62
Thomas R. Neilson, M.D., '77
William P. Norris, M.D., '57
W. Platt Pepper, '57
J. G. Rosengarten, '52
John C. Sims, Jr., '65
APPENDIX IV.

PRELIMINARY REPORT OF THE SEYBERT COMMISSION
FOR INVESTIGATING MODERN SPIRITUALISM.

To the Trustees of the University of Pennsylvania:

"The Seybert Commission for Investigating Modern Spiritualism" respectfully present the following Preliminary Report, and request that the Commission be continued, on the following grounds:

The Commission is composed of men whose days are already filled with duties which cannot be laid aside, and who are able, therefore, to devote but a small portion of their time to these investigations. They are conscious that your honorable body look to them for a due performance of their task, and the only assurance which they can offer of their earnestness and zeal is in thus presenting to you, from time to time, such fragmentary Reports as the following, whereby they trust that successive steps in their progress may be marked. It is no small matter to be able to record any progress in a subject of so wide and deep an interest as the present. It is not too much to say that the farther our investigations extend the more imperative appears the demand for these investigations. The belief in so-called Spiritualism is certainly not decreasing. It has from the first assumed a religious tone, and now claims to be ranked among the denominational Faiths of the day.

From the outset your Commission have been deeply impressed with the seriousness of their undertaking, and have fully recognized that men eminent in intelligence and attainments yield to Spiritualism an entire credence, and who can fail to stand aside in tender reverence when crushed and bleeding hearts are seen to seek it for consolation and for hope? They beg that nothing which they may say may be interpreted as indicating indifference or levity. Wherever fraud in
Spiritualism be found, that it is, and not whatever of truth there may be therein, which is denounced, and all Spiritualists who love the truth will join with us in condemnation of it.

The admission of evidence concerning the so-called Spiritual manifestations has been duly weighed. There is apparent force in the argument that our national histories are founded, accepted, and trusted on evidence by no means as direct as that by which, it is claimed, the proofs of Spiritual miracles are accompanied. But it must be remembered that the facts of profane history are vouched for by evidence which is in accord with our present experience; they are in harmony with all that is now going on in the light of day (that history repeats itself has grown into a commonplace), and we are justified in accepting them on testimony, however indirect, which is nevertheless at one with the ordinary course of events. But the phenomena of Spiritualism have no such support; they are commonly regarded as in contravention of the ordinary experience of mankind (in that they are abnormal and extraordinary lies their very attractiveness to many people), and no indirect testimony concerning them can be admitted without the most thorough, the most searching scrutiny. We doubt if any thoughtful Spiritualist could be found to maintain that we should unquestionably accept all the so-called "facts" with which their annals teem. To sift the evidence of merely half a dozen would require inestimable labor. Wherefore we decided that, as we shall be held responsible for our conclusions, we must form those conclusions solely on our own observations; without at all imputing untrustworthiness to the testimony of others, we can really vouch only for facts which we have ourselves observed.

The late Mr. Henry Seybert during his lifetime was known as an enthusiastic believer in Modern Spiritualism, and shortly before his death presented to The University of Pennsylvania a sum of money sufficient to found a chair of Philosophy, and to the gift added a condition that the University should appoint a Commission to investigate "all systems of Morals, Religion, or Philosophy which, assume to represent the Truth, and particularly of Modern Spiritualism."

A Commission was accordingly appointed, composed as follows: Dr. William Pepper, Dr. Joseph Leidy, Dr. George A. Koenig, Professor Robert Ellis Thompson, Professor George S. Fullerton, and Dr. Horace Howard Furness; to whom were afterwards added Mr. Coleman Sellers, Dr. James W. White, Dr. Calvin B. Knerr, and Dr. S. Weir Mitchell. Of this Commission Dr. Pepper, as Provost of the University, was ex officio Chairman, Dr. Furness, Acting Chairman, and Professor Fullerton, Secretary.

As a befitting preliminary, at one of our earliest meetings each member in turn expressed his entire freedom from all prejudices against the subject to be investigated, and his readiness to accept any conclusion warranted by facts; one of our number, the Acting Chairman, so far from being unprejudiced, confessed to a leaning in favor of the substantial truth of Spiritualism.

We deemed ourselves fortunate at the outset in having as a counsellor the late Mr. Thos. R. Hazard, a personal friend of Mr. Seybert, and widely known throughout the land as an uncompromising Spiritualist.

By the advice of Mr. Hazard we addressed ourselves first to the investigation of Independent Slate Writing, and through his aid a séance for this purpose was arranged with a noted Medium, Mrs. S. E. Patterson.

As a befitting preliminary, at one of our earliest meetings each member in turn expressed his entire freedom from all prejudices against the subject to be investigated, and his readiness to accept any conclusion warranted by facts; one of our number, the Acting Chairman, so far from being unprejudiced, confessed to a leaning in favor of the substantial truth of Spiritualism.

This mode of manifesting Spiritualistic power, as far as it has come under our observation, is, concisely stated, the writing on the concealed surface of a slate which is in contact with a Medium. In the present instance, between two slates fastened together by a hinge on one side and a screw on the other, there was placed a small fragment of slate pencil; when this fragment is bitten off by the Medium, it receives, so Mr. Hazard assured us, additional Spiritualistic power. As soon as a Spirit has finished writing its communication with the pencil on the inner surface of the slates, the completion of the task is made known by the ap-
pearance of the slate pencil on the outside, upon the slates. The slates are always held in concealment under the table, and never has this remarkable passage of the pencil through the solid substance of the slate been witnessed by any one, not even the Medium herself in all the years during which this wonderful phenomenon has been a matter of daily, almost hourly, experience.

Our first séance was held in the evening at the Medium's own home. The slates were screwed together with the bit of slate pencil inclosed, and held by the Medium between her open palms, in her lap, under the table. After waiting an hour and a half without the least response on the slates from the Spirits, the attempt was abandoned for that evening, much to the disappointment, not only of us all, but to the chagrin of Mr. Hazard, who could not understand "what the deuce was in it, seeing that the Medium was one of the very best in the world, and on the preceding evening, when he was all alone with her, the messages from the spirit of Henry Seybert came thick and fast."

No better success attended our second séance with this Medium, although we waited patiently an hour and twenty minutes, while the slates were in the Medium's lap.

By the advice of the Medium, in order to eliminate any possible antagonism, we divided our numbers, and only one or two of us at a time sat with her. On one occasion writing did appear on the slates, after the slates had been held by both hands of the Medium for a long time in concealment under the table, but to neither of the two sitters did the screw appear to be by any means as tightly fastened after the writing as before; nor did the writing of two or three illegible words seem beyond the resources of very humble legerdemain; in fact, no legerdemain was needed, after a surreptitious loosening of the screw which, considering the state of the frame of the slate, could have been readily effected.

From some cause or other the atmosphere of Philadelphia is not favorable to this mode of Spiritual manifestation. With the exception of the Medium just alluded to, not a single Professional Independent Slate Writing Medium was known to us at that time in this city, nor is there one resident here even at this present writing, as far as we know.

We were, therefore, obliged to send for one to New York. With this Medium, Dr. Henry Slade, we had a number of sittings, and, however wonderful may have been the manifestations of his Mediamanship in the past, or elsewhere, we were forced to the conclusion that the character of those which passed under our observation was fraudulent throughout. There was really no need of any elaborate method of investigation; close observation was all that was required.

At the risk of appearing inconsequent by mentioning that first which in point of time came last, we must premise that in our investigations with this Medium we early discovered the character of the writing to be twofold, and the difference between the two styles to be striking. In one case the communication written on the slate by the Spirits was general in its tone, legible in its chirography, and usually covered much of the surface of the slate, punctuation being attended to, the i's dotted, and the i's crossed. In the second, when the communication was in answer to a question addressed to a Spirit the writing was clumsy, rude, scarcely legible, abrupt in terms, and sometimes very vague in substance. In short, one bore the marks of deliberation and the other of haste. This difference we found to be due to the different conditions under which the communications were written. The long messages are prepared by the Medium before the séance. The short ones, answers to questions asked during the séance, are written under the table with what skill practice can confer.

With this knowledge, it is clear that the investigator has to deal with a simple question of legerdemain. The slate, with its message already written, must in some way be substituted for one which the sitter knows to be clean. The short answers must be written under trying circumstances, out of sight, under the table, with all motions of the arm or hand concealed. It is useless to attempt to limit the methods whereby these two objects may be attained. All that we can do is to describe the processes which we distinctly saw this Medium adopt.
In its simplest form (and one which any person can try with astonishing results upon an artless, unsuspicious sitter), a slate, on which, before the sitter's visit, a message has been written, is lying face downward on the table when the séance begins. There are other slates on an adjoining table within easy reach of the Medium. In order that the Medium may be brought into Spiritual relationship with the sitters, contact with the Medium is necessary, and the sitters are therefore requested to place their hands, palms downward, in the middle of the table; on these hands the Medium places his own and the séance begins. Before long, the presence of Spiritual power becomes manifest by raps on the table, or by vibratory movements of the table, more or less violent, and by spasmodic jerking or twitching of the Medium's arms or body. When sufficient Spiritual power has been generated, the Medium takes up the slate, and, still controlling with his left hand the hands of his sitters, places on it a minute fragment of slate pencil. No offer is made to show both sides (the prepared message is on the hidden side), the side in full view is perfectly clean, and it is on that side that the Spirits are to write with the slate pencil; there is no need of showing the other side. With this right hand the Medium holds the slate under the edge of the table, barely concealing it thereunder, and drawing it forth every few seconds to see if any writing has appeared. After waiting in vain for five or ten minutes, the Medium's patience becomes exhausted, and he reaches for another slate from the table close behind him, and, ostentatiously washing both sides of it, lays it on the table in front of him (still controlling with his left hand the hands of his sitters), and removes the pencil from the first slate to the second, and on top of the second so places the first slate that the 'prepared message is underneath, on the inside and next to the other slate. The trick is done. All that now remains for the Medium to do is to hold the two slates under the table for awhile, or rest them on the shoulder close to the ear of the sitter on the right, and, by scratching with the finger nail on the frame of the slate, to imitate the writing by the Spirits with the inclosed pencil. When there are two or more sitters it is only the one on the right of the Medium who is privileged to hear the writing. To apply the slate to the ear of any other would disclose the way in which the sound of the writing is counterfeited. To him, therefore, who sits on the Medium's left, so that the Medium's hand, while holding the slates on the shoulder of the sitter on the right, is sharply outlined against the light, the motion of the Medium's fingers while the sound of writing is imitated by him may be distinctly seen.

By such elementary tricks of legerdemain as these are guileless, honest folk deceived.

Dr. Slade prefers to have only two sitters at a time, one on his right and one opposite. The fourth side of the table he prefers to have unoccupied; his manipulations of the slate can be from that side more readily observed; moreover, strange Spiritual antics may be there manifested, such as upsetting chairs which happen to be there, making slates appear above the edge of the table, etc. These manifestations are executed by the Medium's foot, which, on one occasion, was distinctly seen before it had time to get back into its slipper by one of our number, who stooped very quickly to pick up a slate which had accidentally fallen to the floor while the Spirits were trying to put it into the lap of one of the sitters.

At the first two séances an ordinary wooden table was used belonging to the hotel where Dr. Slade lodged. At the third séance a similar but larger table was used, somewhat the worse for wear, and the joints of its leaves were far from fitting close. Every crack, however, and every chink had been carefully filled up with paper to prevent, so the Medium said, "the electricity from flowing through."

The method of producing the long message which opened the séance has been described above. Whenever we received other long messages, written with some care and more or less filling the side of the slate, the agency employed was adroit substitution, generally effected when the Medium supposed that the attention of
his sitters was engrossed with an answer just received to a question addressed to the Spirits. Prepared slates resting against the leg of the table behind him were substituted for those which but a moment before he had ostentatiously washed on both sides and laid on the table in front of him. The handwriting of these long messages bore an unmistakable similarity to the Medium's own.

When a question is written on the slate by a sitter, equal dexterity to that used in substituting the prepared slate, or even greater, is demanded of the Medium, in reading the question and in writing the answer.

The question is written by the sitter out of sight of the Medium, to whom the slate, face downward, is handed over and a piece of pencil placed on it. The task now before the Medium is first to secure the fragment of pencil and to hold it while the slate is surreptitiously turned over and the question read, then the slate is turned back again and the answer written.

Every step in the process we have distinctly seen. In order to seize the fragment of pencil without awakening suspicion, while holding the slate under the table, the slate is constantly brought out to see whether or not the Spirits have written an answer. By this manœuvre a double end is attained: First, it creates an atmosphere of expectation, and the sitters grow accustomed to a good deal of motion in the Medium's arm that holds the slate; and secondly, by these repeated motions the pencil (which, having been cut out from a slate pencil enclosed in wood, is square, and does not roll about awkwardly), is moved by the successive jerks toward the hand which holds the slate, and is gradually brought up to within grasping distance. The forefinger is then passed over the frame of the slate, and it and the thumb seize and hold the pencil, and under cover of these repeated motions the slate is turned over and the question read. At this point it is that the Medium shows his nerve: it is the critical instant, the only one when his eyes are not fastened on his visitors. On one occasion, when the question was written somewhat illegibly in a backhand, with a very light stroke, and close to the upper edge of the slate, the Medium had to look at it several times before he could make it out.

After reading the question, it may be noticed that Dr. Slade winks three or four times rapidly; this may have been partly to veil from his visitors the fact that he had been looking intently downward, and partly through mental abstraction in devising an answer. He evidently breathes freer when this crisis is past.

Convulsive spasms attend the reversing of the slate, which is then generally held between his knees; only once did we note that he placed it on his knees, and once we believed that he supported it by pressing it against the leg of the table. The answer is written without looking at the slate, in a coarse, large, sprawling hand, at times scarcely legible. While writing he keeps his eyes steadily fixed on his visitors, and generally rests a minute or two after it is finished. Presently the slate is held near the edge of the table and close up to it, and a tremulous motion imparted to it suggests that Spiritual power is then at work and that the writing is in progress.

Dr. Slade performed several little tricks which he imputed to Spiritual agency, but which were almost puerile in the simplicity of their legerdemain, and which have been repeated with perfect success by one of our number; such as tossing a slate pencil on and sometimes over the table from a slate held apparently under the table, or the playing of an accordion when held with one hand under the table. This Medium's fingers are unusually long and strong, and the accordion, being quite small and with only four bellows folds, can be readily manipulated with but one hand, and when under the table is held by the keys.

Two compasses, which we placed on the table during one séance, remained unaffected by Dr. Slade's presence.

At our last séance with him we noticed two slates which were not with the other slates on the small table behind him, but were on the floor resting against the leg of that table, and within easy reach of his hand as he sat at the larger table. As we had previously seen prepared slates similarly placed we kept a sharp watch on these slates. Unfortunately, it was too sharp. Dr. Slade caught
the look that was directed at them. That detected glance was sufficient to preven
the Spirits from sending us the messages which they had so carefully prepared.
The slates were not produced during the séance; but when it was over one of our
number managed to strike them with his foot so as to displace them and reveal
the writing. None of us present that day will be likely to forget the hurried way
in which these slates were seized by the Medium and washed.
We think it worthy to be recorded that, in reply to a question, Dr. Slade said
that Professor Zoellner watched him closely only during the first three or four
sittings; but that afterwards Professor Zoellner let him do just as he pleased,
fully and unreservedly submitting to all the conditions demanded by the Spirits.
We received from Dr. Slade a written expression of his satisfaction with
our treatment of him, which had been throughout, so he said, entirely fair and
courteous, and of his willingness at any time hereafter to sit with us again, should
we desire it and his engagements permit.

It is a source of regret that, in our investigations, we have received no aid from
unprofessional Mediums; and in dealing with professional Mediums we have
been continually distracted by the conflicting estimates in which these Mediums
are held among the Spiritualists themselves. There are very, very few profes-
sional Mediums, as far as our experience goes, who are accepted by all Spiritual-
ists as free from the reproach of fraud. Indeed one Medium with whom, by the
advice of Mr. Hazard, we had a séance, and for whom Mr. Hazard vouched as
one of the best of his class, we have been denounced as a "liar and a thief." In
the earnestness of our zeal we advertised in the local secular press, and in the
leading Spiritualist Journals both East and West, for Independent Slate Writing
Mediums, and to this widespread appeal there came but three replies, and of
these, two were so remote that the promise of performance held out by the re-
spondents did not, in our opinion, justify so large an outlay of money for travel-
ing expenses as a journey across the Continent involved. This noteworthy re-
luctance on the part of Mediums to come before us cannot be due to any harsh or
antagonistic treatment received at our hands by any Medium. All Mediums
have been treated by us with uniform courtesy, and with every endeavor to ac-
quise in the "conditions" imposed or suggested by the Spirits. And yet a
well-known Medium in New York, Mrs. Thayer, to whom the Acting Chairman
was unknown, and with whom he was at the time having a séance, vehemently
asserted that no member of the "Seybert Commission" should ever have a
séance with her, that the whole Commission, one and all, were "old scoundrels,
and should never darken her doors," etc. etc., and confessed that the foundation
of her belief was the warning (sent to her by an eminent Medium whose séances
the Commission had attended) that she should have nothing to do with "the Sey-
bert men, that they would do her no good." Even in instances where Mediums
have expressed their willingness to appear before us, we have been embarrassed
by demands for compensation which we could not but deem extortionate, and,
practically, prohibitory; as in the case of Mr. Keeler, the Spiritual Photogra-
pher, whose terms will be found in the Appendix, and in that of Dr. Henry Rog-
cers, whose terms were five hundred dollars if he should be successful before us,
and the half of that sum if he failed.
Although the number of Mediums whose manifestations we have been able to
examine has been thus restricted, we feel ourselves justified in giving as a result
of our examination of Independent Slate Writing that, whether the agency be
Spiritual or Material, its mode of manifestation almost wholly precludes any
satisfactory investigation.
There are not wanting eminent expounders of the Spiritualistic Faith who as-
sert that this is as it should be, and that if in the attempt to apply the laws of the
material world to Spiritual manifestations we could not but deem extortionate, and,
our examination of Independent Slate Writing that, whether the agency be
Spiritual or Material, its mode of manifestation almost wholly precludes any
satisfactory investigation.
Yet, as a rule, Mediums assert that they invite investigation. Our experience
has been, as we have just said, that as soon as an investigation, worthy of the name, begins, all manifestations of Spiritualist power cease.

The bare statement of the conditions whereby the Mediums maintain that the manifestations of Independent Slate Writing are alone possible, involves the extreme difficulty, we might almost say the impossibility, of any genuine or rational investigation. Even the very spirit of investigation, or of incredulity, seems to exercise a chilling effect and prevents a successful manifestation. Indeed Mr. Hazard once told us that the true spirit in which to approach the study of Spiritualism is "an entire willingness to be deceived." In Independent Slate Writing, in our experience, there is a period, of longer or shorter duration, when the slate is concealed. During this period the investigator's eye must not watch it. When the slate is held under the table, knees and feet and clothing exert no deleterious effect, but the gaze of a human eye is fatal to all Spiritual manifestation; although to one of our number, on three occasions, a pocket mirror, carefully adjusted, unknown to the Medium, gave back the reflection of fingers, which were clearly not Spiritual, opening the slates and writing the answer.

There is really no step in the bare process of producing this writing, as we have observed it, which might not be accomplished by trickery or by legerdemain. Of course, therefore, we were sincerely anxious to disprove in these experiments the presence of those discreditable elements, not only for the credit of human nature, but for the sake of the great scientific interest involved. We are perfectly ready to accept any fact of Spiritual power; and so far from flinching from an open avowal of our belief in this revelation of a novel force in Nature, we would welcome it. But no one, not a Spiritualist, we should suppose, can demand of us that we should accept profound mysteries with our eyes tight shut, and our hands fast closed, and with every avenue to our reasoning faculties insurmountably barred. Yet this is precisely what is demanded of us by Mediums in regard to Independent Slate Writing. We must sign a dispensation to forego the exercise of common sense, and accept as "fact" what they choose so to term. Few assertions by departed Spirits are more hackneyed than, "This, is a great truth," and yet in an honest endeavor to prove that it is a "great truth," and not a great lie, the sincere and earnest seeker is at every turn baffled and thwarted.

To eliminate from our investigations every element of distrust, or hostility, or suspicion, or chilling antagonism, we intrusted to Mr. Hazard's friend, Mrs. Patterson, vouched for by him as one of the very best Mediums in the country, two carefully closed and sealed slates, inclosing, of course, the required piece of slate-pencil, with the earnest entreaty that the Spirits should write therein even if it were but the merest mark, sign, or scratch; therewith we would be content, and ready to accept Independent Slate Writing with its train of consequences. The Medium was fully impressed with the importance of the trial, and with the fame which would thereby accrue from such a wholesale conversion as that of the united Seybert Commission.

Every Medium, it would appear, is under the special tutelage of a departed Spirit; this Spirit is termed the "Medium's control." In the present case, when the slates were delivered to Mrs. Patterson, her "control," one "Thomas Lister," at once promised that Spirit hands should shortly write within the sealed-up-space. But no writing came that day nor the next, nor the next, although the Medium protested that every attention should be bestowed on the refractory slates. In vain was the Medium again and again adjured to put forth every power. At the end of six months the slates were received again, without any writing, according to the confession of the Medium.

So anxious, however, was our Acting Chairman that the experiment should prove successful, that, undeterred by this failure, he carefully sealed up a second slate, and placed it in the hands of the same Medium, with renewed adjurations to put forth all her Spiritualistic strength. At the end of a fortnight or more, after redoubled exertions of Mediumistic power, to which was added the combined Spiritualistic power of the Medium's entire family circle, the exciting
announcement was made to us that the fragment of slate pencil within the slates could no longer be heard to rattle, and that presumably the Spirits had written a message for us.

Each Medium, generally, has some peculiar mode of manifesting Spiritualistic power; it is a peculiarity of this Medium, as has been before stated, that the completion of the Spirit message within the slates is indicated not by raps, as is frequently the case with other Mediums, but by the sudden and marvellous appearance on the top of the slate of the little fragment of pencil, which had been securely fastened up within. The fact, therefore, that the pencil was no longer inside of our slates was presumptive evidence that the Medium's control had been true to his word, and had written us a message. The slates were received from the Medium most carefully, and a meeting of the Commission hastily called. It is scarcely worth while to enter here at length on the details of that session, of the careful scrutiny to which the slates were subjected, of the unmutilated seals, of the untouched screws, etc. etc.; but it is worth while to record the feeling of grave responsibility, almost akin to solemnity, with which we all approached, what, for ought we knew, might prove to be a revelation of a power as wonderful as any with which, as yet, we had ever been brought into acquaintance. Just before we opened the slates it was noticed that at one corner, owing to the flexibility of the wooden frames, it was quite possible to stretch the slates far enough apart to permit the insertion of the blade of a knife, and an examination of the edges at this point revealed only two plainly discolored abrasions. When the slates were finally opened, not a stroke of writing nor a scratch was to be found, but at the suspected corner were the discolored marks, visible to this day, of the knife which had been inserted to extract the pencil, which, in its enforced outward passage, had left behind it its scratches on the wood, a tell-tale trail of dust which the microscope revealed to be of the same substance as the pencil. The Spirits had not taken even the precaution to wipe the broad knife clean from rust or dirt. The slates are preserved in our sad museum of specimens of misdirected ingenuity.

We are continually confronted with statements wherein the narrator claims a Spiritual solution as the only possible one of the enigma involved in the phenomena, as he observed them.

To all such statements we have, first, the plain and ready answer, that we do not attempt to pass judgment on manifestations which we ourselves have not observed. All that we can vouch for is the result of our own observations. More cannot be demanded of us.

Secondly, experience has shown us that with every possible desire on the part of Spiritualists to tell the truth, the whole truth, and nothing but the truth, concerning marvellous phenomena, it is extremely difficult to do so. Be it distinctly understood that we do not for an instant impute wilful perversion of the truth. All that we mean is that, for two reasons, it is likely that the marvels of Spiritualism will be, by believers in them, incorrectly and insufficiently reported. The first reason is to be found in the mental condition of the observer; if he be excited or deeply moved his account cannot but be affected, and essential details will surely be distorted.

For a second reason, note how hard it is to give a truthful account of any common, every day occurrence. The difficulty is increased a hundred-fold when what we would tell partakes of the wonderful. Who can truthfully describe a juggler's trick? Who would hesitate to affirm that a watch, which never left the eye-sight for an instant, was broken by the juggler on an anvil? or that a handkerchief was burned before our eyes? We all know the juggler does not break the watch, and does not burn the handkerchief. We watched most closely the juggler's right hand, while the trick was done with his left. The one minute circumstance has been omitted that would have converted the trick into no trick. It is likely to be the same in the accounts of most of the wonderful phenomena of Spiritualism.
For these two reasons, we laid down for ourselves at the start that in cases demanding close observation we would endeavor to have as many members as possible of the Commission present at every séance.

In dealing with phenomena where all ordinary methods of investigation are excluded, we perceived clearly that our best resource lay in having the largest possible number of observers present.

Investigators, therefore, are forced to bring to bear their own powers of close observation, sharpened and educated by experience. Be it remembered that what we have here stated applies solely to the process whereby the communication is written on the slate; with the substance of the communication, whether pertinent answers to questions or dreary platitudes, we are not now dealing.

Whether these answers be ascribed to Spirits, or to what is termed clairvoyance, they would be none the less true or false if delivered orally by the Medium; all that we are sure of is that the writing down of these communications be their substance what it may, is performed in a manner so closely resembling fraud as to be indistinguishable from it. It would be a mere matter of opinion that all Independent Slate Writing is fraudulent; what is not a matter of opinion is the conviction, which we have unanimously reached as a Commission, of its non-spiritual character in every instance that has come before us.

An eminent professional juggler performed, in the presence of three of our Commission, some Independent Slate Writing far more remarkable than any which we have witnessed with Mediums. In broad daylight, a slate perfectly clean on both sides was, with a small fragment of slate pencil, held under a leaf of a small ordinary table around which we were seated; the fingers of the juggler's right hand pressed the slate tight against the underside of the leaf, while the thumb completed the pressure, and remained in full view while clasping the leaf of the table. Our eyes never for a fraction of a second lost sight of that thumb; it never moved; and yet in a few minutes the slate was produced, covered on both sides with writing. Messages were there, and still are there, for we preserved the slate, written in French, Spanish, Dutch, Chinese, Japanese, Gujarati, and ending with "Ich bin ein Geist, und liebe mein Lagerbier." We were utterly baffled. For one of our number the juggler subsequently repeated the trick and revealed its every detail.

We request your honorable body to note that this report is preliminary, and that we do not consider our investigations in this department as finally closed, but hold ourselves ready to continue them whenever favorable circumstances arise.

To the subject of "Spirit rappings" we have devoted some time and attention, but our investigations have not been sufficiently extensive to warrant us at present in offering any positive conclusions. The difficulty attending the investigation of this mode of Spiritualistic manifestation is increased by the fact, familiar to physiologists, that sounds of varying intensity may be produced in almost any portion of the human body by voluntary muscular action. To determine the exact location of this muscular activity is at times a matter of delicacy.

What we can say, thus far, with assurance is that, in the cases which have come under our observation, the theory of the purely physiological origin of the sounds has been sustained by the fact that the Mediums were invariably, and confessedly, cognizant of the rappings whenever they occurred, and could at once detect any spurious rappings, however exact and indistinguishable to all other ears might be the imitation. For the details of the investigation which guided us to this conclusion we refer to the Appendix.

There are among Mediums certain specialists, whose alleged Spiritual manifestations we have endeavored to investigate, not always successfully, as, for in-
stance, in the case of Mr. W. M. Keeler, through whose Mediumship "Spiritual Photographs" are produced. The "conditions" which this Medium demanded would have made any attempt at investigation a mere waste of time, and his terms of remuneration were, in addition, as we have before mentioned, prohibitory and suggestive of unwillingness to come before the Commission. In these days of "Composite Photography" it is worse than childish to claim a Spiritual source for results which can be obtained at any time by any tyro in the art. Mr. Keeler's letter will be found in the Appendix.

We were more successful in procuring a séance with Mr. Keeler's brother, whose Mediumship manifests itself by the materialization of a right hand behind a low screen, in front of which the Medium sits, with his face alone visible, his entire person being concealed by black muslin. The screen is stretched across a corner of a room to about the height of the back of the Medium's head, as he sits in front of it. The lights are lowered, and in a few minutes various instruments, musical and otherwise, which had been previously placed on a small table in the corner inclosed by the screen, are heard to sound, a drum is beaten, a guitar is played, etc. The music is interspersed with flashes of hand darting and waving above the screen to the right of the Medium. The hand, when shaken, was found to be a right one. As a proof that the hand is Spiritual and not that of the Medium, the latter requests one of the visitors at the séance to sit beside him on his right, and also to be covered to the chin with the same black muslin under which all the Medium, except his head, is concealed. This visitor's bare left forearm is grasped by the Medium, as he says, with both his hands, and this pressure of the Medium's two hands on the visitor's arm is never relaxed, as the visitor readily testifies. The proof seems, therefore, conclusive that the hand which plays the instruments behind the screen is not the Medium's, and hence must be a materialized Spirit. The trick is simple and highly deceptive, as any one can prove for himself by requesting a blindfolded friend to bare the left arm to the elbow, then let the experimenter grasp this bared arm, near the wrist, with the third and fourth fingers of his left hand, closing them around it tightly, and as he does so, asking the owner of the arm to note that this is his left hand; then let the experimenter, without relaxing this hold, stretch the remaining fingers and thumb up the arm as far as he can, and while clasping it with his thumb and forefinger, remark that this second pressure comes from his other hand. The conviction is complete in the mind of the blindfolded friend that he feels the grasp of two hands, whereas only the left hand of the experimenter has grasped his arm, and the right hand is free to beat a drum or play a zither. After this test, which is patent to all, we can dismiss the theory of a Spiritual origin of the hand behind Mr. Keeler's screen. To forestall the discovery by Mr. Keeler's companion of this trick, and to prevent its detection by simply feeling with his free right hand after the supposititious hands of the Medium, which are grasping his left forearm, a second visitor is requested to share the discomfort of the muslin envelope, and to sit on the right of the first visitor and to hold the latter's truant right hand with his left hand, while his right is exposed to view outside the curtain. Again we refer to the Appendix for the minutes of our meeting.

We had a séance also with Messrs. Rothermel and Powell, of whom the former is the Medium, the latter, acting mainly as a reservoir of psychic force, guides and directs the séance. In this case the Medium's Spiritual manifestations, as well as his material arrangements, are similar to those of Mr. Keeler, except that instead of having a visitor whose arm may be grasped, Mr. Rothermel's hands are fastened in his lap by bands of tape passed around his legs and sewed to his clothes. After the black curtain had hid the hands from our sight we were not again allowed to examine them except in the most hurried and superficial way, but, even in the brief inspection which was permitted, a glance was sufficient to show that the tape had been tampered with. The close of the séance was
announced by the sound of clipping scissors, and by Mr. Rothermel's exclamation, while still concealed, that the Spirits were cutting him loose. We had no means of knowing whether the tape was cut at the beginning of the séance or not. When the muslin envelope was removed, Mr. Rothermel's hands were certainly free. The bands were cut, and we had no difficulty in believing that the hands which were dexterous enough to play the zither with very remarkable skill, under such conditions, behind the curtain, were deft enough to sever the cords.

Our séances with Mrs. Maud E. Lord were acknowledged by the Medium herself to be altogether unsatisfactory. This is much to be regretted. Mrs. Lord is one of the few professional Mediums whose excellence is acknowledged by all Spiritualists alike, and who, in her attitude towards the Commission, displayed every desire to aid a full and complete investigation into the manifestations peculiar to her Mediumship, and furthermore, without remuneration.

In conclusion, we beg to express our regret that thus far we have not been cheered in our investigations by the discovery of a single novel fact; but, undeterred by this discouragement, we trust with your permission to continue them with what thoroughness our future opportunities may allow, and with minds as sincerely and honestly open, as heretofore, to conviction.

We desire to call especial attention to Professor Fullerton's Report in the Appendix of his interviews with Professors Fechner, Scheibner, and Weber, the surviving colleagues of Professor Zoellner in his experiments with Dr. Henry Slade.

And also to an investigation of the power of Mediums to answer the questions contained in "Sealed Envelopes."

WILLIAM PEPPER,
JOSEPH LEIDY,
GEORGE A. KOENIG,
GEORGE S. FULLERTON,
ROBT. ELLIS THOMPSON,
HORACE HOWARD FURNESS,
COLEMAN SELLERS,
JAMES W. WHITE,
CALVIN B. KNERR,
S. WEIR MITCHELL.

UNIVERSITY OF PENNSYLVANIA,
May, 1887.

APPENDIX V.

GREEK PLAY.

To William Pepper, Esquire, M.D., LL.D.,
Provost of the University of Pennsylvania.

Dear Sir: The recent careful and scholarly performance of The Acharnians of Aristophanes, given by students of the University of Pennsylvania, under the direction of their instructors, with music composed and conducted by one of their professors, has attracted the
attention of the lovers of the liberal arts; and we believe that it is for
the advantage of good learning that an achievement so notable in itself,
and so well adapted to stimulate an interest in classical studies, should
be witnessed by as many persons as possible.

We have the honor, accordingly, to request that you will consent to
have the play presented at the Academy of Music, in the city of New
York, during the coming autumn, at such time as may be most con-
venient to the University.

We are very truly yours,

F. A. P. Barnard,
President of Columbia College.

Alexander S. Webb,
President of the College of the
City of New York.

Daniel C. Gilman,
President of the Johns Hopkins
University

Julius H. Serlye,
President of Amherst College.

George Williamson Smith,
President of Trinity College.

Charles K. Adams,
President of Cornell University.

Timothy Dwight,
President of Yale College.

William S. Tyler,
Williston Professor of the Greek
Language and Literature, Am-
herst College.

William W. Goodwin,
Eliot Professor of Greek Litera-
ture, Harvard College.

Basil L. Gildersleeve,
Professor of Greek, Johns Hop-
kins University.

Fitzgerald Tisdall,
Professor of the Greek Lan-
guage and Literature, College
of the City of New York.

James O. Murray,
Holmes Professor of Belles Let-
tres and of the English Lan-
guage and Literature, College
of New Jersey.

J. C. Van Benschoten,
Jane A. Seney Professor of the
Greek Language and Litera-
ture, Wesleyan University.

Isaac Flagg,
Professor of the Greek Lan-
guage and Literature, Cornell
University.

Isben T. Beckwith,
Professor of the Greek Lan-
guage and Literature, Trinity
College.

Augustus C. Merriman,
Adjunct Professor of the Greek
Language and Literature, Co-
lumbia College.

William M. Sloane,
Professor of History and Politici-
Cal Science, College of New
Jersey.

John Williams White,
Professor of Greek, Harvard
College.

William G. Hale,
Professor of the Latin Language
and Literature, Cornell Univer-
sity.

Noah Porter.
Howard Crosby.
George William Curtis.
Charles Eliot Norton.
Henry G. Marquand.
Frederic J. DePeyster.
John Knowles Paine.
Theodore Thomas.
University of Pennsylvania, September 30, 1886.


Gentlemen: I am in receipt of your most courteous communication requesting the authorities of the University of Pennsylvania to sanction a performance of The Acharnians of Aristophanes, in the city of New York, by students of the University.

There are so many practical difficulties in the way, that nothing would lead to an acceptance of this request but a sense of the deference due to the judgment of those who have preferred it, that the cause of liberal education would be promoted by a second presentation of this Greek Play. The College Faculty and the Students of the University have been consulted, and I am glad to be able to inform you that they are willing to undertake the task. The suggestion of the Academy of Music, as the place for the representation, is entirely acceptable, and I venture to name the evening of Friday, the 19th of November, as a convenient date.

As the sole motive actuating the acceptance of this request is the hope of encouraging classical and liberal studies, it seems proper to couple with our acceptance an expression of the wish that the proceeds of the performance may be devoted to the Fund for the Endowment of the American School of Classical Studies at Athens.

I have the honor to remain your obedient servant,

WILLIAM PEPPER,
Provost.

Cambridge, Mass., 14 April, 1887.

Dr. William Pepper,
Provost of the University of Pennsylvania.

Dear Sir: I have the honor to convey to you the unanimous vote of the Managing Committee of the American School of Classical Studies in Athens:—

"Resolved, That the Chairman convey to the Provost of the University of Pennsylvania the grateful thanks of the Managing Committee for his liberal action in authorizing the performance in New York of the Acharnians of Aristophanes on November 19, 1886, and in providing that the receipts of the performance should go towards the endowment fund of the School at Athens."

I have the honor also to transmit to you the following unanimous vote of the Executive Committee of the Managing Committee:—
"Resolved, That the Provost and Board of Regents of the University of Pennsylvania be requested to permit the Managing Committee of the American School (1) to restore the name of the University of Pennsylvania to the list of the Colleges uniting in the support of the School, and (2) to consider the large and generous contribution made by the University of Pennsylvania to the endowment of the School to be payment in full for all future annual contributions."

In performing the agreeable duty committed to me by the Committee, I beg permission to add the more personal expression of the great pleasure I had in hearing and seeing the scholarly performance of the Acharnians by the young gentlemen of the University of Pennsylvania, and to express my sincere hope that I shall be permitted again to add the name of your University to our list of contributing Colleges.

I am, with great respect, sir, yours,
(Signed) JOHN WILLIAMS WHITE,
Chairman.

APPENDIX VI.

UNIVERSITY LECTURE ASSOCIATION.

The experience of the past few years, during which special courses of lectures of public interest have been provided at the University, has shown clearly that they supply a recognized want, and exert a positive influence on the intellectual life of the community. In order to secure the permanence and expansion of this arrangement it is proposed to form the University Lecture Association, with a membership of about one hundred. As it has been found that, by judicious selection of lecturers and subjects, it is possible to provide, at a moderate charge for admission, lectures so attractive that the receipts will cover the expenses, there will be no fixed annual payment attached to membership in this Association; but each member will be called upon to pay only such part of ten dollars per annum as may be the individual share in any deficit remaining at the end of the lecture season. If any surplus remain it will go towards a permanent lecture fund, or be devoted to some University purpose, as may be decided by the Executive Committee. This committee shall consist of nine members, in addition to the Provost and the Secretary of the University, who shall be ex officio members; they shall be chosen at the first meeting of the Association, and shall serve for one year, and shall report at the next annual meet-
ing of the Association when the Executive Committee for the ensuing year shall be chosen. They shall have power to select lecturers and make contracts for courses of lectures to be delivered at the University; and shall see that such courses are properly announced; shall conduct all business connected with said courses, and shall report thereon at the ensuing annual meeting of the Association. It is further contemplated, as a possible extension of this work, that, following the example of Oxford and Cambridge, in England, University lecturers may be sent to neighboring towns.

A detailed statement of the courses arranged for the present season will be found appended. The total cost of these courses will doubtless be more than covered by the receipts.

You are cordially invited to be a member of this Association.

ROBERT ADAMS, JR.,
MRS. MATTHEW BAIRD,
MRS. GEO. W. BANKS,
WHALETS BARKER,
MISS FRANCES E. BENNETT,
C. W. BERGNER,
MRS. M. A. BURNHAM,
GEORGE W. CHILD,
MRS. CLARENCE H. CLARK,
MISS FANNIE CLARK,
ISAAC H. CLOTHIER,
EDWARD H. COATES,
GEN. S. WYTHE CRAWFORD,
REV. J. H. DANFORTH, D.D.,
SAMUEL DICKSON,
A. J. DREXEL,
FREDERICK FRALEY,
HORACE HOWARD FURNESS,
MRS. C. A. GRISCOM,
MRS. HORACE B. HARE,
CHARLES H. HARRISON,
THOMAS HOCKLEY,
H. H. HOUSTON,
MRS. WILLIAM HUNT,
CHARLES H. HUTCHINSON,
JAS. H. HUTCHINSON, M.D.,
HENRY LABARRE JAYNE,
HORACE JAYNE, M.D.,
W. W. KEEN, M.D.,
HENRY C. LEA,
MISS HENRIETTA LEONARD,
JAMES B. LEONARD,
MISS BEETHA LEWIS,
FRANCIS W. LEWIS, M.D.,

MRS. J. BERTRAM LIPPINCOTT,
MRS. J. DUNDA LIPPINCOTT,
MRS. SAMUEL LUCAS,
THOMAS MCKEAN,
MRS. THOMAS MCKEAN,
R. C. McMurtrie,
GEORGE F. MARTIN,
J. VAUGHN MERRICK,
S. WHHR MITCHELL, M.D.,
MISS ANNIE NEWHALL,
MISS MARY NEWHALL,
MISS ALICE M. PATTEN,
JAMES W. PAUL, JR.,
WILLIAM PEPPER, M.D.,
MRS. WILLIAM PEPPER,
WILLIAM PLATT PEPPER,
CHARLES PLATT,
JOSEPH D. POTTS,
HENRY REED,
J. G. ROSENBERG,
MISS ANNA P. SHARPLESS,
MRS. FREDERICK SHEPPARD,
JOHN C. SIMS, JR.,
GEORGE C. THOMAS,
CHARLES N. THORPE,
J. S. WHITNEY,
MRS. A. L. WINTER,
MRS. EDWARD R. WOOD,
MISS IDA WOOD,
MISS JULIANA WOOD,
RICHARD WOOD,
STUART WOOD,
MISS EDITH WRIGHT,
ELLIS YARNALL.
COURSE OF PUBLIC LECTURES, 1888.

I. THE STORY OF THE AMERICAN REVOLUTION. Thirteen Lectures by Mr. John Fiske.

SUBJECTS AND DATES.

5. January 31st. The Times that Tried Men's Souls. 1776.
7. February 7th. The Centre Saved. 1777.

II. A CENTURY OF AMERICAN HISTORY. Two Lectures by Prof. J. B. McMaster, A.M.

1. March 2d. From 1787 to 1840.

III. MIGRATION, CONQUEST, EXPANSION. Three Lectures by J. Foster Kirk, A.M.

1. March 9th.
3. March 16th.

IV. GREEK LYRIC POETRY. Four Lectures by Herbert Weir Smyth, Ph.D.


V. MOHAMMED AND MOHAMMEDANISM. Six Lectures by Prof. Morris Jastrow, Jr., Ph.D.

1. March 8th. Arabia before the Days of Mohammed.
2. March 12th. Mohammed; his Career and his Work.
4. March 19th. Mohammedanism; its Relations to Judaism and Christianity.
5. March 22d. The Rise and Progress of Mohammedanism.
VI. THE TALMUD.* Two Lectures by Prof. Morris Jastrow, Jr., Ph.D.


VII. PSYCHO-PHYSICS. Ten Lectures by James McK. Cattell, Ph.D.

1. January 23d. The Use of Experiment in Psychology.
5. February 20th. Perceptions of Light.
6. February 27th. Perceptions other than those of Sound and Light.
7. March 5th. Data used in the Formation of our Ideas of Space and Time.
10. March 26th. The Correlation between Mind and Matter.

APPENDIX VII.

DEPARTMENT OF PHYSICAL EDUCATION.

The Department of Physical Education is now in the fourth year of its existence, and has risen in that short time to occupy a foremost position as compared with the same department in other colleges. That this is a remarkable showing and reflects credit upon the previous management, as well as upon the wisdom of the Trustees in making the innovation, goes almost without saying. The improvements made in the Department since its organization were many and valuable, and a decided advance was made in the number of examinations during the present term. Thus 420 examinations were made in the first three years of our existence, ending with the graduation of the class of '87, as compared with 270 examinations made in the first half of the present term. Examinations shall be made as heretofore every fall and spring, and as often as it is reasonably requested so to do, or whenever there are special reasons for a re-examination. Our object for numerous examinations is to, as soon as possible, get enough to construct a chart of our own for estimating the standing of our students from the average of others who have attended the University of Pennsylvania.

* Postponed until next season.
Two plotting charts have been devised and copyrighted that are believed to be an improvement on those devised by Dr. Sargent, of Harvard, and Dr. Swain, of Indianapolis.

A new and enlarged edition of the “Elementary Directions for Personal Hygiene and Physical Development” is in process of preparation, and will contain instructions as to the best supplementary and training exercises for many kinds of special athletics, as for instance base-ball, foot-ball, tennis, tug-of-war, jumping, walking and running. These new directions will all have a correct anatomico-physiological basis. The pamphlet will also treat of the relative merits of quick and slow movements and light and heavy exercises.

Despite the many improvements already made, very much still remains to be done before we can hope to excel in all features. Many gymnasia are to be found that offer advantages which ours does not and, in its present location, cannot possess. All of these are too numerous to mention in a short report, but among those which may be instanced are an indoor running track, a plunge and swimming bath, a bowling-alley, a base-ball cage, a winter tennis and hand-ball court and a target range. Only the winter necessities are mentioned because of their pressing importance in view of our lately inaugurated yearly indoor winter sports. The large number of students in attendance at the University of Pennsylvania, the mature age of hundreds of those in the professional departments, and our proximity to one of the largest cities of the land, together with the importance and prestige wisely given this department, make our athletic possibilities greater than those of any other college in the country.

At present there are grave hindrances in the way of the great success otherwise assured. These consist in the lack of harmony in the working of this Department with that of the others. For instance, exercises, as a rule, must now be taken at times when to do so interferes with study and actually with health, and so must of necessity either be avoided, or taken at a risk, or taken at the expense of other studies. The college roster at the present writing is so made out that several sections of students have six hours’ steady work from nine A.M. without any intermission, thus compelling an interval of at least seven hours between breakfast and the succeeding meal. The fact that this is not a daily requirement of any one section makes it all the worse, for it leads to great irregularity in lunching because the second meal is taken at noon on those days when it is possible. Otherwise, such a roster leads to necessary cutting of recitations. Most of the students are boys in years and feel such privation and irregularity much more than do adults. No mention of this would be made here were it not that this
department has in its charge the health of all those committed to the care of the whole college department. It is bad to exercise in the gymnasium just after breakfast and immediately preceding study. It is also bad to exercise just before or after lunch. Considerable worry attends the necessary rapid undressing and dressing within one hour, especially if it is dovetailed between two recitations. This worry naturally counteracts to a variable extent the good effects of the gymnasium work.

It is the policy of the Department this year to excuse from gymnasium work all who are in training. The object is to avoid physical overwork, interference with training, and the encouragement of a beneficial amount of competitive athletics, as all such belong to the higher grades of physical work and leads to a better development of body, a marked increase in nervous energy, and those qualities so valuable in a student and business man, known as vigor, pluck, determination, fixidity of purpose, and endurance.

The primary importance of a general intermission for all Departments of the University is worthy of the most careful attention, for only by giving all our athletic material daily opportunity to work together can we hope to attain that supremacy which is in our power. By this is not meant a mere physical supremacy, but all kinds; and be it remembered that as in civilization, so in all other things, the physical development naturally precedes the mental, and if we gain the admitted ascendency in athletics over all competitors, it will lead to a vigorous intensification of an at present admittedly comparatively weak college spirit, and this in turn, with the improved physique that has been the cause of it, and the increased mental vigor that has been the effect of it, will lead to higher intellectual attainments than at present, great though they may be.

It may also be most appropriate to mention just here that this same important college spirit would be immeasurably increased by college dormitories, which the experience of other institutions, as for instance Harvard, has shown to net an annual income of over eight per cent. That there is a demand for dormitories by the students no longer admits of any doubt, since over 350 have in good faith signed a paper passed among them requesting those only to sign who would prefer to live in dormitories if we had them. The advantages to the student and college are numerous, and among them may be mentioned a saving of time, a saving of money, less temptation to neglect study for social attractions of all kinds, an improved fellow-feeling, a strong college spirit, more time for athletics, consequent improvement in bodily and mental vigor, better representation of the University at athletic "meets," and
the ability to keep our athletic teams at a training table and to prevent their smoking and drinking. These are only some of the advantages of dormitories and they are very important. The number of signatures obtained could have been run up to 500 had the paper been passed to all the matriculates of all the Departments. As many as 50 of the signers were students in the College Department.

The difficulties attending the proper and most judicious management of the Department this year can be estimated from the fact that the work done last year by five persons is this year wholly in the hands of one. The Gymnasium roster of last year had to be adhered to as nearly as possible during the first half of this term, and caused many necessary irregularities and consequent complaints because it had been arranged on the basis of the year before, when one man alone had the Gymnasium work in hand and others the examinations and prescribing of exercises. For instance, it was necessary last fall for one person to lecture, be in the Gymnasium, and upon the Athletic grounds at the same time. Of course this was impossible, and those and similar impossibilities were sufficiently numerous to cause it to appear as if the management was lax or indifferent. This has now been to a large extent remedied by a new but still very defective roster as regards athletic work and the best health of the students.

It has also been deemed advisable from every standpoint to close the Gymnasium when the Athletic grounds are open, because gymnasium work is really only a substitute for out-door work, and the objects of the Department can be better attained by a corresponding amount of out-door work than when done in-doors. It has also been made obligatory upon the student to dress in a proper suit for gymnasium work, so as to prevent dampening of the underclothing from perspiration and the subsequent chilling and catching of "cold." It is proposed to carry out the same plan when classes report for duty upon the grounds.

In conclusion it may be well to suggest the following recommendations:

1. The prompt erection of dormitory buildings.
2. A general two hours' daily intermission from all study in all the departments.
3. Having all gymnasium work done at the end of the day's recitations.
4. The early erection of a gymnasium building that shall include a running track, plunge and swimming bath, bowling-alley, base-ball cage, winter tennis and hand-ball court, and a target range.
5. The admission of special students to the department of Physical
Education under conditions similar to those governing special students in other departments.

All of which is respectfully submitted.

A. H. P. LEUF, M.D.,
Assistant Director of Physical Education.

FEB. 8, 1888.

APPENDIX VIII.

REPORTS OF TECHNICAL COURSES.

F. A. GENTH, Ph. D.,
Professor of Analytical Chemistry.

The work of the Post Senior Class during the first term of 1887-88 included:—

Lectures on Quantitative Analysis by F. A. Genth, Jr.

Lectures on Applied Inorganic Chemistry, embracing the various inorganic colors and paints; the occurrence and various modes of the manufacture of sulphur from its ores, giving a detailed description of the methods and apparatus used from the earliest times down to the present day; the manufacture of the most important compounds of sulphur, such as carbon disulphide, sulphur dioxide, sulphurous acid, sulphur trioxide, sulphuric acid, pyro-sulphuric acid, the manufacture of nitric acid, etc., by F. A. Genth, Jr.

The practical work consisted in more or less complicated quantitative analyses, embracing those of the greatest commercial importance, such as irons, steel, iron ores, chrome ores, nickel matte, alloys, fertilizers, ultramarine, zinc spinel, etc., etc.

The following subjects have been selected by the Post Seniors for their Graduating Theses:—

Byrne—Methods of Separation of Cobalt and Nickel.

Frankel—Comparative Study of the Methods Used for the Determination of Phosphoric Acid.

Hawkins—On Lima Oil.

Hovey—On Mineral Paints.

Krecker—Determination of Manganese and its Separation from Iron.

Newlin—Methods used for the Analysis of Chromic Iron and Comparison of the Results.

Riddle—On Tungsten Steel.
SAMUEL P. SADTLEK, Ph. D.,
Professor of General and Organic Chemistry.

The work of the Post-Senior Chemical Section with me is in Applied Organic Chemistry, and included, during the first term:—

Lectures on Petroleum and Mineral Oil Industries.
Lectures on Vegetable and Animal Oils and Fats, Soap and Candle Industries, Glycerine, Nitroglycerine and Dynamite.
Lectures on Essential Oils, Resins, Varnishes and Paint.
Lectures on Sugar Production and Refining Methods of Analysis.
Lectures on Starch, Fermentation and the Industries Connected.
Lectures on Wine, Beer, and Spirit Industries.
Lectures on Chemistry of Vinegar and Acetic Acid.
Lectures on Milk and Cheese Industries and Analysis.
Lectures on Technology of Vegetable Fibres, Flax, Hemp and Cotton.
Lectures on Technology of Animal Fibre, Wood and Silk.
Lectures on Paper Making, Celluloid, etc., to be continued during second term by

Lectures on Dye Colors, both Natural and Artificial.
Lectures on Coal Tar Distillation and its Products.
Lectures on Dyeing, Calico Printing and Bleaching.
To be illustrated by excursions in the Spring to different Sugar and Petroleum Refineries and other chemical manufacturing works.

Three of the Section work extra time in my laboratory on Organic Analysis and special technical methods for organic products.

One of the Section, Mr. Hawkins, will work out a Thesis under my direction on the "Crude Oil from Lima, Ohio."

GEO. A. KOENIG, Ph. D.,
Professor of Metallurgy and Mining.

The Post-seniors made an excursion of twelve days to the coal-fields. They examined three collieries near Tremont, and obtained important geological sections at Williamstown colliery, which throw some new light upon the faulted condition of the measures. They measured sections in five tunnels of the "Panther Creek" basin, near Lansford. On their return the measurements were tabulated, and each man con-
structured one cross-section. They finished their mining course with lectures on pumping machinery.

They finished a course of advanced mineralogy on quantitative blowpipe analysis and the constructive metallurgy of pig-iron.

A course of fourteen lectures on the mathematical bases of ore-concentration will be followed, during the second term, with an experimental course in this branch. All the men have chosen subjects in experimental metallurgy for their graduating theses: the main part of the second term will be devoted to this work in the metallurgical laboratory. The remainder will be taken up by lectures on special metallurgy of steel, lead, copper, silver, and gold; American economic geology, and the stratigraphic geology of the mezo- and neo-lithic systems.

The subjects of the theses are:

The influence of manganese in carwheel iron; chrome steel; tungsten steel; molybdenum steel; silicon steel; the quantitative action of mixtures of carbon-monoxyd and dioxyd on the oxyds of iron.

Most of the members of the chemical section have chosen metallurgical subjects for their theses. Of the six graduated seniors, five returned for the Post-senior work and the professional degree.

Lewis M. Haupt, A.M.,
Professor of Civil Engineering.

I have the honor to submit the following report upon the work of the Civil Engineering Post-senior Class for the first term of the current year:

Number in Section 3.

The Civil Engineering Section of the Post-senior Class has lost but few members in the transition from seniors; these were Hancock, Latta, and Siddall, who left to enter upon professional employment, leaving 13 out of 16, being a loss of 18½ per cent.

The Post-seniors of last year numbered 10.

Class Room Instruction.

Recitations—In Commercial Law and Business Forms, with C. H. Haupt, Instructor.

Recitations—In Hydromechanics and Engineering Contracts and Specifications—Prof. Haupt.
Lectures—Sanitary Engineering and River and Harbor Improvements—Prof. Haupt.

Drawing—From data collected in observation tours.

Modelling—Wissahickon Bridge on Philadelphia and Reading and a Modified Howe Truss—Mr. Simons.

PRACTICAL WORK—REPORTS AND VISITS.

1. The Philadelphia Traction Co.'s new form of conduit on Seventh Street.
2. Trestles of the Pennsylvania Railroad on Schuylkill Valley Division.
3. P. Moreau's power rock drill and the Siemen Lungren's lamps and manufactory.
4. Failure of the bulkhead at the Schuylkill river docks of the Baltimore and Ohio Railroad, with design and estimate.
7. The Market Street Cantilever Bridge.
8. Defective masonry (students to seek and report on special cases).
10. Examination of the plant of the Peerless Brick and Stone Company.
11. The manufacture of car-wheels, as illustrated at the Whitney Car-wheel Works.

Most of the above were made the subject of a special report by each member of the section, although, in case of elaborate drawings, the work was distributed, each doing his part. These reports have in part been critically read and returned for information. General comments and suggestions were made on the subjects to the section. Some of the work is not up to date, nor the reports read from lack of time.

A few of the above reports were of such a character that they have been submitted to technical journals for publication, and have been accepted. There have also been several special reports by those students who have kept ahead of the general work of the section.

SECOND TERM WORK.

Lectures and recitations continued on irrigation, railroad management, hydromechanics, etc., and the visits will be continued, with a tour to the great engineering works in and near New York City. The preparation of theses will consume a large portion of the term. The
students have given and will continue to give a large portion of time to research and reading technical journals.

WILLIAM D. MARKS,
Professor of Dynamical Engineering.

Hydrodynamics—Three hours per week for first half year.
Hydraulic Motors—Three hours per week for second half year.
Electro-dynamics (with Mr. Hering as instructor)—First half year.
Studies—Electrical engineering apparatus, as used by artisans.
   Practical electric engineering examples.
   Measurements of potential and intensity of currents and resistance by galvanometer, voltometer, calorimeter, and dynamometer.
   Measurement of light by photometer.
Electro-dynamics—Second half year.
Studies—Theory and practical tests of arc and incandescent dynamos—of electromotors—of storage and primary batteries.
   Electro-plating.

H. W. SPANGLER, Asst. Eng., U. S. N.
Assistant Professor of Dynamical Engineering.

During the last term:
   In Thermo-dynamics—General dynamical theory of heat and its application to air and gas engines and partly to steam-engine.
   Making calculations and methods of drawing specifications for machinery.
   Laboratory work—Methods of making engine and boiler tests, testing indicators and pumps, determining specific heat.
During the next term:
   Finish work in application of thermo-dynamics.
   Drawing specification for engine and boiler and making estimates for same.
   Continuation of laboratory work as above.
Voluntary attendance, fifteen lectures on Architecture.
Twelve students in Section.
APPENDIX IX.

REPORT ON DEPARTMENT OF BIOLOGY, 1888.

The history of the Department of Biology, during the past two years, has been marked by continuous progress. The Faculty has been strengthened by the addition of several gentlemen of great ability and experience—leaders in their respective lines of work; the course of instruction has been extended in very many important directions, the laboratory building enlarged, and more perfect system introduced into the details of executive work. As a result a gratifying advance may be recorded in the amount and character of the original work done, and the number of students—graduate and undergraduate—has rapidly increased. The additions to the Faculty have been Dr. John A. Ryder, formerly Embryologist to the United States Fish Commission, to the chair of Comparative Embryology; Dr. William P. Wilson, graduate of Harvard and Tübingen, formerly associated with Professors Gray and Goodale at Cambridge, to take charge of the work in Structural and Physiological Botany; and Dr. Hobart A. Hare to fill the instructorship in Physiology, made vacant by the untimely death of Dr. N. A. Randolph. Mr. Edwin A. Kelley and Mr. Milton J. Greenman have been appointed assistants in the anatomical and general biological laboratories.

The General Course of instruction offered by this Department is very largely selected by students who design subsequently to study medicine. There has been an evident need of some school in which men who have not the time or money for a full college course of four years, and who are either too young or have not had sufficient elementary training to enter the medical school at once, may get one or two years of thorough drill on the subjects which form the foundation of medical studies, and, at the same time, make up some of the general subjects in which they are deficient. The course, as at present constituted, covers two years, and includes in the first year General Biology, Elementary Botany, Zoology and Anatomy, at least one language, Chemistry and Drawing; in the second year Advanced Botany, Zoology and Anatomy, Histology and Embryology, Physiology, one language, and Chemistry. The instruction in these subjects is almost entirely practical and is given in about thirty hours a week to each class, in the laboratory or in field excursions to various collecting grounds under the direction of the instructors. The importance of this training before beginning the study of medicine cannot be overestimated. The habits, acquired
while young, of cleanliness and accuracy, of skill in handling the dissecting knife and microscope, of neatness in operating under the eye of the instructor, are the habits which determine future success. The results so far obtained have been most satisfactory. That the value of such a course is becoming appreciated is shown in the encouragement received from prominent physicians and all those interested in higher medical education, and by the special arrangement which the Medical School has made for graduates of this department. This plan prevents unnecessary repetition in certain directions and insures much more practical work on strictly medical subjects.

The number of students who feel they can give more than two years to this preparatory work, or who intend devoting themselves to the study and teaching of Biology, is so rapidly increasing that the necessity for definite advanced or post-graduate instruction is apparent. It is proposed, therefore, to add, in the next session, an additional optional year to the course, which may be spent in higher biological work, and will include also some closely allied subjects, as Mineralogy, Geology and Paleontology, Geography, etc.

The lack of fellowships, which would support deserving graduates until positions were offered here or elsewhere, is already keenly felt.

The whole number of students instructed in this laboratory is now over one hundred. Of these upwards of sixty take laboratory courses in addition to lectures, and thirty take the entire general course offered by this department.

Ten women have entered the school since its foundation in 1884. The majority of these were special students in botany, and but one followed the full prescribed course and received the certificate.

The increase in the number of teachers and students and the extension of the course of study have necessitated the enlargement and partial re-equipment of the laboratory building. An additional story gives a photographic studio and dark room, three private and three general laboratories. One of the latter is eighty feet long and twenty-three feet wide and will accommodate sixty students. Some changes and alterations have been made in the three lower floors, giving each instructor a private laboratory and allowing five large rooms to be devoted to post-graduate work. The building now contains thirty rooms, exclusive of closets, and is heated throughout by steam. Twelve additional Zeiss microscopes and twelve new Zentmayer dissecting stands have been purchased and much fine apparatus added to the general stock. Over twelve hundred lantern slides, illustrating morphological objects, have been prepared for use in the Zoological lectures.

The erection of a small greenhouse, thirty feet long by eighteen feet
wide, deserves particular mention as a step towards the fulfilment of the long-cherished plan for a botanical garden. Although small, this house is constructed upon the most approved methods of glazing, heating, and ventilation. It is now possible to have a series of living typical plants always ready for laboratory work, and many problems in physiological botany may be easily solved. Plans for a large range of hot-houses have been carefully drawn, and it is hoped that the necessary funds will soon be secured.

Another new and interesting departure is the establishment of a well-equipped photographic gallery under the charge of skilful professional photographers who will do all classes of photographic work, not only for those engaged in the biological laboratory, but for the University at large. This will greatly stimulate the publication of scientific papers by securing accurate and inexpensive illustrations. It will also enable teachers in this and other institutions to obtain good lantern slides and diagrams made from small drawings for lecture use. An agency for the sale of these has been formed, and a catalogue of the negatives already available will soon be published. Other illustrations will be made to order under the direction of a committee appointed by the Faculty. The portraits of college organizations and individual students can be furnished at very low prices.

It has been decided to organize at once a course of instruction in Photography, to consist of lectures by eminent specialists, with practical work in the studio, field, and dark room.

In addition to the lectures to the regular classes, all the instructors in this department have given public lectures either in the University lecture course or before other institutions in this and neighboring cities.

Two important expeditions have been undertaken during the past year. One by Dr. Rothrock to Florida, and the second under the charge of Dr. Dolley to the Bahamas. In both cases interesting additions have been made to the Zoological and Botanical collections, new animals and plants discovered, and facts accumulated concerning those already known.

Great progress is apparent in simplifying old and inventing new methods for scientific work, and in facilitating the collection and preservation of large quantities of material of all kinds for class exercise and research. Such material has been obtained from many sources: from the Philadelphia Zoological Gardens, the Horticultural Hall, the Zoological Stations at Naples and Wood's Holl, from the laboratories at Bar Harbor and Nassau, and by the general and special excursions. A unique collection, embracing over one thousand embryos of various
species of mice, has been brought together by Dr. Ryder. Among the important apparatus devised may be mentioned Dr. Ryder's automatic microtomes, Dr. Jayne's culture oven, and Dr. Dolley's constant temperature plates.

The importance of a working library relating to biology has been appreciated from the foundation of this department, and no efforts have been spared during the year to increase the collection. The University is particularly indebted to the Director, Dr. Leidy, who has given the greater part of his private library—many volumes of which have a peculiar value as testimonials of esteem from savans now dead. Not a few naturalists regularly send their publications, and some have generously presented complete collections of their works. Very few books have been purchased, and these principally rare memoirs offered at exceptionally advantageous prices. Many volumes have been deposited in the library, particularly in the line of complete sets of journals, such as the publication of the London Zoological Society, the Journal of Anatomy and Physiology, Müller's Archiv, Archiv für Mikroskopische Anatomie, and Jenaische Zeitschrift.

With all that has been accomplished much remains yet to be done. There are many volumes which should be on our shelves, and could be comparatively easily obtained if the officers of societies, and the publishers of certain periodicals could be induced to present them or to exchange with University publications.

During the greater part of the year the work of card cataloguing was systematically carried on. This work included not only the books, but also the contents of the many volumes of bound pamphlets. The author catalogue is now completed, and embraces about 3000 titles. It is contemplated to catalogue, at first by authors, the contents of all bound journals and proceedings of learned societies.

The library has been opened every day at all hours, and has been as generally used by the students as the size of the room would permit. About fifty journals are regularly received and kept on file, and a Journal Club has been organized among the teachers and students, which meets weekly to discuss recent publications.

While certain text-books will always be needed in the laboratory, the larger part of the library should be deposited in a general library building where may be found the ordinary works of reference—encyclopaedias, dictionaries, book catalogues, and serial publications which contain other than merely biological papers, and should therefore be of easy access to students of all departments. This is particularly true of those rare works which are seldom consulted, and only by special students, or which have an important historical value and great pecuniary worth.
Books not in the library have been obtained from the American Philosophical Society, and advantage has been taken of the invitation of the Academy of Natural Sciences to consult its library.

The Zoological collection is growing very rapidly. The Philadelphia Zoological Gardens have furnished many valuable specimens which have been studied, prepared, and placed in the cases or carefully preserved for future study. A series of typical birds has been purchased, and an exquisite collection of marine invertebrates obtained from the Zoological Station at Naples. Several smaller sets have been received by exchange. A very large collection of skeletons of mammals has been deposited in the museum, making the illustration of comparative osteology especially complete.

The collections made at Bar Harbor, Maine; Nassau, New Providence; and in Florida, fill many deficiencies in the series, while the material gathered by the students in their annual excursions is gradually illustrating the fauna around Philadelphia.

The enlargement of the laboratory building has enabled the collection to be exhibited to better advantage by dividing it into several secondary collections, but the rapid increase, which is only limited by the accommodation, renders a separate Museum building a necessity. This building should contain an amphitheatre large enough to accommodate classes of several hundred students, the lecture-room in the laboratory already having proved inadequate.

The Herbarium has been cared for and largely increased. Two collections of flowering plants—one from Texas, the other from Arizona—have been purchased. The more important gifts are several valuable sets from Dr. Asa Gray, and a collection of three hundred species of mosses, determined by Lesquereux, and one hundred species of lichens, determined by Nylander, of Paris, from Dr. Eckfeldt. Mr. Isaac Burk has added constantly to the collection presented by him some years ago.

The general botanical collection has received an instructive series of neatly mounted specimens of medicinal preparations from Parke, Davis & Co., while a number of plants said to possess medicinal properties, and an exceedingly interesting collection of native woods were obtained in the Bahamas.

A few living plants have been acquired by deposit or gift, or collected on the various excursions or expeditions. There are now in the new greenhouse, to which it is proposed to transfer the collection of living medicinal plants, presented by the late Dr. Geo. B. Wood, which have been deposited in the Horticultural Hall at Fairmount Park.

Respectfully submitted,

HORACE JAYNE, M.D.,
Secretary.
REPORT OF BIOLOGICAL EXCURSION TO THE BAHAMAS, JUNE, 1887.

TO THE PROVOST OF THE UNIVERSITY.

DEAR SIR: From the time institutions of learning began teaching the important facts derived from the study of the lower forms of life, it has been the habit of naturalists to betake themselves, during their vacations, to such places on the sea-coast as offered suitable facilities for the purposes of collecting and investigating marine organisms in a living condition. The necessity of this is apparent, when one considers the fragile character of many marine invertebrates, and the practical impossibility of preserving them by means of reagents, or of keeping them alive in anything but sea water continually renewed.

For many years Naples, Messina, Trieste, and Nice were resorted to by such teachers as Leuckart, Haeckel, Huxley, Semper, and Balfour; and owing to the great expense attendant upon each supplying himself with collecting apparatus, boatmen, and suitable laboratory accommodations, a demand arose for some permanent institution, in a situation possessing an abundant fauna and flora; at which investigators could for a consideration be served by trained collectors, and have the means of carrying on their studies. In response to this demand, Prof. Anton Dohrn established, some ten or fifteen years since, the now celebrated Zoological Station of Naples. No institution in existence can compare with it in the importance of the biological researches accomplished in the same length of time, and the fact that the German and Italian governments have done everything to promote the enterprise; that each territorial district in Germany has a standing committee of its most intelligent citizens, whose business it is to raise funds for the support of the Zoological Station, indicates an appreciation of the importance of the work accomplished; as does the fact, that there are few universities of importance in Great Britain or Europe that do not maintain a table at the Naples station for the use of their teachers and advanced students.

These considerations, together with the fact that similar institutions have since been founded in compliance with the increased demand for biological instruction, until now, one may count a dozen or more, situated in Italy, France, Germany, Norway, Scotland, England, and Japan; and it is largely to the encouragement and facilities afforded by these marine laboratories that the biological sciences have pushed so to the front within the last decade. In America something of a similar nature has been attempted, but nothing of a permanent character. The elder Agassiz recognized the importance of this style of training
in his endeavor to found a school at Penikese; his son followed this with a laboratory at Newport, devoted unfortunately mostly to private use, or to that of specially invited students. Johns Hopkins University has maintained for some seven years a marine laboratory under the able directorship of Prof. W. K. Brooks, and despite the fact that it has moved from place to place, and never had any thing like the best facilities for work, it has contributed more than almost any other one factor in giving reputation to the Biological Department of that institution.

In 1884 the University of Pennsylvania took a table at the Naples Zoological Station, the second that has so far been taken by any American institution, and the writer enjoyed the privilege of studying there as its representative for the larger portion of a year. So greatly impressed was he with the importance of providing similar means for promoting high grade biological work in this country, that particular attention was given to securing definite information regarding the practical running of the place, in the hope of being able in good time to take active steps in founding something of the sort in connection with the Biological Department of this University. The multitude of details incident to the establishment of a new department have until recently prevented any active measures being taken in furtherance of this plan, although the subject has been constantly under advisement, and examinations into the fitness of several localities have been made, i. e., Bar Harbor, Maine; Wood's Holl, Mass.; Tarpon Springs, on the west coast of Florida; and lastly, the Bahama Islands, with the conclusion that the desired conditions seem to be better provided for at the latter place than at any other. In this conclusion I am sustained by the experience of Prof. Brooks and other practical workers.

On June 9, 1887, I sailed from New York with my assistant, Mr. M. J. Greenman, and three students, for Nassau, N. P. Upon arrival, a house situated about three miles "to eastward" of the town of Nassau, and almost directly upon the seashore, was rented, servants employed, and a temporary laboratory set up. A sail-boat adapted to the work in hand was chartered, together with small boats and necessary appliances, and Mr. Christopher Brown employed to take charge. Brown is an enterprising young man, bred to the water, and acquainted with every rock and cay within many miles of Nassau; he is trustworthy in every particular, and a most valuable naturalist's assistant, from having collected under the direction of several scientists sent out by English authorities, as well as for Prof. Brooks, Prof. McMurrich, and myself.
After a few days of preparation, a systematic method of work was adopted. The early mornings before high tide were employed in surface towing, to obtain data concerning the character and abundance of the pelagic fauna. At low tide the various coral reefs, rocks, cays, mud-flats, etc. were successively visited, and collections made. The working force was so divided that each had charge of collecting and securing information as to the abundance, habit, and habitat of the various invertebrate groups.

Careful notes of these observations were taken, as well as of the weather, by means of a set of U. S. Signal Service thermometers. The island of New Providence was very thoroughly traversed, and a large number of the small islands of the groups visited, as well as Andras, Eleuthra, and Watlings Island among the larger. In this was a very good knowledge of the character of the vegetation obtained, and points of geological interest noted, as, for instance, the caves, the so-called banana holes, the red earth, and the drifting sands. Nearly a hundred photographs—now being printed in the new photographic rooms of this Department, by the photographer in charge—were taken, illustrating characteristic scenery and tropical vegetation. The Bahamas being the headquarters of the sponge trade in the western hemisphere, the sponging grounds were visited, and the condition of the industry examined sufficiently to establish the fact, that unless something be speedily done to protect the young sponges, or some method of artificial culture be discovered, the entire trade will soon be destroyed.

Here, as has been the case in fish, oyster, and lobster culture, the biologist alone can give substantial aid (see works of Prof. John Ryder of this Department, and of Prof. W. K. Brooks), and a field of work for the staff or students of a marine laboratory opens at once.

Throughout the sojourn in the island the party were afforded every facility by the governor and other members of the local government, as well as by the citizens; and I am safe in predicting that a marine zoological station would meet with substantial encouragement. To give an idea of the character of the work done, I may refer to some fifty cases and barrels of specimens now being unpacked. As the species have not been determined in all cases, I can give only approximate figures, but have included what I know to be separate species.

Sponges . . . 20 species. Anemones . . . 15 species.
2 new species.

Eleven of which are new, according to Prof. McMurrich, who made a special study of them.
<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corals</td>
<td>18 species</td>
</tr>
<tr>
<td>1 new species suspected.</td>
<td></td>
</tr>
<tr>
<td>Gorgonias</td>
<td>6 species</td>
</tr>
<tr>
<td>Alcyonarians</td>
<td>5 species</td>
</tr>
<tr>
<td>Hydroid polypes</td>
<td>3 species</td>
</tr>
<tr>
<td>Meduse</td>
<td>4 species</td>
</tr>
<tr>
<td>Star-fishes</td>
<td>8 species</td>
</tr>
<tr>
<td>Sea-urchins</td>
<td>9 species</td>
</tr>
<tr>
<td>Sea-cucumbers</td>
<td>3 species</td>
</tr>
<tr>
<td>Worms</td>
<td>8 species</td>
</tr>
<tr>
<td>Crustaceans</td>
<td>20 species</td>
</tr>
<tr>
<td>Spiders</td>
<td>5 species</td>
</tr>
<tr>
<td>Myriapods</td>
<td>3 species</td>
</tr>
<tr>
<td>Butterflies and moths</td>
<td>56 species</td>
</tr>
<tr>
<td>Cephalopods</td>
<td>2 species</td>
</tr>
<tr>
<td>Sea-hares</td>
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<td>Gasteropods and Lamellibranchs</td>
<td>55 species</td>
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<td>15 species</td>
</tr>
<tr>
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<td>3 species</td>
</tr>
<tr>
<td>Cephalopods</td>
<td>2 species</td>
</tr>
<tr>
<td>Medusae</td>
<td>4 species</td>
</tr>
<tr>
<td>Sea-hares</td>
<td>1 species</td>
</tr>
<tr>
<td>Star-fishes</td>
<td>8 species</td>
</tr>
<tr>
<td>Gasteropods and Lamellibranchs</td>
<td>55 species</td>
</tr>
<tr>
<td>Sea-urchins</td>
<td>9 species</td>
</tr>
<tr>
<td>Sea-cucumbers</td>
<td>3 species</td>
</tr>
<tr>
<td>Worms</td>
<td>8 species</td>
</tr>
<tr>
<td>No attempt was made to collect fishes on account of their bulk, only a few strange forms were retained.</td>
<td></td>
</tr>
</tbody>
</table>

Snakes: 3 species  
Lizards: 2 species

These, together with 70 specimens of native woods, 7 species of living orchids, 4 species of living ferns, and 6 of other interesting tropical plants for the new conservatory of this Department, make a total of 294 species of plants and animals collected, not including pressed plants.

The climate, healthful and pleasant the year round, the absence of sources of malaria, the great abundance of life, both marine and terrestrial, its accessibility on account of the beautiful transparency, high temperature and shallowness of the waters, all combine, with the ease and comfort with which Nassau can be reached, to render it almost unrivalled for the location of a marine laboratory, on the eastern coast of America. Detailed information as to available properties, prices, exemption from taxation, etc., is at hand, and it is with the hope that the expedition may prove a step towards the establishment of a marine laboratory in connection with the Biological Department of the University of Pennsylvania that this brief report is submitted.

Respectfully,

C. S. DOLLEY.

BIOLOGICAL DEPARTMENT  
UNIVERSITY OF PENNSYLVANIA, December 5, 1887.

APPENDIX X.

REPORT OF THE WHARTON SCHOOL.

To the Provost.

Sir: The Department of Finance and Economy, now in its seventh year, shows a gratifying prosperity. The number of regular students
in each year, beginning with the academic year 1881–82, was as follows: 2, 2, 8, 9, 18, 20, and at present there are 25. Besides the regular students, who were candidates for degrees, there have been several special or partial students, who, if counted, would make the figures of attendance as follows: 13, 9, 20, 20, 27, 26, and during the present year 38. It will be seen that the attendance has been steadily growing, and the proportion of regular students has been increasing more rapidly than the list of special students. This is as it should be, for while the number of special students shows that a department is fulfilling a want in the community, the number of regular students will show how general and how permanent this want is likely to be.

The success thus far achieved on the limited foundation, and with the limited facilities of the Department, point conclusively to the existence of a want in the community, which such Department may satisfy. The Faculty have kept steadily before them the subject which the Founder of the School had in mind, and which he expressed in his "Outline for a Curriculum," viz: (1) "adequate education in the principles underlying successful civil government," and (2) "the wants of those who intend to engage in business or to undertake the management of property." For this purpose courses of study are provided in the following subjects: Political Economy, Political Science, Administrative and Constitutional Law, Finance, American Political and Constitutional History, Theoretical and Practical Accounting, and Mercantile Law and Practice.

To these studies ten exercises, per week, are devoted in the Junior Year, and eleven exercises, per week, throughout the Senior Year. The rest of the student's time is taken up with other branches, such as Physics, English Literature, Philosophy, etc. Experience has proven conclusively that just in proportion as this Department has increased the time and attention devoted to its specific work in that proportion has the attendance increased. The same fact has become apparent in the similar departments in connection with other institutions. This is simply another illustration of the prevailing tendency in American Higher Education, viz: an inclination toward thoroughgoing work, which can only be gratified by a concentration of effort and attention on some specific end and aim. It will be observed that most of the studies above enumerated are such as may fairly lay claim to being liberalizing branches par excellence, and such as every American citizen should pursue, in outline at least, as a preparation for his duty as a voter. They are furthermore studies which form the leading constituent in the special preparation of certain classes of workers, such as teachers of history and social science, journalists, business men, public
servants and lawyers. It is believed by the Faculty that a large increase in attendance will occur as soon as circumstances will permit the addition of some specific instruction looking more immediately to these various callings.

This Department of Finance and Economy bears the same relation to the great field of social and political science as does the Towne Scientific School to the field of technical knowledge, and it can not be regarded as in any sense complete until, in addition to the general subjects which underlie the whole field, it adds particular instruction specially adapted to each calling or profession falling within that general department. It has the additional advantage, as noted above, that its subject-matter is in large part the same as should enter into the education of every liberally trained American citizen, and in thus expanding its work to cover the whole field, it will at the same time provide facilities for this general work into a greater extent than at present.

It will be observed that this Department does for the University of Pennsylvania a work very similar to that done for Columbia and Michigan Universities, by their Schools of Political Science, and for Cornell by the Andrew D. White School of Politics and History. Each of these departments emphasizes a somewhat different part of the subject, but in general they cover about the same ground. To keep pace with the growing demands of the community and the rapidly increasing facilities of other institutions, we should as soon as possible increase very considerably the instruction in Political Economy and allied branches.

The resignation of Professor Bolles has led to a temporary readjustment of work between this and other departments which is very far from satisfactory, and the Faculty earnestly recommend that some provision be made by which this state of things may be remedied.

The collection of books which has come to the University through the Wharton School is slowly but steadily growing. Thanks to the liberality of several friends, among whom Mr. Stuart Wood and Mr. La Barre Jayne deserve special mention, a number of valuable works on Constitutional Law and Political Science has been added since the last report to the shelves of our working library.

Special effort is now making to increase the collection of books and pamphlets bearing on the subject of Political Science, and more especially on Public Administration and Statistics. It is proposed that the Political Science Seminary, which was organized three years ago, shall be continued next year, and that a Statistical Seminary shall also be organized, which shall have for its special object original work in the field of statistical science. An attempt is making to secure the estab-
lishment of an Academy of Political and Social Science in connection
with the University, which shall have for its object work in the domain
of Political and Social Science very similar to that which the Academy
of Natural Sciences is doing in its field. The special working library,
which such an Academy would establish, would be of great use not only
to the University but to all workers in this field, not merely in this
city but in the whole country.

A tolerably full account of the work done in the Wharton School, as
far as it relates to the subject of American History and Economics,
will be found in a recent circular issued by the Bureau of Education in
Washington on the Study of History in American Colleges. The por-
tion especially relating to the Wharton School was prepared by Dr.
F. N. Thorpe, of the Philadelphia Manual Training School, and for-
merly Fellow of the Wharton School in Political Science.

The methods of work in this department have remained the same as
hitherto, and may be characterized as a combination of the recitation,
lecture, and seminary methods. The endeavor is made to train the
students to think independently on the topics which form the subjects
of instruction. An earnest effort is made to exclude all dogmatism in
political or economic teaching, to present fairly all aspects of disputed
questions, and to put the students in a position to form their own
opinions on intelligent grounds. For this purpose they are held to the
regular and careful preparation of essays on important topics connected
with their studies, which are written after a thorough study of the
literature pertaining to the subject which is to be found in the Univer-
sity library, or in the various city libraries, public and private, to which
the students have access. These essays are examined by the instructor,
and criticised in the class as fully as time will permit. Such of them
are read before the class as seem specially worthy, either for their in-
trinsic merit or the importance of the subject.

Some of this work has been done in departments which have not
been fully worked up hitherto by any one, and it is believed that some
of these essays are worthy of publication, not only as evidences of the
kind of work which our students are doing, but also valuable contribu-
tions of which they treat. A series of publications has been begun in
the department of research which this school represents. The second
number which appeared recently, on the Anti-Rent Agitation in New
York, 1839–46, attracted wide attention from specialists both in this
country and Europe, as being a noteworthy contribution to the history
of the land question, which is just occupying such a large place in the
public thought; it was prepared by Mr. E. P. Cheyney, a graduate of the
Wharton School and now Instructor of History in the University.
Other papers will shortly appear. The appearance of this series has been made possible by the liberality of Mr. Wharton Barker.

The general scope of the work done in this Department during the last two years, along the lines of work peculiar to it, will appear from the following statement:

1. A course in the Theory of Accounting, to which are devoted four hours a week throughout the junior year. Practical work is insisted upon only so far as it is necessary to understand the theoretical aspects of the subject and the general principles which underlie all special systems of accounting.

2. A course in Mercantile Law, which treats of the subject from the standpoint of the future business man rather than that of the lawyer, and is intended to acquaint the students with the most general principles of this important branch of law.

3. A course in Mercantile Practice, in which the actual methods of conducting business in several great departments are described and discussed. Special attention is given to banking, merchandizing, and railroading.

4. A course in Political Economy, in which special attention is given to the general theories of the science, and which is intended to introduce the student to the study of practical economic and social problems.

5. A course in Practical or Advanced Economics, in which the great economic and social issues are discussed in their origin, development, and solution.

6. A course in the Political History of the United States, beginning with colonial politics and closing with the history of the period since the war.

7. A course in the Constitutional History of the United States, beginning with the formation of the Federal Constitution and tracing the course of constitutional development down to the latest period.

8. A course in the Constitutional Law of the United States, involving a careful study of the nature and provisions of the Federal Constitution, followed by a discussion of the State Constitutions and the form and functions of local governments, including the county, township, and city.

9. A course in general Political Science, in which the general nature of government, its origin, functions, forms, etc., are as fully treated as time permits, with a comparative study of our own and foreign governments of the past and present.

10. A course in Public Finance, in which the subject of taxation and similar branches is treated historically and theoretically. A study is
made of our own and foreign systems of public revenue, general and local, followed by a presentation of the general theories of public finance, which are considered worthy of special attention.

It is our desire and purpose to expand our instruction along these and similar lines as rapidly as circumstances will permit.

It is worthy of notice that students are beginning to come from a great distance to enjoy the advantages of the Department. The States of Arkansas, Colorado, Delaware, Illinois, New Jersey, Pennsylvania, Texas, and West Virginia are represented in our list of students, and Japan, of foreign countries.

All of which is respectfully submitted,

EDMUND J. JAMES,
For the Faculty.

Jan. 1, 1888.

APPENDIX XI.

REGULATIONS OF FACULTY OF PHILOSOPHY.

NATURE AND SIGNIFICANCE OF THE PH.D. DEGREE.

The degree of Doctor of Philosophy is a special and not a general degree. It is not given for proficiency in miscellaneous branches or merely for the faithful performance of a prescribed course of study. It is conferred only on the ground of detailed investigation and high attainments in some special department. The degree is a recognition on the part of the University that the candidate is qualified to give advanced instruction in the department which he has chosen as his major subject.

THESIS.

The tests prescribed are a thesis and an examination. The thesis, relating to some topic connected with the principal subject, must furnish evidence that the candidate is thoroughly informed on the topic selected, and that he has pursued his investigations to such a point as to be able to treat it with independence of judgment. The citation of the chief authorities and auxiliary aids used by the student should be carefully given. A good form and correct language are indispensable. When a thesis is presented notice shall be given to each member of the Faculty, and the thesis shall be kept open to inspection of the Faculty for one week. It shall then be referred to a Committee, consisting of the Professors with whom the candidate has done his work, who shall
report to the Faculty their opinion as to the acceptability of the thesis. In case of a favorable opinion the Faculty may admit the candidate to examination. A successful candidate may print his thesis as one accepted for the degree, and at least two copies of the thesis, either written or printed with the certificate of the Approving Committee, must be deposited in the Library and must be open to public inspection.

**OBJECT AND CHARACTER OF EXAMINATION.**

The object of the examination in the major subject is chiefly to ascertain to what extent the special knowledge displayed by the candidate in his thesis is based upon a comprehensive view of the particular science to which it belongs and of the other sciences most closely related to it. The examination in the minor subjects is intended to ascertain how far the candidate has made himself familiar in a general way with fields aside from his specialty. In case the minors are closely connected with the major subject, the examination may be more detailed in character.

The examination, which can in no case be held until the thesis has been accepted, shall consist of two parts—an oral and a written. The written examination shall be conducted by the Professors in charge of the several courses taken by the candidate. It shall not exceed twelve hours in length; six of which may be assigned to the principal branch and three each to the subordinate branches. The examination may be conducted in three hour periods on four different days, but every such examination shall be completed within ten days from the time it is begun. The questions set by the examiners and the answers given by the candidates shall be filed with the Secretary for preservation, and shall be open to the inspection of all members of the Faculty. The oral examination shall not exceed three hours in length, and shall be conducted by the Professors in charge of the courses taken by the candidate in the presence of a Committee composed of such Professors and the Dean and Secretary of this Faculty. All members of the Faculty shall be invited to attend the oral examination, and shall be entitled to put such questions to the candidate as they see fit.

**COMMITTEE.**

The Dean and Secretary of this Faculty and the Professors in charge of the courses chosen by the candidate shall constitute a Committee who shall have full charge of the examination of the candidate, shall appoint the times of the oral and written examination, and report to the Faculty the result of such examinations. In case of a favorable
report the Faculty may recommend the candidate for the degrees of Doctor of Philosophy and Master of Arts.

**FORMAL REQUIREMENTS.**

The candidate for the degree of Doctor of Philosophy must be a baccalaureate graduate either in Arts or Science of an American College whose degrees are accepted by this University as equivalent to its own, or he must satisfy the Faculty, by examination or otherwise, that he possesses an equivalent preparation for graduate studies.

He must pursue graduate studies for at least two years after taking his Bachelor's Degree; provided that no year shall be counted to a student as a full year of study which is not devoted to studies approved by this Faculty as leading to this degree.

Private study, or study pursued at a distance from laboratories, libraries, and other facilities, will not be considered as equivalent to University study. The degree is not conferred *in absentia*, nor upon any one who has not pursued a course of study under the supervision of this Faculty for a period (in no case less than six months) sufficient to enable the Professors to judge of his fitness for this degree.

Under favorable circumstances it will be possible to obtain the Ph.D. degree after two years' graduate study; but where the subjects selected by the candidate are new to him, or where he does not give up his undivided time to the work of the course, this period will be sufficient only in exceptional cases.

Every candidate for a degree is required to register at the office of the Clerk of the College Faculty, at the beginning of each academic year, on or before the first Friday in October. A student who omits to register at the prescribed time without a satisfactory excuse is liable to be dropped from the list.

The Professors in each department may require the candidate to attend such exercises, and present such oral or written reports on his work, as in their judgment may be necessary.

**LIST OF SUBJECTS.**

The candidate must present himself for examination in three of the following subjects, one of which he must designate as his principal or major, and the other two as his subordinate or minor branches or subjects. Any subject may be taken either as major or minor:

- American Archaeology and Languages.
- American History—Political and Constitutional.
- Botany.
- Chemistry—Inorganic.
Chemistry—Medical.
Chemistry—Organic.
Classical Philology and Literature.
Comparative Philology and Sanscrit.
English Language and Literature.
Germanic Philology and Literature.
General History.
Law—Roman and History of Common law.
Mathematics.
Mineralogy and Geology.
Political and Social Science.
Philosophy.
Physics.
Romance, Philology, and Literature.
Semitic Languages and Literature.
Zoology.

If History be chosen as a major, either Ancient, Mediaeval, or Modern History may be taken as a special field, but in all cases a knowledge of general Political History will be required. If Political and Social Science be taken as a major, either Political Economy or Political Science, in the narrower sense, may be taken as the special field, but a general knowledge of the other will be required.

If Botany or Zoology be chosen as a major, any department of either science may be chosen as the special field, but a general knowledge of the other departments will also be required.

**SEMITIC LANGUAGES.**

1. *a.* Any one of the following languages may be selected as a major study: Arabic, Assyrian, Ethiopic, Hebrew, Syriac.

   *b.* In addition to these, any one of the following may be selected as a minor study: Post-biblical Hebrew, Palestinian Aramaic, Babylonian Aramaic, Samaritan, Amharic.

2. A student who selects a Semitic language as his major study may choose another as a minor study; but no student is allowed to take two Semitic languages as his two minor studies, whether he selects a Semitic language as his major or not.

3. Whatever Semitic language a student may select as his major study, he will be required to show a good knowledge of Hebrew grammar, and be able to read an ordinary historical Hebrew text at sight.

4. If a Semitic language be taken as the major study, a general knowledge of two other Semitic languages shall be required, as follows:
With Arabic, Ethiopic and Hebrew; with Assyrian, Hebrew and Arabic; with Hebrew, either Palestinian, Aramaic, or Syriac, and either Arabic or Assyrian; with Ethiopic, Arabic and Hebrew.

By a general knowledge is meant an acquaintance with the grammatical principles of the language and some practice in reading; such an amount in Arabic, for example, as would be equivalent to Socin's Arabic grammar with the Chrestomathy.

5. If a student select the major study and one minor study in the Semitic group, the language chosen as the minor shall be other than the two languages required in connection with a Semitic language as a major study.

Any application for further subdivision of these subjects must be referred to the Executive Committee of the Faculty.

Women are admitted to any course for the Ph.D. degree on the same conditions as men.

Approved November 14, 1887.

APPENDIX XII.

DEPARTMENT OF MEDICINE.

TO THE PROVOST OP THE UNIVERSITY:—

DEAR SIR: As Secretary of the Faculty of Medicine I have the honor to submit the following report upon the Department of Medicine for the academic year 1886–7.

Four hundred and six students attended the instruction in this Department. Of these—

4 were students of the fourth year,
120 " third "
136 " second "
137 " first "
9 were special students, making a total of 406.

Of students of the first year 44 possessed degrees in Arts or Sciences, 78 were admitted upon certificates from recognized high schools and academies, and 23 were admitted after examination in Physics and English. Of those examined in Physics 5, or 22 per cent., were admitted conditioned on this subject. Of the total number of students
in attendance 123 possessed literary or scientific degrees, 19 students were admitted to advanced standing, 15 to the second year, 2 to the third year, and 2 to the fourth year. Of the 15 students admitted to advanced standing in the second year 5 passed the admission examinations; of those admitted to the third year no admission examination was required, nor of those admitted to the fourth year. Of the 4 students of the fourth year 2 were graduates of other medical schools, 2 had spent three years with us, and 1 of these was graduated from this school the year previous. The fact that our own students up to the present time have not been sufficiently impressed with the importance of a fourth year to take advantage of it is a significant and disappointing one. Several of our own recent graduates have, however, returned to take special courses provided by the fourth year.

The fourth year was established for the session 1883–4, in which there were 4 students, for the session 1884–5 there were 3, and 1885–6 there were 5, for 1886–7 there were 4. Of the 4 students of the fourth year (1886–7) 3 applied for the University degree, and of these 2 were already graduates of other schools.*

Respecting the work in various departments there is little that requires allusion. In anatomy advantage has been taken of the employment of a skilled preparer to put the preparations of the Wistar and Horner Museum in a proper state of repair. For a number of years past, in consequence of the failing health and death of Robert Nash, the assistant, for many years in charge, the specimens in the Museum have been suffering. The new assistant, John Knight, has remounted a large number of specimens requiring it, and many new ones which have been accumulating for years but which have remained unmounted. The specimens in the George B. Wood Museum and the H. H. Smith Collection have been similarly overhauled, and the entire museum is in a better condition than for many years, although the repairs have not been quite completed. Since the completion of the Biological Building, by far the largest portion of the Comparative Anatomy Collection of the Wistar and Horner Museum has been removed to the former building, where it is well housed and very much more useful than in Medical Hall. The removal of this collection made space in the large Museum Hall for the Wood Collection, by which a commodious room was

* Students who, in consequence of failure to pass the examinations of the third year, are required to attend another year before graduating, are not placed in the catalogue of the fourth year, but in the third year. To place them in the fourth year class would make it appear larger, but, as they are really repeating the third year and not taking the fourth, although a fourth year, such a course is not regarded as justifiable.
vacated. This has been fitted up and furnished as a reading-room for the medical and dental students, and no feature recently added has been more useful or more popular than this room.

In addition to the Pathological Collections of the Wistar and Horner and Wood Museums, there have been collected by the Pathological Department a large number of hand specimens, which are kept in the Pathological Laboratory and are used in the demonstrations. To accommodate these specimens and others, which it is expected to add, it has been necessary to expend a small sum of money for the construction of cases. This outlay is offset by the diminished wear and tear upon the Wistar and Horner Museum, many specimens from which have to be carried up and down stairs and thus subjected to the risk of breaking. On account of the special demonstrations in the Pathological Laboratory the Wistar and Horner Museum is much more drawn upon than in former years.

In the Department of Clinical Medicine Prof. Osler has done much to improve and develop the practical teaching by enlarging the instruction and subdividing the work.

The most important original contributions from the Chemical Laboratory during the past two years were—


(6) The Occurrence of Arsenic in Glass and in the Ordinary Laboratory Reagents. John Marshall and Charles S. Potts.


(8) Hüfner's Reaction with American Ox Gall and a rapid method for obtaining Glycocholic Acid from Ox Gall. John Marshall. Also published in German.


(11) An Examination of the Air in the Lecture Rooms of the Medical Department of the University and also in the Wards of the University and Philadelphia Hospitals. E. J. Kerlin.


The following papers emanated from the Physiological Laboratory during the session of 1886–87:

Researches upon the Venoms of Poisonous Serpents. By S. Weir Mitchell, M.D., and Edward T. Reichert, M.D. Smithsonian Contributions to Knowledge No. 647. 4to. 186 pp., with chromolithographic plates.

A Contribution to our Knowledge of Fever and of the Agents which Produce or Arrest it. By Drs. H. C. Wood, Edward T. Reichert, and Hobart A. Hare. 8vo. 40 pp.

The following were issued from the Laboratory of Experimental Therapeutics during the session of 1886–87:

The Physiological Action of Spigelia or Pinkroot. By Dr. H. A. Hare. Medical News. March 12, 1887.

The Influence of Antifebrin, Salicylic Acid, and Carbolic Acid on Normal and Abnormal Bodily Temperature. By Dr. H. A. Hare. Therapeutic Gazette. June, July, and August, 1887.

The Value of Bile Salts when used in conjunction with Inunctions of Cod Liver Oil. By Dr. H. A. Hare. Boston Medical and Surgical Journal. March 24, 1887.

The Physiological Action of Cannabis Indica. By Dr. H. A. Hare. Therapeutic Gazette. April, 1887.

The Physiological Action of Cimicifuga Racemosa. By Dr. Randall Hutchinson. Therapeutic Gazette, November, 1887.

The following table shows the subject-matter and the amount of instruction given by the professors and other instructors in the past year:
### First Year.

<table>
<thead>
<tr>
<th>Instructors</th>
<th>Subjects</th>
<th>Exercises per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Leidy, Dr. Deaver</td>
<td>Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>Drs. Deaver, Holmes, and Neilson</td>
<td>Topographical Anatomy, Practical Anatomy (Dissection)</td>
<td>14</td>
</tr>
<tr>
<td>Dr. Fiersol</td>
<td>Histology, laboratory instruction; 5; 1 hour demonstration</td>
<td>6</td>
</tr>
<tr>
<td>Dr. Miller</td>
<td>Practical Pharmacy, laboratory exercises</td>
<td>4</td>
</tr>
<tr>
<td>Dr. Toboldt</td>
<td>General Chemistry, including Chemical Physics</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Wormley</td>
<td>Practical Chemistry, laboratory</td>
<td>4</td>
</tr>
<tr>
<td>Dr. Marshall</td>
<td>Physiology</td>
<td>3</td>
</tr>
<tr>
<td>Prof. Reichert</td>
<td>Practical Physiology</td>
<td>1</td>
</tr>
<tr>
<td>Prof. Dolly</td>
<td>General Pathology</td>
<td>1</td>
</tr>
<tr>
<td>Prof. Tyson</td>
<td>Hygiene</td>
<td>1</td>
</tr>
<tr>
<td>Prof. Richardson</td>
<td>General Clinics, Medical and Surgical</td>
<td>3</td>
</tr>
<tr>
<td>Profs. Agnew, Pepper, and Ashhurst</td>
<td>Medical Chemistry, lecture</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Marshall</td>
<td>Laboratory Exercises in Medical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Prof. Reichert</td>
<td>General Pathology and Morbid Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Tyson</td>
<td>Laboratory Exercises in Pathological Histology</td>
<td>5</td>
</tr>
<tr>
<td>Dr. Formad</td>
<td>Physical Diagnosis, 1 lecture per week, 1 hour practical instruction</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Bruen</td>
<td>Therapeutics</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Wood</td>
<td>Theory and Practice of Medicine</td>
<td>3</td>
</tr>
<tr>
<td>Prof. Pepper</td>
<td>Surgery</td>
<td>3</td>
</tr>
<tr>
<td>Prof. Agnew</td>
<td>Obstetrics</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Penrose</td>
<td>General Clinics, Medical and Surgical</td>
<td>4</td>
</tr>
<tr>
<td>Profs. Agnew, Pepper, Ashhurst, and Osler</td>
<td>Special Clinics (Nervous Diseases, Diseases of the Skin, Eye, Ear, Diseases of Women and Children)</td>
<td>5</td>
</tr>
</tbody>
</table>

### Second Year.

<table>
<thead>
<tr>
<th>Instructors</th>
<th>Subjects</th>
<th>Exercises per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Leidy</td>
<td>Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>Dr. Deaver</td>
<td>Topographical Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>Drs. Deaver, Holmes, and Neilson</td>
<td>Dissection</td>
<td>10</td>
</tr>
<tr>
<td>Prof. Wormley</td>
<td>Medical Chemistry, lecture</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Marshall</td>
<td>Laboratory Exercises in Medical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Prof. Reichert</td>
<td>Physiology</td>
<td>3</td>
</tr>
<tr>
<td>Prof. Tyson</td>
<td>General Pathology and Morbid Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>Dr. Formad</td>
<td>Laboratory Exercises in Pathological Histology</td>
<td>5</td>
</tr>
<tr>
<td>Prof. Bruen</td>
<td>Physical Diagnosis, 1 lecture per week, 1 hour practical instruction</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Wood</td>
<td>Therapeutics</td>
<td>2</td>
</tr>
<tr>
<td>Prof. Pepper</td>
<td>Theory and Practice of Medicine</td>
<td>3</td>
</tr>
<tr>
<td>Prof. Agnew</td>
<td>Surgery</td>
<td>3</td>
</tr>
<tr>
<td>Prof. Penrose</td>
<td>Obstetrics</td>
<td>2</td>
</tr>
<tr>
<td>Profs. Agnew, Pepper, Ashhurst, and Osler</td>
<td>General Clinics, Medical and Surgical</td>
<td>4</td>
</tr>
<tr>
<td>Prof. Wood, Norris, Duhring, Strawbridge and Goodell</td>
<td>Special Clinics (Nervous Diseases, Diseases of the Skin, Eye, Ear, Diseases of Women and Children)</td>
<td>5</td>
</tr>
</tbody>
</table>
Third Year.

Instructors. Subjects. Exercises per week.

Prof. Tyson General Pathology and Morbid Anatomy, including demonstrations 3

Dr. Formad Demonstrations in Morbid Anatomy 2

Prof. Wood Therapeutics 2

Prof. Pepper Theory and Practice of Medicine 3

Prof. Agnew Surgery 3

Prof. White and Drs. Davis and Martin Operative Surgery, Minor Surgery, and Bandaging, 1 lecture per week, 2 hours' practice 2

Prof. Penrose Obstetrics 2

Dr. E. Richardson Operative Obstetrics, 1 hour practice, 2 term 1

Prof. Penrose Diseases of Women and Children 1

Prof. Goodell Gynaecology, 1 lecture per week, 1 hour bedside teaching 2

Prof. Osler Bedside Instruction in Practical Medicine 3

Prof. Ashhurst Bedside Instruction in Practical Surgery 3

Profs. Agnew, Pepper, Ashhurst, and Osier General Clinics, Medical and Surgical 4

Prof. White and Drs. Davis and Martin Special Clinics (Nervous Diseases, Diseases of the Skin, Eye, Ear, Gynaecology, Children, Genito-urinary Diseases) 7

Prof. White and Drs. Davis and Martin Medical Jurisprudence and Toxicology 1

Fourth Year.

Clinical Medicine and Physical Diagnosis, including Laryngology—practical instruction 1 before Jan. 1.

Clinical Surgery—clinical lecture, practical instruction 3

Operative Surgery and Genito-Urinary Diseases—practical instruction 1

Clinical Instruction in Genito-Urinary Diseases 1 after Jan. 1.


Mental Diseases 1
Instructors. | Subjects. | Exercises per week.
--- | --- | ---
Prof. Goodell and Dr. Taylor | Gynaecology—didactic lecture, clinical lecture, practical instruction | 3
Prof. Starr | Diseases of Children—1 hour practical instruction after Jan. 1 | 1
Dr. Stelwagon | Dermatology—didactic lecture, clinical lecture, practical instruction | 3 until Jan. 1, 2 after Jan. 1.
Prof. Strawbridge and Dr. Ziegler | Otology—didactic lecture, clinical lecture, practical instruction for half session, practical instruction for half session | 1 until Jan. 1, 1 after Jan. 1.
Prof. Norris and Dr. Risley | Ophthalmology—didactic lecture, clinical lecture, practical instruction | 3
Dr. E. Richardson | Clinical and Operative Obstetrics—practical instruction for half session | 1
Drs. Willard and Roberts | Orthopaedic Surgery—didactic lecture for half session, practical instruction for half session | 1 after Jan. 1, 1 until Jan. 1.
Prof. Reese | Medical Jurisprudence and Toxicology | 1

Just ten years have elapsed since what is known as the "change of plan" was made in the course of the Medical School. This step was the adoption of a compulsory three years' course and a rearrangement of the curriculum in accordance with it. This was soon followed by a prolongation of the annual term of instruction from five to six and a half months, exclusive of the period of examinations. The details of these changes and the success with which they have been accomplished are sufficiently well known. This step resulted, in connection with the pre-existing facilities for medical education in Philadelphia and the changes in the curriculum which grew out of it, in retaining the Medical Department of the University far in advance of any medical school in America, except the Medical School of Harvard University, which preceded us in taking a similar step. Since that time, although our Medical School has not been idle in further elaborating its instruction and in adding to it, others have also been in the field. The Harvard Medical School has substituted for the old building a new medical hall, whose beauty, convenience, and general adaptation to the demands of modern education are well known. The very large income of the Johns Hopkins's endowment is resulting in the gradual construction of a hospital and series of laboratories which will surpass all others in the facilities offered, while the munificence of the Vanderbilts has furnished the College of Physicians and Surgeons of New York with resources which, if wisely used, should result in facilities second to no others.
The skilled use of such advantages by any or all of these institutions must result in efficiency and attractiveness of curriculum which will demand the best efforts of our school in a successful competition for the higher class of medical students whom we desire to attract. For these reasons I consider that the time has come at which some further efforts should be put forth in order to keep in the front rank with these rival institutions—that indeed another crisis has been reached in our history. To place the teaching of the school on a plan by which, with proper energy, we may easily maintain our position, three requirements ought soon to be made. First. A Maternity Department should be added, in order that suitable practical instruction in Obstetrics may be furnished our graduates. Second. A new building is needed for the accommodation of the Physiological and Pathological Laboratories. Finally. The Endowment Fund of the Medical Department should be increased by at least $100,000.

One of the most unsatisfactory matters in connection with the present organization of the school is the totally insufficient compensation received by the large majority of the demonstrators, who devote very many valuable hours to the practical teaching, the efficiency of which has had so much to do with the present success of the school. Increased revenue from endowment, rather than an increased number of students, should be the source of an increased compensation, which is becoming almost imperative if we would retain the services of these valuable instructors, some of whom have already been taken from us by other institutions offering larger compensation. These facts are commended to the numerous Alumni and other friends of the Medical Department, many of whom must be in a position to influence donations from others, if it is not in their own power directly to aid the Alma Mater in the work she is endeavoring to accomplish.

Another great help to the school would be an increase in its Prize Fund. Nothing so stimulates the best efforts of students as prizes offered for high scholarships or those based upon original research. In this respect the College of Physicians and Surgeons of New York affords an example worthy of imitation. In this school over $2000 are annually distributed in prizes, and on alternate years $2500, in addition to the Stevens triennial prize of $200. All of these funds are due to the liberality of the Alumni of the school. Not only does the distribution of a considerable sum in the shape of prizes stimulate to effort, but it also attracts students who hope by successful competition to repay, entirely or partially, the expenses of their education.

JAMES TYSON,
Secretary.
APPENDIX XIII.

DEPARTMENT OF DENTISTRY.

UNIVERSITY OF PENNSYLVANIA, February 4, 1888.

PROF. WM. PEPPER, PROVOST.

DEAR SIR: At your request I submit the following report of work performed in the Dental Department for the years 1885-86 and 1886-87.

COURSE OF INSTRUCTION IN THE DENTAL DEPARTMENT, SESSIONS 1885-86 AND 1886-87.

Lectures on Mechanical Dentistry . . . . 2 hours each week.
" " Operative . . . . 2 " " " "
" " Dental Pathol., Ther., and Mat. Med. 2 " " " "
" " Anatomy . . . . 3 " " " "
" " Chemistry . . . . 2 " " " "
" " Physiology . . . . 3 " " " "
Chemical Laboratory, first-year students . 4 " " " 
Mechanical Laboratory, under care of Demonstrators . . . . 12 " " " 
Dental Infirmary, under care of Demonstrators . 24 " " " 

The Infirmary and Mechanical Laboratory are open daily, from 9 A. M. to 4 P. M., for practical work.

Total number of Matriculates, 1885-86 . . . . 97
" " Graduates " . . . . 41
Total number of Matriculates, 1886-87 . . . . 111
" " Graduates " . . . . 39
Students from the United States, 1885-86 . . . . 74
" " foreign countries " . . . . 23
Students from the United States, 1886-87 . . . . 86
" " foreign countries " . . . . 25

WORK OF THE OPERATIVE AND MECHANICAL DEPARTMENTS, SESSIONS 1885-86 AND 1886-87.

Operating Department.

Number of patients, 1885-86 . . . . 4898
" " 1886-87 . . . . 5190

10,088
Number of fillings, 1885–86 ... 6819
" " " 1886–87 ... 7069

**13,888**

Other operations and extractions, 1885–86 ... 4213
" " " 1886–87 ... 5460

**9,673**

Amount of gold used for fillings, and exclusive of that used for plate and crown work in Laboratory, 100 ounces (8 lbs. 4 oz.), cost $2500.

**Mechanical Department.**

Number of patients, 1885–86 ... 313
" " " 1886–87 ... 494

**807**

Number of cases inserted, 1885–86 ... 392
" " " 1886–87 ... 667

**1059**

**Spring and Fall Sessions.**

May and June, practical work under care of Demonstrators, each day ... 4 hours.
Practical work each day without Demonstrators ... 4 "

**8**

*September.*

Lectures each day from the 15th ... 1 hour.
Practical work ... 4 hours.

While the present session could not be included in the foregoing report, it may be well to state that at the present session, 1887–88, we have students ... 123
The number of these from the United States ... 100
" " " " foreign countries ... 23

Very respectfully submitted.

**JAMES TRUMAN,**

*Secretary.*
To THE PROVOST OF THE UNIVERSITY OF PENNSYLVANIA:

SIR: I have the honor to submit to you the following report: The Veterinary Department at the close of the last session, 1886-'87, had completed for the first time its full curriculum, and found itself at the end of a short, but surely the most important, cycle, through which it will go in the present or future. During the last year but few unimportant changes were required in the plan of theoretical instructions and practical detail which had been adopted. The routine of the Institution was no longer tentative, as it had been to a certain degree in the two first years, but was a fixed law which was closely followed. The small percentage of the students who had matriculated at the outset with the idea that a course of Veterinary study was a sinecure, which was to secure them simply the protecting garb of the University diploma after the payment of a few fees, learned that the superiority which they were to obtain over the empirical practitioners of their neighborhood could only be obtained by close attention, constant industry, and active intelligence. This small percentage dropped from the rolls either by their own volition or as the result of the rigid examination at the end of each year; and, as a class, I can safely assure you that they have not in the University their superiors in honest intent to acquire a good education in order that they shall make a reputable future for themselves. In those studies which the Veterinary students take in common with the students of medicine, they have been the creditable peers of their co-workers. In Botany and Zoology the course has been rigid. The former, in which they now receive instruction from both Professors Rothrock and Wilson, has been extended to five hours a week for one entire year, and includes a complete practical course in the recognition of both the forage and medicinal plants, indigenous and foreign. In the strictly Veterinary studies of Medicine, Surgery, Zootechnics, and Obstetrics, the nine hours a week are devoted to purely didactic instruction, while double that time is employed in practical teaching germane to these subjects under the personal supervision of the teachers. The hospital has furnished over 1700 cases for clinical instruction and for the personal contact of the students with the various species of animals, familiarizing them with dressings and administration of medicines. The out-patient service had added
2089 cases for the same purpose, making a total of 3834. The ambulance service has proved most successful, allowing many cases to be relieved which could not otherwise be treated, adding to the hospital service, and training the students to handle carefully and properly sick and injured animals, which, as in the case of a horse weighing 1600 or 1800 pounds, and suffering intensely, is sometimes extremely difficult.

Of the original (1st) class of 33, 10 received their diplomas at the last Commencement. At present there are matriculated in the

<table>
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<tr>
<th>Year</th>
<th>Students</th>
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<tbody>
<tr>
<td>3rd</td>
<td>17</td>
</tr>
<tr>
<td>2nd</td>
<td>12</td>
</tr>
<tr>
<td>1st</td>
<td>26</td>
</tr>
<tr>
<td>Special</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
</tr>
</tbody>
</table>

of whom 53 are in actual and constant attendance. During the last year this Department has become much more widely known, and since September the applications for announcements and information from all portions of the United States, Canada, and other countries have amounted to about one thousand. This, I believe, insures a very large class for the coming year. Our space, facilities, and time have been taxed to the utmost during the present session. The dissecting-room is crowded at present, and will be overtaxed with a larger class. This building is also needed for room for our collections. The present Museum is crowded by the tables and apparatus for practical pharmacy and physiology, for which there should be a new building. The Farriery is too small, and the room it now occupies is needed for a post-mortem and preparing room. Owing to our small number of employés and limited means, the majority of the valuable anatomical and pathological specimens, which should be forming an extensive and necessary Museum, are lost. Dormitories on the grounds are an absolute necessity with our system of practical instruction. While the human practitioner can depend to a great extent on loving friends and trained nurses for the personal care of their patients, who are reasonable beings, the Veterinary student must be placed directly in personal contact with the animal which he treats to learn these details. It is a most arduous labor to familiarize our students (many of whom are from cities) with even the normal conditions of cattle and swine, for which we need the proper stables on the grounds. It is imperative for the conservation of the present standard of the Department and for its future development that we shall have the means to remedy these evils.

I respectfully call your serious attention to the fact that for four
years the Faculty of the Veterinary Department has furnished its services to the University almost without remuneration. We have done so uncomplainingly, and are heartily interested in the future of the school. It cannot, however, be presumed that ten men can always be found who can afford to sacrifice their time and energy entirely to a labor of love. An increasing demand is being made in other parts of the country for scientific veterinary talent. Already four of our graduates of last year have received State or Government positions at salaries of $1600 per year. To insure the filling of the present chairs in a competent manner means must be taken to furnish a living to the occupants.

I am, sir, very respectfully,
Your obedient servant,
(Signed) RUSH S. HUIDEKOPER, Dean.

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2. Syllabus of Course of Elementary Instruction in United States History and Civil Government. 8vo. pp. 44.

J. G. R. McElroy, A.M.

5. The Etymology of "Wannion." [Modern Language Notes. March, 1887.]

John Bach McMaster, A.M.

1. Life of "General Grant" for the Philadelphia Press of July, 1885.
8. "Life of Benjamin Franklin for the American Men of Letters Series."

John Marshall, M.D., Nat. Sc. D.


The two following papers were prepared in this Laboratory by Students:

EDWARD MARTIN, M.D.

PHILADELPHIA PATHOLOGICAL SOCIETY.
Epithelioma of Larynx with Slide.
Recurrent Fibroid of Breast with Slide.
Cystic Sarcoma of Breast.
Hard Cancer of Male Breast.
Carcinoma of Breast.
Carcinoma of Breast (Recurrent).
Redundant Thumb, with History of Maternal Impression.

READ BEFORE THE WEST CHESTER MEDICAL SOCIETY.
The Micro-organisms of Suppuration, with Test-Tube and Plate Cultures.

READ BEFORE THE PHILADELPHIA COUNTY MEDICAL SOCIETY.
Ichthyol in Surgery.

AMERICAN LARYNGOLOGICAL SOCIETY.
A New Operation for the Removal of Laryngeal Tumors. With Dr. J. Solis Cohen.
Elementary Directions for Personal Hygiene and Physical Development. With Dr. J. William White.
Operations for Hernia in the Philadelphia Hospital. Medical and Surgical Reporter.

CHARLES K. MILLS, M.D.

Catalepsy. The Polyclinic. February, 1886.

Proper and Improper Methods of Performing Massage. The Polyclinic. October, 1886.

On the Nursing and Care of the Insane. The Therapeutic Gazette. October, 1886.


Confessions of the Insane. The Polyclinic. 1887.

Some Disorders of Consciousness and Memory. The Polyclinic. April, 1887.


Notes of Some Cases of Multiple Neuritis (or Myelitis) of Syphilitic Origin. Read before the American Neurological Association, July 22, 1887. Medical News. August, 1887.


Glioma of the Temporal Lobe. A Case in which Trephining was considered and decided against. Journal of Nervous and Mental Disease. Vol. XII., No. XI. November, 1887. With Dr. George A. Bodamer.

S. WEIR MITCHELL, M.D., LL.D.

In War Times. Philadelphia. 1885.


Prince Little Boy, and Other Tales out of Fairy Land. Philadelphia, 1887.

The Masque and Other Poems. Philadelphia. 1887.


Lectures on Treatment of Spastic Paralysis. American Medical News. 1887.
Centennial Oration before the Philadelphia College of Physicians. January 4, 1887.

JOHN H. MUSSER, M.D.

Hæmophilia.
Diseases of the Biliary Passages.
Peri-Hepatitis.
Hepatitis.
Congestion of the Liver.
Acute Yellow Atrophy of the Liver.
Anæmia.
Progressive Pernicious Anæmia.

Boston Medical and Surgical Journal. November 25, 1886.
Two Cases of Malignant Endocarditis.

Medical and Surgical Reporter.
I. Lead Encephalopathy and on Chronic Myocarditis. May 21, 1887.
II. Jaundice Treated by Cold-Water Enemata. Cirrhosis of the Liver with Jaundice. September 10, 1887.

Medical Bulletin. March 16, 1887.
Abscess of the Thyroid Gland, etc.

The Polyclinic.
I. Pneumonia. November, 1886.
II. Dyspnoea. July, 1887.

Transactions of the College of Physicians. 1887.

Two Cases of Malignant Endocarditis.

Transactions of the Philadelphia County Medical Society.
Some Cases from Private Practice. October, 1887.

Transactions of the Philadelphia Pathological Society. 1886-87.

Cancer of the Stomach.
Gall-Stones with Dilatation of the Biliary Canals.
Gall-Stones. Specimens and Clinical Histories.
A Case of General Atheroma.
A Case of Aneurism of the Aorta.
A Case of Diaphragmatic Pleurisy.
Diabetes Mellitus.
Fœtus Papyraceous.
Carcinoma of the Breast. To October, 1887.
MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA. 1887.
Clinical Remarks on Vomiting.

AMERICAN CLIMATOLOGICAL SOCIETY. 1878.
On the Treatment of the Final Stages of Phthisis.

WM. F. NORRIS, M.D.


WILLIAM OSLER, M.D.

2. The Morbid Anatomy of Typhoid Fever. Ibid. 1886.
12. The Cardiac Relations of Chorea. American Journal of the Medical Sciences. 1887.
C. STUART PATTERSON, A.M., L.L.B.


WILLIAM PEPPER, M.D., LL.D.


REV. JOHN P. PETERS, PH.D.

Books.


Magazines and Journals.

Jacob's Blessing. Journal of the Society of Bibliography, Literature and Exegesis. 1886.

The Ten Words. Ibid.

Miscellaneous Notes. Hebraica. April, 1886.

Miscellaneous Notes. Ibid. January, 1887.


Book Reviews.


Newspaper Articles.

Sunday School Times.

November 1, 1885. The Times of Isaiah, illustrated from the Monuments.

January 23, 1886. Daniel to the Monuments.

Evening Post, New York.


The Church.

September 25, and October 2, 1886. Some Aspects of Recent Old Testament Study.

JOHN J. REESE, M.D.


Some Points in Toxicology. An address before the Alumni Society of the Philadelphia College of Pharmacy. February, 1886.
Some Points in Medical Jurisprudence. Address before the Alumni Society of the Philadelphia College of Pharmacy. October, 1887.


Suicide in its Relations to Insanity. Address before the Medical Jurisprudence Society of Philadelphia. December, 1887.


EDWARD T. REICHERT, M.D.

Researches upon the Venoms of Poisonous Serpents. (With Dr. S. Weir Mitchell.) Smithsonian Contributions to Knowledge. No. 647. 4to. pp. 186. With Chromolithographic Plates. 1886.

A Contribution to our Knowledge of Fever, and of the Agents which Produce or Arrest it. (With Drs. Wood and Hare.) 1886.

A. SYDNEY ROBERTS, M.D.


Remarks on Flat-foot, with Description of a New Plantar Spring for its Relief. Read before a meeting of the Medical Society of the State of Pennsylvania, Williamsport, June 3, 1886; and at a meeting of the National Orthopaedic Society; published in Transactions. New York Academy of Medicine. June, 1887.

REVIEW.


JOSEPH T. ROTHROCK, M.D.

3. American Forestry. Six lectures.

JOHN A. RYDER, PH.D.


SAMUEL P. SADTLER, PH.D.


Present Problems in Industrial Chemistry. An address before the Alumni Association of Lehigh University, June 23, 1886. Published by the Association. pp. 27.


Monthly Abstracts on Industrial Chemistry, for the Franklin Institute Journal, since January, 1887.

REV. CHARLES W. SCHAEPFER, D.D.

The Wittenberg Concord of 1536. Lutheran Church Review.

Clerical Vestments. Lutheran Church Review.
GEORGE E. DE SCHWEINITZ, M.D.


Report of Case of Brain and Spinal Cord Syphilis, showing extensive disease of the bloodvessels. (With Dr. A. V. Meigs.) Journal of Nervous and Mental Disease. June, 1887.


Four Cases in which Retinal Hyperesthesia was associated with Oxaluria. Medical and Surgical Reporter. June 18, 1887.


Notes of a Case of Optic Atrophy and Temporal Hemianopsia; suspected Tumor of the Pituitary Body. Medical and Surgical Reporter. October 8, 1887.

A Group of Cases illustrating severe inflammatory Affections of the Cornea, Iris and Conjunctiva, with their treatment. Medical and Surgical Reporter. December 3, 1887.

An Unusual Case of Ciliary Neuralgia with an erratic history. (With Dr. Shakespeare.) College of Physicians. November 2, 1887.

PAPERS AND EXHIBITS BEFORE THE PATHOLOGICAL SOCIETY, PHILADELPHIA.

1. Lungs and Kidneys from a case of Phthisis in a Syphilitic child.
2. Tumor originating in the Gland of Bartholine and Medullary Sarcoma of Testis.
3. Papilloma of the Conjunctiva.
5. Multiple Aneurisms of the Abdominal and Thoracic Aorta.
6. Eyes showing Panophthalmitis; Lacerated wound of Ciliary Region; Calcified lens.
7. Atheromatous Ulcers and Aneurisms of the Abdominal and Thoracic Aorta.
8. Microscopical Preparations and reports of Specimens of Diphtheritic Membrane from Tonsils; Pedunculated Fibroma of Back; Carcinoma of Ovary; Epithelioma of Penis, and Ova in the Liver of a Mouse (Tricocephalus). Transactions of the Pathological Society. 1886 and 1887.

OSWALD SEIDENSTICKER, PH.D.

CARL SEILER, M.D.

LOUIS STARR, M.D.
Habitual Constipation, and its Domestic Management. Babyhood. April, 1887.
Croupous Pneumonia of the Apex attended by an Unique Symptom. Therapeutic Gazette. July 15, 1887.

HENRY W. STELWAGON, M.D.
Notes on the Use of Medicated Rubber Plasters in certain Cutaneous Diseases. Medical News. October 8, 1887.
A Case of Purpura with Circinate Lesions. Journal of Cutaneous and Venereal Diseases. October, 1887.

ALFRED STILÉ, M.D., LL.D.

A. L. A. TOBOLDT, M.D.
TRANSLATIONS.
Sundry Articles of Action of Drugs, “Medical Clippings,” and New Chemicals. 1886-87.
The Carlsbad Mineral Water and Salt. Ninth International Medical Congress.
JAMES TRUMAN, D.D.S.


Naphthol and Hydro-Naphthol in Dental Practice. Odontological Society of Pennsylvania.


JAMES TYSON, M.D.


HENRY A. WASMUTH, E.M.


H. R. WHARTON, M.D.


1. Larynx and Trachea, with Extensive Deposit of False Membrane, from a Case of Diphtheria.
2. Round-Celled Sarcoma of the Thigh.
3. Specimens from Cases of Arthritis of the Knee-Joint.
4. Specimens from Compound Fracture of the Skull, with Wound of the Lateral Sinus.
5. Cerebral Tumor.
6. Specimens from Cases of Excision of the Knee-Joint.
7. Specimens from a Case of Strangulated Femoral Hernia.
8. Specimens from Cases of Necrosis of the Jaw in Children

J. William White, M.D.

A Century of Medicine. Pamphlet. (Reprint.) Antiseptic Nursing. Pamphlet. (Reprint.)
Abstracts on Treatment of Vesical Calculus, Radical Cure of Hernia, Surgery of the Gall Bladder, Treatment of Vesical Tumors, Surgery of the Kidneys, etc. etc. American Journal of the Medical Sciences.

De Forest Willard, M.D.

Tracheotomy in Diphtheria. Philadelphia Medical News. XIV., 726.
Astragalus, Compound Fracture. Philadelphia Medical and Surgical Reporter. LIII. 467.
Fracture, Ribs with Wound of Liver and Lung. Polyclinic. II., 188.
Fracture, Base of Skull. Medical and Surgical Reporter. LIII., 466.
Traumatic Aneurism Aorta. Maryland Medical and Surgical Journal. XIII.,
505.
Rupture of Bladder. Medical and Surgical Reporter. LIII., 68.
Removal of Foreign Bodies from Bladder and Urethra by the Evacuator.
Transactions of the Philadelphia County Medical Society. November,
1887. New York Medical Journal. 1887. XLVI. 666. Maryland Medical
Journal. XVIII. 89.

W. P. WILSON, M.D.
The Anatomy and Physiology of the peculiar aerial roots of the so-called Black
Mangrove. *Avicennia nitida* (Jacquin). Proceedings of the Academy of
The relation of *Sarracenia purpuria* to *Sarracenia variolaris*. Proceedings of
On the Origin and Function of the so-called Knees of Taxodium distichum, with
reference to similar outgrowths on other trees. Proceedings of the Academy

HORATIO C. WOOD, M.D., LL.D.
"Nervous Diseases and their Diagnosis." J. B. Lippincott Co. 1887. From
the Therapeutic Gazette.
Treatment of Phthisia by Sulphuretted Hydrogen.
Rest in the Treatment of Disease.

THEODORE G. WORMLEY, M.D., LL.D.

JAMES K. YOUNG, M.D.
Congenital Absence of the Tibia. American Journal of Medical Sciences. 1887.

APPENDIX XVI.
ABSTRACTS AND SUMMARIES FROM THE TREASURER’S REPORTS.

The Treasurer of the University of Pennsylvania presents annually in
September to the Board of Trustees a detailed account of the Real
Estate, Stocks, Bonds, and other securities belonging to the several
Funds of the University, of the receipts and expenditures of each
Department, and of the donations received during the year. From his
Annual Reports of 1886 and 1887 the subjoined abstracts and summa-
ries are collated.
General Summary.

General Fund—
West Philadelphia Real Estate, Library, Museum, Perpetual insurance, etc. ... $1,099,569 03
Less Ground-rent ... 10,000 00
$1,089,569 03

Real and Personal property ... $6,196 00 $1,095,765 03

Hospital Funds—
Real Estate, Perpetual Insurance and Furniture ... 264,142 85
Real and Personal Property ... 253,533 59 517,676 44

Ward for Chronic Diseases Fund—
Real Estate (Gibson Wing) and Perpetual Insurance ... 65,825 00
Personal Property ... 109,324 51 175,149 51
Special Hospital Funds ... 139,439 00 139,439 00

Veterinary Fund—
Real Estate, Perpetual Insurance, and Furniture ... 44,945 94

Department of Biology Fund—
Real Estate, Perpetual Insurance, and Furniture ... 25,162 21

Medical Department Funds ... 88,776 00 88,776 00

Various Special Trusts ... 760,578 38 760,578 38

$1,489,645 03 $1,357,847 48 $2,847,492 51

Deficit for year ending August 31, 1885 ... 89,517 12
Add deficit, 1886 ... $31,683 65
Less donations, 1886 ... 15,000 00
... 16,683 65

Deficit, August 31, 1886 ... $26,200 77
Deduct donations, 1887 ... $25,200 00
Less deficit, August 31, 1887 ... 16,310 04
... 8,889 96

Balance uncancelled deficit, August 31, 1887 ... $17,310 81

The Medical, Dental, and Law Departments are self-sustaining.
The Departments of Arts and Science were maintained at a loss of $4,461.04.
The Hospital Department has an annual deficit which is made good by the Board of Managers of the Hospital.
The Wharton School of Finance and Economy was maintained at a loss of $452.47, which was made good by a member of the Board of Trustees.
RECEIPTS AND EXPENDITURES FOR THE YEAR ENDING AUGUST 31, 1887

University Account.

<table>
<thead>
<tr>
<th>RECEIPTS</th>
<th>EXPENDITURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Donations</strong></td>
<td><strong>Balance, August 31, 1886</strong></td>
</tr>
<tr>
<td>$25,200.00</td>
<td>$26,200.77</td>
</tr>
<tr>
<td><strong>Interest on amount loaned Veterinary Department</strong></td>
<td><strong>Current Expenses</strong></td>
</tr>
<tr>
<td>$292.09</td>
<td>12,141.09</td>
</tr>
<tr>
<td><strong>Deficit</strong></td>
<td><strong>Amount of Deficit of Department of Arts and Science</strong></td>
</tr>
<tr>
<td>17,310.81</td>
<td>4,461.04</td>
</tr>
<tr>
<td><strong>Total RECEIPTS</strong></td>
<td><strong>Total EXPENDITURES</strong></td>
</tr>
<tr>
<td>$42,802.90</td>
<td>$42,802.90</td>
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</table>

Department of Arts and Science.

<table>
<thead>
<tr>
<th>RECEIPTS</th>
<th>EXPENDITURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income from Funds</strong></td>
<td><strong>Prize Funds</strong></td>
</tr>
<tr>
<td>$31,688.15</td>
<td>$77.86</td>
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<tr>
<td><strong>Tuition</strong></td>
<td><strong>Salaries</strong></td>
</tr>
<tr>
<td>38,037.50</td>
<td>57,389.14</td>
</tr>
<tr>
<td><strong>miscellaneous</strong></td>
<td><strong>Current Expenses</strong></td>
</tr>
<tr>
<td>3,229.58</td>
<td>18,926.17</td>
</tr>
<tr>
<td><strong>Balance carried to General Expenses of University</strong></td>
<td><strong>Book-keeper, Stationery, etc.</strong></td>
</tr>
<tr>
<td>4,461.04</td>
<td>1,023.10</td>
</tr>
<tr>
<td><strong>Total RECEIPTS</strong></td>
<td><strong>Total EXPENDITURES</strong></td>
</tr>
<tr>
<td>$77,416.27</td>
<td>$77,416.27</td>
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</table>

Wharton School.

<table>
<thead>
<tr>
<th>RECEIPTS</th>
<th>EXPENDITURES</th>
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<tbody>
<tr>
<td><strong>Income Wharton School Fund</strong></td>
<td><strong>Salaries</strong></td>
</tr>
<tr>
<td>$4,000.00</td>
<td><strong>$9,999.97</strong></td>
</tr>
<tr>
<td><strong>Tuition Fees</strong></td>
<td></td>
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<tr>
<td>2,887.50</td>
<td></td>
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<tr>
<td><strong>Graduation Fees</strong></td>
<td></td>
</tr>
<tr>
<td>150.00</td>
<td></td>
</tr>
<tr>
<td><strong>Amount carried to Wharton School Deficiency Fund account, being amount of interest in default on Schuylkill Navigation Loans</strong></td>
<td><strong>Deficit, made good by a Member of the Board of Trustees</strong></td>
</tr>
<tr>
<td>2,500.00</td>
<td>452.47</td>
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<td><strong>Total RECEIPTS</strong></td>
<td><strong>Total EXPENDITURES</strong></td>
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<tr>
<td>$9,999.97</td>
<td><strong>$9,999.97</strong></td>
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### Medical Department.

**RECEIPTS.**

<table>
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<tr>
<td>Income, J. Rhea Barton Fund</td>
<td>$1,969 44</td>
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<tr>
<td>&quot; J. G. Fell Fund</td>
<td>74 38</td>
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<tr>
<td>Tuition Fees</td>
<td>55,373 58</td>
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<tr>
<td>Balance</td>
<td>581 35</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$57,998 75</strong></td>
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**EXPENDITURES.**

<table>
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<th>Description</th>
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<tr>
<td>Balance, September 30, 1886</td>
<td>$108 82</td>
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<tr>
<td>Current Expenses</td>
<td>12,113 03</td>
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<tr>
<td>Salaries</td>
<td>40,576 90</td>
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<td>Proportion of Tuition Fees paid</td>
<td>5,200 00</td>
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<tr>
<td>Department of Arts and Science</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$57,998 75</strong></td>
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</tbody>
</table>

| Balance                                 | 581 35   |

### Auxiliary Faculty of Medicine.

**RECEIPTS.**

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<td>Balance, August 31, 1886</td>
<td>$60 00</td>
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<tr>
<td>Income, Dr. George B. Wood Fund</td>
<td>2,183 18</td>
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<tr>
<td>for Auxiliary Faculty of Medicine</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2,243 18</strong></td>
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</table>

| Balance                                 | 154 00   |

**EXPENDITURES.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Salaries, etc</td>
<td>2,089 18</td>
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<tr>
<td>Balance</td>
<td>154 00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2,243 18</strong></td>
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### Department of Dentistry.

**RECEIPTS.**

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<th>Description</th>
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<td>Tuition Fees</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$13,529 63</strong></td>
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</tbody>
</table>

**EXPENDITURES.**

<table>
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<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Balance, May 31, 1886</td>
<td>$75 00</td>
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<tr>
<td>Current Expenses</td>
<td>4,548 79</td>
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<tr>
<td>Salaries</td>
<td>8,243 34</td>
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<tr>
<td>Payment on account of Laboratory and</td>
<td>662 50</td>
</tr>
<tr>
<td>Dental Building</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$13,529 63</strong></td>
</tr>
</tbody>
</table>
### Veterinary Department

**RECEIPTS**

- Balance, August 31, 1886: $1,192.35
- Fees, etc.: $8,400.00
- Donation: $3,000.00

**EXPENDITURES**

- Current Expenses: $10,756.60
- Interest paid on borrowed money: $1,042.09
- Balance: $793.66

**TOTAL:** $12,592.35

### Biological Department

**RECEIPTS**

- Balance, August 31, 1886: $155.77
- Donations: $1,375.00
- Amount from Department of Arts and Science: $1,000.00
- Tuition Fees: $2,410.00

**EXPENDITURES**

- Current Expenses: $1,762.36
- Salaries: $3,149.82
- Balance: $28.59

**TOTAL:** $4,940.77

### Hospital Department

**RECEIPTS**

- Balance: $2,576.08
- Dispensary: $1,755.81
- Patients’ Board: $5,751.65
- Income, Hospital Fund: $7,662.04
  - Alumni Ward Fund: $300.00
  - Dr. G. B. Wood Fund, Hahn Ward: $1,470.48
  - Mrs. Norris Fund: $57.00
  - Bement Fund: $175.00
  - Ward for Chronic Diseases Fund: $1,195.01
  - Henry Seybert Fund: $2,017.66
- Donation: $556.42
- Balance of deficiency and repair Fund: $5,881.73

**TOTAL:** $29,728.88

**Less amount due Trustees of University**

- $5,000.00

**Balance**

- $1,220.50
EXPENDITURES.

Current Expenses .................................................. $23,508.38
Balance .................................................................. 6,220.50
........................................................................... $29,728.88

Orthopaedic Department.

RECEIPTS.

Balance, December 31, 1886 .................................. $73.59
Receipts ................................................................ 600.00
........................................................................... 673.59
Balance .................................................................. 113.59
........................................................................... 873.59

EXPENDITURES.

Payments to Hospital Department ............. $560.00
Balance .................................................................. 113.59
........................................................................... 873.59

DONATIONS.

Donations received during the year ending August 31, 1886.

Edward S. Willing, Veterinary Department ........ $100.00
Thaddeus Norris ......................................................... 25.00
W. Struthers ................................................................. 100.00
Harrison, Brothers & Co. .......................................... 50.00
J. B. Lippincott et al. ............................................... 2,500.00
Pennsylvania R. R., Hospital Department ........ 500.00
Moore & Sinnott ......................................................... 50.00
Miss S. P. M. ................................................................. 50.00
Samuel Welsh, Department Applied Organic Chemistry .. 5,000.00
Estate of Henry Seybert, Ward for Chronic Diseases Fund .. 56,000.00
Mrs. Hall, General Fund ........................................ 50.00
Wm. Arrott, Department Applied Organic Chemistry .... 1,000.00
Henry La Barre Jayne, Biological Department ........ 5,000.00
John Baird, Department Applied Organic Chemistry .... 1,000.00
Estate of James Bonbright, Scholarship Fund .......... 500.00
Samuel R. Shipley, General Fund ......................... 250.00
John F. Smith, for Mrs. John F. Smith Bed, Hospital Fund .. 5,000.00
Dr. Wm. Pepper, General Expenses .................... 5,000.00
Charles C. Harrison .................................................. 5,000.00
Henry H. Houston ...................................................... 5,000.00
Wharton Barker, Wharton School, deficit, 1884–5, 1885–6 .. 2,129.35
Wm. M. Potts, Department of Applied Organic Chemistry .. 5,000.00
Francis L. Potts ......................................................... 5,000.00
........................................................................... $104,754.35
Donations received during the year ending August 31, 1887.

<table>
<thead>
<tr>
<th>DonorName</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Charles C. Harrison, General Expenses</td>
<td>5,000.00</td>
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<tr>
<td>Samuel Dickson, &quot; &quot;</td>
<td>1,000.00</td>
</tr>
<tr>
<td>Henry H. Houston, &quot; &quot;</td>
<td>2,500.00</td>
</tr>
<tr>
<td>Joseph D. Potts, &quot; &quot;</td>
<td>5,000.00</td>
</tr>
<tr>
<td>Horace Howard Furness, &quot; &quot;</td>
<td>600.00</td>
</tr>
<tr>
<td>C. H. Hutchinson, &quot; &quot;</td>
<td>400.00</td>
</tr>
<tr>
<td>Richard Wood, &quot; &quot;</td>
<td>2,500.00</td>
</tr>
<tr>
<td>Wharton Barker, &quot; &quot;</td>
<td>2,000.00</td>
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<tr>
<td>Dr. Wm. Pepper, &quot; &quot;</td>
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<tr>
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Total: $72,249.55