GROUND PLAN OF THE UNIVERSITY.

COLLEGE BUILDINGS.

1. College Hall.
2. Medical Hall.
3. Medical and Dental Laboratory.
4. Hospital.
5. Wing for Chronic Diseases.
7. Veterinary College.
8. Veterinary Hospital.
9. Biological Hall.
10. Athletic Grounds.

THE BUILDINGS AND PROPERTY.

ROUTES OF ACCESS.

A Market St., and Chestnut & Walnut Sts. P. R. R.
B Lombard and South St. P. R. R.
Also South St. Station of P. W. & B. R. R.
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CALENDAR.

1886.

Sept. 15, Wednesday. First Term begins: College Department and Department of Biology. 10 A.M.

Oct. 1, Friday. Winter Session begins: Departments of Medicine, Law, Dentistry, Veterinary Medicine, and Auxiliary Department of Medicine.

" 4, Monday. First Term begins: Department of Music.

Nov. 25, Thursday. Thanksgiving Day. (Holiday.)


1887.

Jan. 3, Monday. Christmas Recess ends. 9 A.M.

" 27, Thursday. Mid-Year Examinations end: College Department.

" 28, Friday. First Term ends: College Department (Chapel at 10 A.M.) and Department of Law.

Feb. 1, Tuesday. Second Term begins: College Department, and Departments of Biology and Law.

April 6, Wednesday. Easter Recess begins: College Department, 5 P.M.

" 8, Friday. Good Friday. (Legal Holiday.)

EASTER RECESS.

" 11, Monday. Final and Term Examinations begin: Departments of Medicine and Dentistry.

" 20, Wednesday. Examination for Resident Physicians, University Hospital. 12 Noon.

" 27, Wednesday. Easter Recess ends: College Department. 9 A.M.

May 2, Monday. Annual Commencement: Departments of Medicine and Dentistry. 12 Noon.

" 3, Tuesday. Spring Session opens: Department of Dentistry.

" 9, Monday. Spring Session opens: Department of Medicine. 11 A.M.

" 12, Thursday. Senior Examinations, College Department, end.

" 20, Friday. Examinations begin: Department of Law and Auxiliary Department of Medicine.

" 31, Tuesday. Second Term ends: Department of Law.
June 13, Monday. Announcement of Results, Annual Examinations: College Department. 10 A.M.

“ 15, Wednesday. Annual Commencement: College Department, Departments of Law and Biology, and Auxiliary Department of Medicine. 11 A.M.

16 to 23. Entrance Examinations: College Department. 9 A.M. each day.

SUMMER VACATION.

Sept. 6 to 14. Entrance Examinations: College Department. 9 A.M. each day.

“ 15, Thursday. First Term begins: College Department and Department of Biology. 10 A.M.

“ 15, Thursday. Introductory Course opens: Departments of Medicine, and Dentistry. 11 A.M.

“ 23, Friday. Competitive Examination for Medical Scholarships. 12 Noon.

“ 27, Tuesday. Examinations for Admission to Advanced Standing, and Re-examination of Undergraduates, Departments of Medicine and Dentistry. 12 Noon.

“ 28, Wednesday. Entrance Examination: Departments of Medicine and Veterinary Medicine. 12 Noon.

Oct. 1, Saturday. Winter Session opens: Departments of Medicine, Dentistry and Veterinary Medicine. 12 Noon.

“ 1, “ First Term begins: Department of Law.

“ 3, Monday. First Term begins: Department of Music and Auxiliary Department of Medicine.
A pamphlet, called: Proposals Relative to the Education of Youth in Pennsylvania, written in 1749 by Dr. Franklin, led to an association, by certain citizens of Philadelphia, for the purpose of founding a School on the lines suggested by that wise counsellor. Over two thousand pounds, equivalent to at least forty thousand dollars at the present time, were raised and a building, which had been erected to accommodate the thronged congregations of the celebrated Whitfield, was purchased, and in 1751 the Academy, consisting of an English, a Mathematical, and a Latin School, each under a Master, with subordinate tutors and ushers, was formally opened. So successful was the undertaking that in two years the Trustees applied to the Proprietaries for a Charter, which was thus granted: —

THOMAS PENN and RICHARD PENN, true and absolute proprietors and governors in chief of the province of Pennsylvania and counties of Newcastle, Kent, and Sussex, on Delaware, To all persons to whom these presents shall come, greeting: Whereas, the well-being of a society depends on the education of their youth, as well as, in great measure, the eternal welfare of every individual, by impressing on their tender minds principles of morality and religion, instructing them in the several duties they owe to the society in which they live, and one towards another, giving them the knowledge of languages, and other parts of useful learning necessary there-to, in order to render them serviceable in the several public stations to which they may be called. And whereas, it hath been represented to us by Thomas Lawrence, William Allen, John Inglis, Tench Francis, William Masters, Lloyd Zachary, Samuel McCall, junior, Joseph Turner, Benjamin Franklin, Thomas Leech, William Shippen, Robert Strettell, Philip Syng, Charles Willing, Phineas Bond, Richard Peters, Abraham Taylor, Thomas Bond, Joshua Maddox, William Plumstead, Thomas White, William Cole-
man, Isaac Norris, and Thomas Cadwalader, of our city of Philadelphia, gentlemen, that for the erecting, establishing, and maintaining an academy within our said city, as well to instruct youth for reward, as poor children whose indigent and helpless circumstances demand the charity of the opulent part of mankind, several benevolent and charitable persons have generously paid, and by subscriptions promised hereafter to pay, into their hands as trustees, for the use of the said academy, divers sums of money, which sums already paid, they, the said trustees, have expended in the purchase of lands well situated, and a building commodious for the uses aforesaid, within our said city in maintaining an academy there as well for the instruction of poor children on charity, as others whose circumstances have enabled them to pay for their learning, for some time past, and in furnishing the said academy with books, maps, mathematical instruments, and other necessaries of general use therein, according to the intentions of the donors. And whereas, the said trustees to facilitate the progress of so good a work, and to perfect and perpetuate the same, have humbly besought us to incorporate them and their successors.

Now know ye, That we favouring such pious, useful, generous, and charitable designs, hoping, through the favour of Almighty God, this academy may prove a nursery of virtue and wisdom, and that it will produce men of dispositions and capacities beneficial to mankind in the various occupations of life; but more particularly suited to the infant state of North America in general, and for other causes and considerations us hereto specially moving, have granted, ordained, declared, constituted, and appointed, and by these presents we do, for us, our heirs, and successors grant, ordain, declare, constitute, and appoint, That the said Thomas Lawrence, and others, as before recited, and such others, as shall be from time to time chosen, nominated or elected, in their place and stead, shall be one community, corporation and body politic, to have continuance for ever, by the name of The Trustees of the Academy and Charitable School in the Province of Pennsylvania.

In witness whereof, we have caused these our letters to be made patent; in the twenty-seventh year of the reign of our sovereign lord, George the Second, who now is king of Great Britain, France, and Ireland, etc., and in the year of our Lord, one thousand seven hundred and fifty-three.”

Under the skillful training of the learned Rev. William Smith the highest class in this Academy attained that proficiency which, in a College course, would entitle it to a Degree. Accordingly, two years later the Proprietaries were again petitioned to convert the Academy into a College with the power of conferring Collegiate Degrees. The petition was granted substantially as follows:
Thomas Penn and Richard Penn, true and absolute proprietaries of the province of Pennsylvania, etc., to all persons to whom these presents shall come, greeting:

And whereas the said trustees have, . . . . represented, That since our granting our said recited charter, the academy therein mentioned, by the blessing of Almighty God, is greatly improved, being now well provided with masters, not only in the learned languages, but also in the liberal arts and sciences, and that one class of hopeful students has now attained to that station in learning and science, by which, in all well constituted seminaries, youth are entitled to their first degree. Now know ye also, That we do hereby, for us, our heirs and successors, give and grant full power and authority to the said trustees and their successors, . . . . to constitute and appoint a Provost and Vice-Provost of the said college and academy, who shall be severally named and styled Provost and Vice-Provost of the same. And also to nominate and appoint professors in all the liberal arts and sciences, the ancient languages and the English tongue, which Provost, Vice-Provost, and Professors, so constituted and appointed, shall be known and distinguished as one body and faculty, by the name of The Provost, Vice-Provost, and Professors of the College and Academy of Philadelphia, in the province of Pennsylvania; and by that name shall be capable of exercising such powers and authorities as the said trustees and their successors shall think necessary to delegate to them, for the discipline and government of the said college, academy, and charitable school: Provided always, That the said trustees, the Provost, and Vice-Provost, and each Professor, before they shall exercise their several and respective powers or authorities, offices, and duties, do and shall take and subscribe the three first written oaths appointed to be taken and subscribed, in and by one act of Parliament, passed in the first year of the reign of our late sovereign lord, George the first, intituled, An Act for the further security of his Majesty's Person and Government; and the Succession of the Crown in the Heirs of the late Princess Sophia, being protestants, and for extinguishing the hopes of the pretended Prince of Wales, and his open and secret abettors; and shall also make and subscribe the declaration appointed to be made and subscribed by one other act of parliament, passed in the twenty-fifth year of the reign of king Charles the second, intituled, An Act for preventing dangers which may happen, etc. . . . . . . excepting only the people called Quakers, who, upon taking, making, and subscribing the affirmations and declarations appointed to be taken, made, and subscribed, by the acts of General Assembly of the province of Pennsylvania, to qualify them for the exercise of civil offices, shall be admitted to the exercise of all and every the powers, authorities, offices, and duties
above mentioned, any thing in this provision to the contrary notwithstanding... And we do hereby, at the desire and request of the said trustees, constitute and appoint the Reverend William Smith, M.A., to be the first and present Provost of the said college and academy, and the Reverend Francis Allison, M.A., to be the first and present Vice-Provost of the same... And we do further, for us, our heirs and successors, give and grant to the trustees of the said college and academy, That for animating and encouraging the students thereof to a laudable diligence, industry, and progress in useful literature and science, they and their successors, met together on such day or days as they shall appoint for that purpose, shall have full power and authority, by the provost, to admit any the students within the said college and academy, or any other person or persons meriting the same, to any degree or degrees, in any of the faculties, arts, and sciences, to which persons are usually admitted, in any or either of the universities or colleges in the kingdom of Great Britain... Provided always, and it is hereby declared to be our true meaning and express will, That no student or students, within the said college and academy, shall ever, or at any time or times hereafter, be admitted to any such degree or degrees, until such student or students have been first recommended and presented as worthy of the same, by a written mandate, given under the hands of at least thirteen of the trustees of the said college and academy...

In testimony whereof, we have caused these our letters to be made patent, and the great seal of our said province to be hereunto affixed... this fourteenth day of May, in the twenty-eighth year of the reign of our sovereign lord, George the second, king of Great Britain, France, and Ireland, etc., and in the year of our Lord, one thousand seven hundred and fifty-five.

The First Commencement was held May 17th, 1757, when Paul Jackson, Jacob Duché, Francis Hopkinson, Samuel Magaw, Hugh Williamson, James Latta, and John Morgan received the Degree of Bachelor of Arts. In the agitated times which followed, the Provost, Mr. Smith, was a Tory of so pronounced a type that he was thrown into prison by the Legislature; but, in faithfulness to his sworn duties as Provost, he received his classes in gaol, and continued his instructions to them there while still a prisoner. He was set at liberty, however, for the purpose of going to England to make a personal appeal to the king, and his kindly reception there was not lessened by the strain to which his loyalty at home had been put. Oxford conferred on him the Degree of Doctor of Divinity. On his return home so highly did his fellow-citizens rate his influence abroad, that when in 1761 the Trustees were hard bestead they sent him back to England to raise funds for an endowment. It happened that King's College (now
Columbia) in New York was in similar straits and had resolved on similar
efforts. The two commissioners met in England and amicably resolved to
"divide the land between them," and share the proceeds. Through the
influence of the Archbishop of Canterbury they received a circular letter
from the king to all churches, and succeeded in raising a very considerable
endowment for each college.

On Dr. Smith's return, as it appears on the minutes of the 14th of June,
1764, a letter was received from the Archbishop of Canterbury, Thomas and
Richard Penn, and the Rev. Samuel Chandler, D.D., addressed to the trus-
tees, in which the trustees are congratulated on the success of Dr. Smith's,
the provost's, collection, in England, and advised of what would be further
necessary to the due improvement of the collection and the future pros-
perity of the institution. "That the institution was originally founded and
carried on for the general benefit of a mixed body of people—that on the
king's brief it is represented as a seminary that would be of great use for
securing capable instructors and teachers, as well for the service of the society
for propagating the gospel in foreign parts, as for other protestant
denominations in the colonies.—That at the time of making the collection,
the provost was a clergyman of the Church of England—the vice-provost,
a Presbyterian—a principal professor, a Baptist, with other useful pro-
fessors and tutors, all carrying on the education of youth with great har-
mony, and people of various denominations have heretofore contributed
liberally and fully.—That jealousies had arisen lest the foundation should
be narrowed, and some party exclude the rest, or put them on a worse
footing than they have been or were at the time of the collection, which
would be unjust and productive of contentions unfriendly to religion. It
was therefore recommended to the trustees, by the writers of the letter
(who had a principal share in procuring the collection), to make a funda-
mental rule or declaration, to prevent inconvenience of this kind; and in
doing which, they were advised that the more closely they kept in view the
plan on which the seminary was at the time of the royal brief, and on
which it was carried on from the beginning, so much the less cause would
any party have to be dissatisfied."

A committee having been appointed to frame a fundamental Resolve or
declaration, in consequence of the letter, the following was reported and
adopted:

"The trustees being ever desirous to promote the peace and prosperity of
this seminary, and to give satisfaction to all its worthy benefactors, have
taken the above letter into their serious consideration, and perfectly ap-
proving the sentiments therein contained, do order the same to be inserted
in their books, that it may remain perpetually declaratory of the present
wide and excellent plan of this institution, which hath not only met with
the approbation of the great and worthy personages above mentioned, but
even the royal patronage of his majesty himself. They further declare that
they will keep this plan closely in their view, and use their utmost endeav-
ors that the same be not narrowed, nor the members of the church of Eng-
land, or those dissenting from them (in any future election to the principal
offices mentioned in the aforesaid letter), be put on any worse footing in this
seminary, than they were at the time of obtaining the royal brief. They sub-
scribe this with their names, and ordain that the same be read and sub-
scribed by every new trustee that shall hereafter be elected, before he takes
his seat at the board."

Perhaps no more striking instance can be given of the distortion to
which men's minds were subject in those days of political commotion, than
the fact that in 1779 this resolution was construed by the Legislature into
a "narrowing of the foundation," and seized as a pretext for confiscating
all the rights and properties of the College, which were bestowed upon a
new organization called in its charter the "Trustees of the University of the
State of Pennsylvania." Ten years later, these rights and properties
were all restored, and in 1791 an act was passed amalgamating the old Col-
lege in the new University, as follows:

WHEREAS, the trustees of the University of the State of Pennsylvania,
and the trustees of the College, Academy, and Charitable School of Philadel-
phia, in the commonwealth of Pennsylvania, by their several petitions
have set forth, that they have agreed to certain terms of union of the said
two institutions, which are as follow:

First. That the name of the institution be "The University of Pennsyl-
vania," and that it be stationed in the city of Philadelphia.

Second. That each of the two boards shall elect, from among them-
selves, twelve persons, who, with the governor for the time being, shall
constitute the board of trustees of the university of Pennsylvania; and that
the governor shall be president.

SECT. 2. And be it further enacted, That the said twenty-four persons so
elected and certified, together with the governor for the time being, who
shall always be president, and their successors, be, and they are hereby
made and constituted a corporation and body politic, in law and in fact, to
have continuance for ever by the aforesaid name, style, and title of "The
Trustees of the University of Pennsylvania," and that the said university
shall at all times be stationed in the city of Philadelphia.

Thus established, the University has advanced with the times, and now
comprises the following departments: —
THE COLLEGE DEPARTMENT, including
THE COURSE IN ARTS,
THE TECHNICAL COURSES IN SCIENCE,
(The Towne Scientific School),
A COURSE IN PHILOSOPHY,
THE COURSE IN FINANCE AND ECONOMY,
(The Wharton School),
THE COURSE IN MUSIC.
THE DEPARTMENT OF MEDICINE.
THE DEPARTMENT OF LAW.
THE AUXILIARY DEPARTMENT OF MEDICINE.
THE DEPARTMENT OF DENTISTRY.
THE DEPARTMENT OF PHILOSOPHY.
THE DEPARTMENT OF VETERINARY MEDICINE.
THE DEPARTMENT OF BIOLOGY.
THE DEPARTMENT OF PHYSICAL EDUCATION.
Provost of the University,
William Pepper, M.D., LL.D.,
President pro tempore of the Board of Trustees.

TRUSTEES.

The Governor of Pennsylvania, ex-officio President of the Board.
Rev. Henry J. Morton, D.D.,
Frederick Fraley, LL.D.,
Rev. Charles W. Schaeffer, D.D.,
Rt. Rev. William Bacon Stevens, D.D., LL.D.,
John Ashhurst,
William Sellers,
Rev. Richard Newton, D.D.,
J. Vaughan Merrick,
Richard Wood,
S. Weir Mitchell, M.D., LL.D.,
Charles C. Harrison,
James H. Hutchinson, M.D.,
Rev. George Dana Boardman, D.D.,
William Hunt, M.D.,
Horace Howard Furness, Ph.D., LL.D.,
Wharton Barker,
Samuel Dickson,
John Scott,
James MacAlister,
John C. Sims, Jr.,
Henry H. Houston,
Joseph D. Potts,
Hon. Henry Reed,
Samuel W. Pennypacker.

Rev. Jesse Y. Burk, Secretary, University.
Wharton Barker, Treasurer, 125 South Fourth-st.
CHAIRMEN OF STANDING COMMITTEES FOR THE YEAR 1886-7.

WAYS AND MEANS: Mr. HARRISON, 101 S. Front-st.
BUILDINGS, ESTATES AND PROPERTY: Mr. WOOD, 400 Chestnut-st.
LIBRARY: Dr. FURNESS, 222 West Washington Square.
DEPARTMENT OF ARTS: Mr. FRALEY, 1000 Walnut-st.
DEPARTMENT OF MEDICINE: Dr. MITCHELL, 1524 Walnut-st.
DEPARTMENT OF LAW: Mr. SCOTT, 3808 Chestnut-st.
DEPARTMENT OF SCIENCE: Mr. MERRICK, Roxboro.
DEPARTMENT OF FINANCE AND ECONOMY: Mr. BARKER, 125 S. Fourth-st.
DEPARTMENT OF VETERINARY MEDICINE: Dr. HUNT, 1300 Spruce-st.
DEPARTMENT OF PHYSICAL EDUCATION: Mr. DICKSON, 32 S. Third-st.
DEPARTMENT OF BIOLOGY: Mr. MERRICK, Roxboro.
OFFICERS.*

WILLIAM PEPPER, M.D., LL.D.,
PROVOST OF THE UNIVERSITY.

E. OTIS KENDALL, LL.D.,
VICE-PROVOST.

Residence.

1811 Spruce-st.

3826 Locust-st.

JOSEPH LEIDY, M.D., LL.D.,
Professor of Anatomy.

HENRY H. SMITH, M.D.,
Emeritus Professor of Surgery.

FRANCIS A. JACKSON, A.M.,
Professor of the Latin Language and Literature.

E. OTIS KENDALL, LL.D.,
THOMAS A. SCOTT Professor of Mathematics.

J. PETER LESLEY, LL.D.,
Emeritus Professor of Geology and Mining.

P. PEMBERTON MORRIS, A.M., LL.D.,
Emeritus Professor of Practice, Pleading, and Evidence
at Law and in Equity.

RICHARD A. F. PENROSE, M.D., LL.D.,
Professor of Obstetrics and of the Diseases of Women and
Children.

ALFRED STILLÉ, M.D., LL.D.,
Emeritus Professor of the Theory and Practice of Medicine, and of Clinical Medicine.

HARRISON ALLEN, M.D.,
Emeritus Professor of Physiology.

HORATIO C. WOOD, M.D., LL.D.,
Professor of Materia Medica, Pharmacy, and General Therapeutics, and Clinical Professor of Nervous Diseases.

JOHN J. REESE, M.D.,
Professor of Medical Jurisprudence, including Toxicology.

* The names are given in the order of accession to office.
OFFICERS.

CHARLES J. STILLÉ, LL.D.,
Emeritus JOHN WELSH CENTENNIAL Professor of History and English Literature. 2201 St. James's Place.

OSWALD SEIDENSTICKER, Ph.D. (Göttingen),
Professor of the German Language and Literature. 309 S. 40th-st.

JOHN G. R. MC ELROY, A.M.,
Professor of Rhetoric and the English Language. 115 S. 20th-st.

J. I. CLARK HARE, LL.D.,
Professor of the Institutes of Law, including, inter alia, International, Constitutional, Commercial, and Civil Law. 118 S. 22d-st.

D. HAYES AGNEW, M.D., LL.D.,
JOHN RHEA BARTON Professor of Surgery, and Professor of Clinical Surgery. 1601 Walnut-st.

REV. ROBERT E. THOMPSON, A.M.,
JOHN WELSH CENTENNIAL Professor of History and English Literature. Jenkintown, P. O.

FREDERICK A. GENTH, Ph.D. (Marburg),
Professor of Chemistry and Mineralogy. 3937 Locust-st.

SAMUEL B. HOWELL, M.D.,
Professor of Mineralogy and Geology. 1513 Green-st.

GEORGE F. BARKER, M.D., Ph.B.,
Professor of Physics. 3909 Locust-st.

E. COPPÉE MITCHELL, LL.D.,
Professor of the Law of Real Estate and Conveyancing and of Equity Jurisprudence. 518 Walnut-st.

LEWIS M. HAUPUT, A.M., C.E.,
Professor of Civil Engineering. University.

WILLIAM PEPPER, M.D., LL.D.,
Professor of the Theory and Practice of Medicine and of Clinical Medicine. 1811 Spruce-st.

WILLIAM GOODELL, M.D.,
Professor of Clinical Gynecology. 500 N. 20th-st.

WILLIAM F. NORRIS, M.D.,
Clinical Professor of Diseases of the Eye. 1526 Locust-st.

GEORGE STRAWBRIDGE, M.D.,
Clinical Professor of Diseases of the Ear. 1500 Walnut-st.

JAMES PARSONS, A.M.,
Professor of the Law of Personal Relations and Personal Property. 1534 Locust-st.

THOMAS W. RICHARDS, A.M.,
Professor of Drawing and Architecture. 4822 Fairmount Ave.
GEORGE A. Koenig, Ph.D. (Heidelberg),
Professor of Mineralogy and Metallurgy. 3207 Summer-st.

Samuel P. Sadtler, Ph.D. (Gottingen),
Assistant Professor of Chemistry. 204 N. 34th-st.

James Tyson, M.D.,
Professor of General Pathology and Morbid Anatomy. 1506 Spruce-st.

Louis A. Duhring, M.D.,
Clinical Professor of Skin Diseases. 1417 Spruce-st.

Hugh A. Clarke, Mus. Doc.,
Professor of the Science of Music. 223 S. 38th-st.

Frederick A. Muhlenberg, D.D.,
Professor of the Greek Language and Literature. 4307 Walnut-st.

Joseph T. Rothrock, M.D., B.S.,
Professor of Botany. West Chester, Pa.

William D. Marks, Ph.B., C.E.,
Whitney Professor of Dynamical Engineering. 4304 Walnut-st.

Theodore G. Wormley, M.D., LL.D.,
Professor of Chemistry and Toxicology. University.

John Ashhurst, Jr., M.D.,
Professor of Clinical Surgery. 2000 W. De Lancey Place.

Otis H. Kendall, A.M., Ph.D.,
Assistant Professor of Mathematics. 3826 Locust-st.

*Joseph G. Richardson, M.D.,
Professor of Hygiene. 3238 Chestnut-st.

Charles J. Essig, M.D., D.D.S.,
Professor of Mechanical Dentistry and Metallurgy. 1700 Locust-st.

Edwin T. Darby, M.D., D.D.S.,
Professor of Operative Dentistry and Dental Histology. 4000 Chestnut-st.

Morton W. Easton, Ph.D.,
Professor of Comparative Phitology. 224 S. 43d-st.

James Truman, D.D.S.,
Professor of Dental Pathology, Therapeutics, and Materia Medica. 3249 Chestnut-st.

Frederick A. Genth, Jr., M.S.,
Assistant Professor of Chemistry. 4014 Chestnut-st.

Albert S. Bolles, Ph.D.,
Professor of Mercantile Law and Practice. Aldine Hotel.

Rush Shippen Huidekoper, M.D., V.S. (Alfort),
Professor of Veterinary Anatomy and Pathology. 111 S. 20th-st.

Edmund J. James, Ph.D. (Halle),
Professor of Finance and Administration. 3718 Locust st.

* Deceased, Nov. 14, 1886.
<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>JOHN BACH McMaster, A.M.</td>
<td>Professor of <em>American History</em></td>
<td>University.</td>
</tr>
<tr>
<td>GEORGE TUCKER Bispham, A.M.</td>
<td>Professor of <em>Practice, Pleading, and Evidence at Law and in Equity</em></td>
<td>402 Walnut-st.</td>
</tr>
<tr>
<td>ROBERT MEADE Smith, M.D.</td>
<td>Professor of <em>Comparative Physiology</em></td>
<td>332 S. 21st-st.</td>
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<tr>
<td>HORACE JAYNE, M.D.</td>
<td>Professor of <em>Vertebrate Morphology</em></td>
<td>1826 Chestnut-st.</td>
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<tr>
<td>WILLIAM OSLER, M.D.</td>
<td>Professor of <em>Clinical Medicine</em></td>
<td>131 S. 15th-st.</td>
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<tr>
<td>EDWARD T. Bruen, M.D.</td>
<td>Assistant Professor of <em>Physical Diagnosis</em></td>
<td>1814 Rittenhouse Square</td>
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<tr>
<td>LOUIS STARR, M.D.</td>
<td>Clinical Professor of <em>Diseases of Children</em></td>
<td>1922 Spruce-st.</td>
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<tr>
<td>WILLIAM L. Zuill, M.D., D.V.S.</td>
<td>Professor of <em>Surgical Pathology</em></td>
<td>University.</td>
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<tr>
<td>REV. GEORGE S. FULLERTON, A.M., B.D.</td>
<td>Adjunct Professor of <em>Intellectual and Moral Philosophy</em></td>
<td>University.</td>
</tr>
<tr>
<td>EDWARD T. Reichert, M.D.</td>
<td>Professor of <em>Physiology</em></td>
<td>University.</td>
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<tr>
<td>J. WILLIAM WHITE, M.D.</td>
<td>Professor of <em>Genito-Urinary Diseases</em>, Director of <em>Physical Education</em>, Demonstrator of Surgery, and Assistant Surgeon in University Hospital, 1810 Rittenhouse Square</td>
<td></td>
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<tr>
<td>REV. JOHN P. Peters, Ph.D.</td>
<td>Professor of <em>Hebrew</em></td>
<td>4408 Chestnut-st.</td>
</tr>
<tr>
<td>JOHN A. Ryder</td>
<td>Professor of <em>Comparative Embryology</em></td>
<td>University.</td>
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<td>DANIEL G. Brinton, M.D.</td>
<td>Professor of <em>American Archaeology and Linguistics</em></td>
<td>115 S. 7th-st.</td>
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<tr>
<td>HERMANN V. Hilprecht, Ph.D.</td>
<td>Professor of <em>Assyriology</em></td>
<td>1031 Walnut-st.</td>
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<td>N. Archer Randolph, M.D.</td>
<td>Professor of <em>Hygiene</em></td>
<td>1004 Walnut-st.</td>
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<td>WILLIAM POWELL Wilson, M.D.</td>
<td>Professor of <em>Anatomy and Physiology of Plants</em></td>
<td>University.</td>
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<tr>
<td>MORRIS JASTROW, Jr., Ph.D.</td>
<td>Professor of <em>Arabic and Rabbinical Literature</em></td>
<td>925 N. 8th-st.</td>
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</table>
ROLAND G. CURTIN, M.D.,
Lecturer on *Physical Diagnosis*, and Asst. Physician in
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GRADUATE STUDENTS.

POST SENIORS.

Course in Science.

<table>
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<th>Address</th>
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<td>Mount Holly, N.J.</td>
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<td>Leon Kraft</td>
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<td>Philadelphia</td>
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<td>John Williamson Ziegler, B.S.</td>
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CITY ADDRESS.

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SENIORS.

Course in the Arts.

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<td>William Allen, Jr.</td>
<td>Philadelphia</td>
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<tr>
<td>David Werner Amram</td>
<td>do.</td>
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<tr>
<td>William Sinclair Ashbrook</td>
<td>do.</td>
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<tr>
<td>John Ashhurst, 3d</td>
<td>do.</td>
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<tr>
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<td>Chestnut Hill</td>
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<td>Edwards Sanford Dunn</td>
<td>Philadelphia</td>
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<tr>
<td>George Harrison Frazier</td>
<td>do.</td>
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<tr>
<td>Fred. Wm. Wilson Graham</td>
<td>do.</td>
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<tr>
<td>John McArthur Harris</td>
<td>Germantown</td>
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<tr>
<td>James Haworth</td>
<td>West Philadelphia</td>
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<td>Oliver Huckle</td>
<td>Frankford</td>
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<td>N.W. Cor. Penn &amp; Allen</td>
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<tr>
<td>Name</td>
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<tr>
<td>Joseph Siegmund Levin</td>
<td>Philadelphia</td>
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<td>do.</td>
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<td>Walter Biddle Lowry</td>
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<td>Christopher Magee, Jr.</td>
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<td>Germantown</td>
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<td>Hatboro, Pa.</td>
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3. Albert Lee Magilton, do. do.
3. George Leslie Martin, do. do.
4. David Pepper, Jr., do. do.
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Ernest de Fremery Miel, do. Ardrossan.
Samuel Geo. Morton Montgomery, West Chester, Pa., Ardrossan.
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<th>City</th>
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</tr>
</thead>
<tbody>
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<td>2937 Richmond-st.</td>
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<td>Horace Clark Richards,</td>
<td>do.</td>
<td>1615 Girard Ave.</td>
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<tr>
<td>John Duncan Ernest Spaeth,</td>
<td>do.</td>
<td>325 S. 16th-st.</td>
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<tr>
<td>Carrow Thibault,</td>
<td>Germantown,</td>
<td>Tulpehocken-st.</td>
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<td>3. George Brodhead Harris,</td>
<td>Germantown,</td>
<td>325 S. 16th-st.</td>
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<td>1. Oliver Hough,</td>
<td>do.</td>
<td>4226 Walnut-st.</td>
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<td>Rome, Italy,</td>
<td>1325 Franklin-st.</td>
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<td>Chester, Pa.,</td>
<td>W. Orthodox-st.</td>
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<tr>
<td>4. Isaac Starr, Jr.,</td>
<td>do.</td>
<td>3321 Walnut-st.</td>
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<td>5. Maurice Davidson Wilt,</td>
<td>do.</td>
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<tr>
<td>Lawrence Savery Smith,</td>
<td>Philadelphia,</td>
<td>1419 Walnut-st.</td>
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<tr>
<td>George Clay Bowker,</td>
<td>Manayunk,</td>
<td>4365 Main-st.</td>
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<tr>
<td>Benjamin Wilfrid Fleisher,</td>
<td>Philadelphia,</td>
<td>2131 Green-st.</td>
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<td>Franklin Derstine Hartzell,</td>
<td>Sellersville, Pa.</td>
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<td>Lightner Witmer,</td>
<td>Philadelphia,</td>
<td>1734 Park Ave.</td>
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<tr>
<td><strong>COURSE IN PHILOSOPHY.</strong></td>
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<td><strong>COURSE IN THE WHARTON SCHOOL.</strong></td>
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<tr>
<td>William Clarence Arrison,</td>
<td>Frankford,</td>
<td>33 E. Orthodox-st.</td>
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<tr>
<td>Frederic Robeson Baker,</td>
<td>do.</td>
<td>1414 Arch-st.</td>
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<tr>
<td>William Alexander Bell,</td>
<td>New York City,</td>
<td>717 S. 10th-st.</td>
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<tr>
<td>Leon Symonety Dexter,</td>
<td>do.</td>
<td>437 N. 32d-st.</td>
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<tr>
<td>Conway Dillingham,</td>
<td>West Chester, Pa.</td>
<td>1435 Girard Ave.</td>
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<tr>
<td>Sherborne William Dougherty,</td>
<td>Philadelphia,</td>
<td>1409 Locust-st.</td>
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<tr>
<td>William Innes Forbes,</td>
<td>do.</td>
<td>101 S. Front-st.</td>
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<tr>
<td>Charles Harrison Frazier,</td>
<td>do.</td>
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<tr>
<td>Dallett Pugnet,</td>
<td>Bryn Mawr, Pa.</td>
<td>1509 Walnut-st.</td>
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<tr>
<td>John White Geary,</td>
<td>Philadelphia,</td>
<td>2213 Walnut-st.</td>
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<tr>
<td>Samuel Moore Hepburn,</td>
<td>Carlisle, Pa.,</td>
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Robert Carmer Hill, Philadelphia, 129 N. 18th-st.
Edwin Isaac Hyneman, Andalusia, Pa.
Charles King Lennig, do.
Dickinson Sergeant Miller, Philadelphia, 1015 Green-st.
James Clayton Mitchell, do.
Rufus Palen, Pennsylvania, 1309 Pine-st.
Charles Peabody, Germantown, 1716 N. 16th-st.
Elliston Joseph Perot, do.
David Bowen Salter, Wayne & Walnut Lane.
Lloyd Mifflin Scott, Germantown Ave.
Walter Scott, 1219 Pine-st.
Franklin Nelson Strader, 1813 De Lancey Place.
Edmund Carter Taylor, do.
William Macpherson Willbank, do.
William Moodie Yeomans, do.

COURSE IN SCIENCE.
Franklin Bache, Philadelphia, 3923 Aspen-st.
Timothy Raymond Beyer, Germantown, 1420 N. 16th-st.
Herbert Hart Boyd, Philadelphia, 1421 Arch-st.
George Brooke, Jr., do.
Oscar Pearl Chamberlain, 231 S. 42d-st.
Howard Crawley, do.
Francis Macomb Cresson, do.
Christian Frederic Fisher, 3912 Chestnut-st.
Thomas Willis Fleming, Mount Holly, N. J.
William Edwin Gaunt, Jr., 3928 Walnut-st.
William Guggenheim, 3913 Chestnut-st.
George Henderson, 2208 Venango-st.
George Hammeken Hill, Clapier-st.
Thomas Wilkins Hulme, do.
Mount Holly, N. J.
Charles Barton Keen, do.
Rudolph Howard Klauder, 2208 Venango-st.
Edward Christman Knight, Clapier-st.
Samuel McCune Lindsay, do.
Edward McClellan Menah, 3928 Walnut-st.
William McClellan Menah, 3913 Chestnut-st.
Augustus Appleton Miller, 2208 Venango-st.
Edward Warloch Mumford, Clapier-st.
Geo. Whitfield Taylor Miller, do.
Ellis Paxson Oberholtzer, 623 N. 13th-st.
David Pacheco, 1401 N. 17th-st.
William Albert Paris, 5122 Green-st.
Edward Asa Partridge, Norristown, Pa.
Walter Phillips, 1310 Walnut-st.
Alfred Newlin Seal, 1907 Green-st.
Daniel Bussier Shumway, 1738 Sydenham-st.
Albert Haseltine Smith, 450 Marshall-st.
Robert Stulb, 1418 Bowier-st.
Archibald Grahm Thomson, 1740 Green-st.
Nathan Young Worrall, 2005 Mt. Vernon-st.
Archibald Wright, 1804 Race-st.
COURSE IN PHILOSOPHY.

George Dana Boardman Darby, Philadelphia, 4000 Chestnut-st.

FRESHMEN.

COURSE IN THE ARTS.

Benjamin Curtis Allen, Philadelphia, 3319 Walnut-st.
John Antrobus, do. 2512 Hagert-st.
Lewis Audenried, do. 1823 Walnut-st.
John Barker, do. 4300 Spruce-st.
William Wilson Barr, Jr., do. 1425 Christian-st.
John Hill Brinton, do. 1423 Spruce-st.
Herbert Charles Brown, do. 3327 Catharine-st.
William Herbert Burk, Clarksboro, N. J. 3601 Walnut-st.
Robert Bealle Burke, Philadelphia, 1908 Spring-Garden-st.
do. 265 S. 4th-st.
Joseph Warren Coulston, Jr., Roxborough, Pa. 1416 N. 11th-st.
Trevanian Borda Dallas, Philadelphia, 1929 Christian-st.
do. E. Walnut Lane.
James Whalley Diggles, Germantown, 4626 Main-st.
Robert Isaac Gamon, Germantown, 520 Walnut-st.
Henry Riley Gurney, Jr., Burlington, N. J. 3928 Walnut-st.
Henry Lincoln Haines, Philadelphia, 4309 Spruce-st.
Tatlow Jackson, Jr., Roxborough, Pa. 325 S. 12th-st.
Henry Leopold Jefferys, Philadelphia, 2106 Chestnut-st.
Henry Ashton Little, Wallingford, Pa. 1633 Locust-st.
William Henry Lloyd, Jr., Roxborough, Pa. 2316 St. Alban's Place.
James Hartley Merrick, Philadelphia, 1717 Carpenter-st.
Joseph Mac Gregor Mitcheson, Roxborough, Pa. 325 S. 17th-st.
Frederick Brooke Neilson, Philadelphia, 107 S. 21st-st.
do. 1935 Turner-st.
do. 1303 Spruce-st.
Hugh Walker Ogden, Portland, Me. 3505 Baring-st.
William Hahn Patterson, Philadelphia, 1633 Locust-st.
do. 2316 St. Alban's Place.
Josiah Harmar Penniman, Philadelphia, 1717 Carpenter-st.
do. 325 S. 17th-st.
Robert McClellan Ramsey, 107 S. 21st-st.
do. 1935 Turner-st.
George David Rosengarten, Jr., 4025 Walnut-st.
do. 1303 Spruce-st.
John Gilbert Stoddart, 3505 Baring-st.
do. 886 N. 6th-st.
William Henry Stubblebine, 1303 Spruce-st.
do. 886 N. 6th-st.
Howard Hungerford Sypher, 3505 Baring-st.
do. 528 Linden-st.
William Henry Trotter, Jr., Roxborough, Pa. 1814 Park Ave.
do. 1809 N. Broad-st.
Robert Reineck Truitt, 1512 Girard-Ave.
do. 36th & Powelton Ave.
Horace Andrews Walton, 36th & Powelton Ave.

Course in Philosophy.
Benjamin Lease Crozer Griffith, Upland, Pa.

The Course in Music.

Second Year.

First Year.
COLLEGE DEPARTMENT.

SPECIAL STUDENTS.

Towne Scientific School.

1. Louis Joseph Mátos, do. 3943 Fairmount Ave.

1. Daniel Byrne, do.
1. Frank Herron Carothers, do.
3. Charles Condit Clifford, do.
5. Crawford Coates, do.
1. Paul Farnum, Media, Pa.
1. Emlen Trenchard Hall, Philadelphia, do.
1. John William Thomas, do.

4. Rudolph Boericke, do.
1. Walter Nadal Boyer, do.
1. Samuel Francis DuPont, do.
3. Charles Samuel Gawthrop, Wilmington, Del.
3. William George Houston, do. 814 N. 21st-st.
1. Albert Sauveur, do. 233 S. 13th-st.
3. Alfred Varley Sims, do. 3300 Locust-st.
1. Walter Raignel Stroud, do. 3709 Woodland Ave.
1. Charles Tindel, Frankford, 236 E. Orthodox-st.

Wharton School of Finance and Economy.

Norton Buel Young, Philadelphia, Chestnut Hill.
Frederick Black, Black’s Island, Pa.
Samuel Kahn Loucheim, Philadelphia, 711 N. 6th-st.
David Emanuel Simon, do. 826 N. 5th-st.
Edward Bright Tustin, do. 3310 Walnut-st.
Charles Sturgis Wood.

Partial Students.

Department of Arts.

Edward Alden Miller, Philadelphia, 1309 Pine-st.
Frazer Ashhurst, do. 1830 Spruce-st.
Stuart Douglas Lansing, Burlington, N. J.
John David Samuel, Philadelphia, 1809 Pine-st.
Matthew James Hyndman, Philadelphia, 1529 N. 22d-st.
James Hall Oliver, do. 1031 Arch-st.

Towne Scientific School.


Tamio Hayashi, Tokio, Japan.
Selden Lord Walkley, Philadelphia.

Wharton School of Finance and Economy.
William Burton Pratt, Milford, Del.
William Townsend Wright, Philadelphia, 3818 Chestnut-st.

George Grierson Divine, do. 53d and Berks-st.
George Stuart Patterson, do. Chestnut Hill.
Elijah Hollingsworth Siter, do. 1528 Chestnut-st.

Undergraduate Course in Philosophy.
Julian Hiland Dewey, Philadelphia, 1537 Centennial Ave.
John Alexander McIlwain, do. 2044 N. 7th-st.
Howard Mellor, do. 460 Marshall-st.

Summary of College Department.

<table>
<thead>
<tr>
<th>Arts.</th>
<th>Science</th>
<th>Philosophy</th>
<th>Finance</th>
<th>Music</th>
<th>Totals</th>
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<tr>
<td>Post-Seniors,</td>
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<td>Seniors,</td>
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<td>Sophomores,</td>
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<td>Freshmen,</td>
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<td>Special Students,</td>
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<td>Partial Students,</td>
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<td>3</td>
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<tr>
<td><strong>Totals</strong>,</td>
<td><strong>116</strong></td>
<td><strong>198</strong></td>
<td><strong>10</strong></td>
<td><strong>32</strong></td>
<td><strong>361</strong></td>
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</table>
The respective Faculties, composing the College Faculty, conduct the following Courses of study: the Course in Arts, the Courses in the Towne Scientific School, the Course in the Wharton School, a Course in Philosophy for Undergraduates, and the Course in Music.

These courses permit a student to take, in the Freshman and Sophomore years, either the classical or the modern languages, with English, History, Mathematics, etc., and to elect at the close of the Sophomore Year, between the further Courses in Arts, Philosophy, and Finance and Economy. Students who wish to take any one of the five Technical Courses in the Towne Scientific School, must have taken the Scientific Course (pp. 41, 42) in the Freshman and Sophomore Years.

The Degree of Bachelor of Arts (A.B.) is given on graduation not only to students in the Department of Arts, but also to those students in the Wharton School and in the Course of Philosophy for Undergraduates who have passed the first two years of the Department of Arts.

The Degree of Bachelor of Science (B.S.) is given to students in the Towne Scientific School at the end of the Senior Year; and the technical degree of Mining Engineer, Civil Engineer, Mechanical Engineer, Practical Chemist and Architect, at the end of the Post-Senior Year. Alumni of the Towne Scientific School who hold a Bachelor's degree may receive the technical degree corresponding to the Special Course, on completing satisfactorily at any time the studies of the Post Senior Year.

The Degree of Bachelor of Philosophy (Ph.B.) is given on graduation to students who have pursued the full Course of the Wharton School, and also to those who, graduating in this School, have passed the Freshman and Sophomore Years in the Towne Scientific School.

PUBLIC LECTURES.

The following courses of Lectures given in this Department are open to the public:—

On German Literature, by Professor Seidensticker.
On the Older English Classics, by Professor McElroy.*
On Social Science, by Professor Thompson.
On Physics and Astronomical Physics, by Professor Barker.
On Inorganic and Organic Chemistry, by Professor Sadtlers.
On Goethe and his Works, by Professor James.
On the “Application of the Principles of Art to every-day Life,” by Henry Blackburn, of London.
On “Roman Archaeology,” by Professor Lanciani, of Rome.

* This course consists chiefly of Readings, with critical commentary.

On "Egypt and the Bible," by the Rev. Professor Hilprecht.

On "American Archaeology," by Professor Brinon.

Instruction in Analytical Chemistry, including practical work in the laboratory, under Professor Genth.

The fee for each course is five dollars; for the instruction in Analytical Chemistry, two hundred dollars a year.

Application for admission or for further information respecting lectures or instruction may be made to the Dean, or to the Secretary, of any of the Faculties.

FEES.

For College Fees, Expenses, Boarding, etc., see page 160.

SCHOLARSHIPS.

I. THE PENN SCHOLARSHIPS, two in number, are filled by the Governor of the State from time to time as vacancies occur. They exist by virtue of a privilege reserved by Thomas Penn, Proprietary of Pennsylvania.

II. Certain Free Scholarships (about five in each class) are granted to deserving and needy students in this Department, under the following regulations:

Each candidate must present written testimonials, as to their deserts and needs, to the Dean of the Faculty, at or before the entrance-examinations in June or September. He must pass these examinations, or, in case he is already in the classes, the annual examinations; and is then recommended for admission to the committee of the Board of Trustees. The scholarships are granted for one year only.

III. THE PUBLIC SCHOOL PRIZE SCHOLARSHIPS.—Under a contract with the City of Philadelphia, Fifty Free Scholarships have been permanently established in the College Department of the University for the benefit of pupils from the Public Schools of the city. The candidates for these scholarships are sent by the Board of Public Education to the examinations for admission in June. They are examined at the same hours and on the same subjects as other candidates, but not necessarily on the same papers. The scholarships, according to the number of vacancies, are bestowed upon those who reach the highest grade in their examination, provided that grade be at least sixty-five per cent.

Of these, THE BENJAMIN FRANKLIN SCHOLARSHIPS, three in number, and the SAMUEL V. MERRICK SCHOLARSHIP have been endowed.

IV. The object of the income of the BLOOMFIELD MOORE FUND is to
enable women (not exceeding six in any year) who are teaching, or who propose to teach, to receive free instruction in all departments to which women are admitted.

**ANNUAL EXAMINATIONS**

For promotion are held in January and June; for degrees, in May. At the end of each term, students who attain a certain standing are classed as "Distinguished." Students whose term-averages show them to be deficient in any of their studies, are conditionally attached to their class, until the deficiency has been fully made up. For persistent neglect of study, great irregularity of attendance, or inability to keep up with the class, students are dropped from the rolls.

**PRIZES FOR THIS YEAR.**

I. **THE FACULTY PRIZES:**

1. A Prize of twenty dollars for the best Essay in Intellectual and Moral Philosophy by a member of the Junior Class. Subject: *The Platonic Ideas*.

2. A Prize of twenty dollars for the best examination on the *Oration of Aeschines against Ctesiphon* by the members of the Junior Class.

3. A prize of ten dollars for the best examination by a member of the Freshman Class on Greek Prose Composition with the Accents. The examination will be on *Arnold's Greek Prose Composition*, from the Relative to the end of the book.

4. A first prize of fifteen dollars, and a second prize of ten dollars, for the best examination on the *Lectures on Quaternions* given to the Voluntary Junior Class.

5. A prize of thirty dollars for the best Essay in History and English Literature by a member of the Senior Class. Subject: *The Irish Union of 1801*.

6. A prize of twenty dollars for the best Essay by a member of the Junior Class. Subject: *The 'In Memoriam' of Alfred Tennyson*.

7. A prize of fifteen dollars for the best Declamation by a member of the Sophomore Class.

8. A first prize of fifteen dollars, and a second prize of ten dollars, for the best special examinations in the Elements of Latin Prose Composition, by Freshmen on entering College. The examinations must reach a satisfactory standard of excellence. In 1886, they will be upon the first fifty-five exercises in *Arnold's Latin Prose Composition*. Certificates will be presented to all competitors whose examinations reach a satisfactory standard.

9. Two prizes of the same value as those offered for Latin Prose Composition for the best special examinations in Greek Prose Composition by
Freshmen on entering College. In 1886, the examinations will be on *Jones's Greek Exercises*, with the Accents.

10. A prize of twenty dollars to a member of the Scientific Classes for improvement in Drawing, and general good conduct and application.

II. **The Henry Reed Prize**, founded by the Alumni of the University, for the best English Essay by a member of the Senior Class, entitles the successful competitor to one year's interest on six hundred dollars, and to a Diploma of Merit. The Essay must be handed to the Dean before the first day of May. Subject: *The Love of Nature as an Element in Poetry, considered especially in regard to the English Literature of the Eighteenth Century.*

Professor Reed on this subject says: 'No great poet, perhaps I may say no great writer is without the deep sense of the beauty and glory of the universe, the earth that is trod on, the heavens that are gazed at. * * * If it can be shown, as it undoubtedly can, that thoughtful genial communion with Nature is an accompaniment of all poetry of the highest order, in all ages, surely we may infer that a literary era which is deficient in this element is the era of a lower literature.'—Reed's *English Literature*, p. 217. See *Introduction to Wordsworth's Lyrical Ballads; Reed's English Literature; Harrison's Choice of Books and other Essays (A Plea for the Eighteenth Century); Perry's English Literature of the Eighteenth Century; Taine's English Literature; Wilson's Recreations of Christopher North.* (See passim for criticism of the poetry of the Eighteenth Century and that of the early part of the Nineteenth.)

III. **The Society of the Alumni Prizes:**

1. A prize for the best Latin Essay, by a member of the graduating class. It entitles the successful competitor to one year's interest on nine hundred dollars. The essays must be handed to the Dean by the first day of May, for transmission to a Committee of Examiners appointed by the Society.

2. A prize for the best Original Declamation by a member of the Junior Class. It entitles the successful competitor to one year's interest on three hundred dollars.

IV. A prize, founded by **Henry La Barre Jayne**, of the Class of 1879, for the best English Composition by a member of the Freshman Class. It entitles the successful competitor to one year's interest on two hundred dollars. Subject: *Hugh Swinton Legaré*.

V. **The Joseph Warner Yardley Prize**, founded by the class of 1877, in memory of their classmate, for the best Thesis in Political Economy by a member of the Senior Class. It entitles the successful competitor to one year's interest on five hundred dollars, and to an accompanying Diploma of Merit. Subject: *Profit-Sharing as a Solution of the Labor Problem.*
VI. A prize founded by D. Van Nostrand, Esq., for the member of the Junior Class in Civil Engineering who attains the highest general average of scholarship. It consists of certain technical works.

SOCIETIES.

The Philomathean (Literary) Society, founded in 1813, holds meetings weekly during the college year, in its rooms at the University. All undergraduates of the College Department are eligible to membership. The order of exercises includes orations, essays, and a debate, besides the usual general business, which affords excellent practice in the principles of parliamentary law. A large and valuable library is owned by the Society.

The Scientific Society holds weekly meetings at its rooms in the University throughout the college year. All undergraduates of the University are eligible to membership. Scientific essays are read, discussions are held, with a general comparison of observations and experiments. Besides a considerable scientific library, large collections of minerals, fossils, ornithological specimens, and other objects of scientific interest are owned by the Society. A course of lectures, under the management of the Society, is delivered annually.

Academy of Natural Sciences.

Through the courtesy of the Curators of the Academy of Natural Sciences (S. W. Corner of 19th and Race sts.), students of the University are admitted free of charge to its very extensive museum on exhibition of a card which can be obtained from the Secretary of the Trustees; and permission to use the Museum for special study, or to consult the library of 30,000 volumes on Natural History can be obtained by application to the Curators.

THE COURSE IN ARTS.

ENTRANCE EXAMINATION.

For the Freshman Class, candidates are examined in—

Greek.—Greek Grammar. Arnold's Greek Prose Composition (to the end of Exercise 24). Xenophon (Four Books of the Anabasis.) Homer (First three Books of the Iliad).


subject to be taken from the last-named of the following books, all of which must have been read by each candidate, viz: Froude's Essay on Education (Short Studies, 2d Series); Scott's Marmion; Alexander Smith's On the Writing of Essays, and A Shelf in My Book-case (Dream-thorpe, pp. 21-45, and 187-210; and Kingsley's Hereward, The Last of the English.

The subject of composition in 1888 will be taken from the last-named of the following works, all of which must have been read by each candidate, viz: Alexander Smith's On the Writing of Essays and A Shelf in My Book-case (Dreamthorpe, pp. 21-45, and 187-210); Kingsley's Hereward, The Last of the English; Shakespeare's As You Like It; and Scott's Rob Roy.

GEOGRAPHY.—Ancient and Modern Geography. (Mitchell's New Ancient Geography and Ancient Atlas are recommended.)

HISTORY.—Ancient History (Freeman's General Sketch of History, Chaps. I.-VI.). History of the United States. (Higginson, Scudder, or Johnston is suggested.)


For advanced standing, candidates must pass satisfactorily in all the subjects pursued by the lower class or classes.

The examinations are held in June and September. Circulars stating the days and the subjects of examination for each day can be had, after April 1st, on application to Mr. J. B. Webster, Clerk to the College Faculty.

COURSE OF STUDY.

FRESHMAN CLASS.

GREEK.—Xenophon's Hellenics. Æschylus. Arnold's Greek Prose Composition, completed.

LATIN.—Selections from Livy, and Horace's Satires.

ENGLISH.—Lectures on Prose Composition, with Illustrative Readings from English prose authors, and Compositions on Themes selected from these Readings. Rhetoric (McElroy's Structure of English Prose, Part First.)

HISTORY.—Freeman's General Sketch of History.


SOPHOMORE CLASS.

GREEK.—Thucydides (Sicilian Expedition). Euripides or Aristophanes. Greek Composition.

LATIN.—Tacitus (Agricola, Germania, or Annals). Cicero (De Senectute or De Officiis). Horace (Selected Odes).

COURSE IN ARTS.

Mathematics.—Bowser's *Analytical Geometry*. Elementary, Differential and Integral Calculus.

Physics.—Mechanics.

Chemistry.—Inorganic and Organic Chemistry (*Experimental Lectures, with Examinations*).

German.—(During the Second Term) Whitney's *Grammar*. Grimm's *Märchen*.

**Junior Class.**

Required,—

Logic.—Jevons's *Lessons in Logic*; Ethics, Whewell's *Elements*; Murray's *Outlines of Hamilton's Philosophy*; Lectures.

Physics.—Sound, Heat, Light, Electricity. (Stewart's *Physics*.)

English.—Six Compositions. Two Declamations.

History.—History of English Literature.

Elective,*—

Greek.—Sophocles. Lysias or Isocrates. Theocritus or Pindar.

Latin.—Selections from Juvenal. Cicero (*De Officiis, De Finibus, or De Amicitia*). Horace (*Epistles*). Reading at Sight.


French.—Corneille and Racine.

History.—Johnston's *American Politics* (with a critical study of Pamphlets and Political Documents).

Optional,—

English.—Critical Study of English Prose Authors, with Special Reference to Composition two hours a week.

Senior Class.

Required,—


History.—Lectures on the Philosophy of History, and on Modern History since 1789.

English.—Five compositions. Two Declamations.

Social Science.—International Law (*Lectures*). Thompson's *Elements of Political Economy*.

Elective,—

Astronomy.—Newcomb's Astronomy.

Greek.—Demosthenes de Corond. Plato (*Apology* and *Crito, or Phædo*).

Latin.—Cicero (*Tusculane*), or Lucretius (*Selections*). Horace (*Ars Poetica*). Reading at Sight.

* In the Junior and Senior years, Greek is elective with German; Latin with French; and Pure Mathematics with History and English.
THE COURSES
IN THE
TOWNE SCIENTIFIC SCHOOL.

The object of this School (named from its largest benefactor, John Henry Towne) is to give a thorough scientific education with technical training.

The studies of the Freshman and Sophomore years are nearly identical with those of the Department of Arts, except that for Latin and Greek are substituted French, and German, and additional Mathematics.

The Technical Courses of Instruction cover three years, termed Junior, Senior, and Post-Senior; of these, the last is in the main practical.

The Courses are:
I. CHEMISTRY AND MINERALOGY.
II. METALLURGY AND MINING.
III. CIVIL ENGINEERING.

IV. DYNAMICAL ENGINEERING.

V. MECHANICAL DRAWING AND ARCHITECTURE.

Duly authenticated graduates of other Colleges are admitted without examination to any of the Technical Courses of the Towne School, upon giving evidence that their studies have been such as to fit them to pursue the particular course for which they apply. Candidates, not graduates of other Colleges, must pass a satisfactory examination in the studies of the previous years.

ENTRANCE EXAMINATIONS.

For the FRESHMAN CLASS candidates are examined in the following subjects:


LATIN (elective with either French or German).—Caesar, Commentaries, 3 books; Virgil, Aeneid, 3 books; Latin Prose Composition.

ENGLISH.—Grammar. (Abbott's How to Parse, Whitney's Essentials of English Grammar, or Murray's Advanced Lessons in English Composition, Analysis, and Grammar indicate the amount required.) Etymology (McElroy's Essential Lessons in English Etymology shows the ground that will be covered by this Examination). Composition. Abbott's How to Write Clearly (first sixty-three pages). An essay on a subject to be taken from the last-named of the following books, all of which must have been read by each candidate, viz.: Froude's Essay on Education (Short Studies, 2d Series); Scott's Marmion; Alexander Smith's On the Writing of Essays, and A Shelf in My Book-case (Dreamthorpe, pp. 21-45, and 187-210); and Kingsley's Hereward, The Last of the English.

The subject of composition in 1888 will be taken from the last-named of the following works, all of which must have been read by each candidate, viz.: Alexander Smith's On the Writing of Essays and A Shelf in My Book-case (Dreamthorpe, pp. 21-45, and 187-210), and Kingsley's Hereward, the Last of the English. Shakespeare's As You Like It; and Scott's Rob Roy.

FRENCH.—Harrison's French Syntax (first forty-five Practical Exercises) and Télémaque (Three Books).


GEOGRAPHY.—Modern Geography.

HISTORY.—Ancient History (Freeman's General Sketch of History, Chaps. I.-VII.). History of the United States. (Higginson, Scudder or Johnston is suggested.)

COURSE OF STUDY.

FRESHMAN YEAR.

DRAWING.—Geometrical and Isometrical Drawing (Minifie), and Drawing

HISTORY.—Myers' Medieval and Modern History.

ENGLISH.—Lectures on Prose Composition with Illustrative Readings from
English Prose authors, and Compositions on Themes selected from
these Readings. Rhetoric (McElroy's Structure of English Prose. Part
First).

GERMAN.—Review of Grammar. Whitney's German Reader. Hodges's
Course of Scientific German.

FRENCH.—Harrison's French Syntax, Modern French Prose. Bócher's
French Plays.

SOPHOMORE YEAR.


PHYSICS.—Mechanics.

CHEMISTRY.—Inorganic Chemistry (Experimental Lectures).

DRAWING.—Linear Perspective. Geometric and Isometric Drawing—
Projection of Shadows. Architectural Detail and Ornament. Gothic
Tracery. Shading in India Ink. Free Hand Drawing.

ENGLISH.—Rhetoric completed. Lounsbury's English Language. Six
Compositions. Two Declamations.

GERMAN.—Selections from Virchow and Hotzendorff's Wissenschaftliche
Vorträge. Practical Exercises. Specimens of the modern Drama.

FRENCH.—Modern Prose (continued). Molière.

TECHNICAL COURSES.

JUNIOR YEAR.

STUDIES PURSUED BY THE WHOLE CLASS.

LOGIC.—Jevons's Lectures on Logic. Ethics.

HISTORY.—Lectures on Modern History, in connection with Wilhelm
Müller's Political History of Present Times as a text-book.

PHYSICS.—Sound, Heat, Light, and Electricity.

GERMAN.—Scientific Essays.

FRENCH.—Racine or Corneille. Molière.

ENGLISH.—Critical Study of English Prose Writers, with Special Refer-
ence to Composition. Six Compositions. Two Declamations.

1. Studies pursued by the Chemical Section.

CHEMISTRY.—Laboratory Practice and Recitations. Douglass and Pres-
cott's Qualitative Analysis. Lectures on Organic Chemistry, begun in
Second Half-Year.


BOTANY.—Structure of Woods.
2. Studies pursued by the Metallurgical and Mining Section.

MINING.—Construction of parts of Mines, and of Mining machinery, from notes and sketches.

MINERALOGY.—Same as First section.

 GEOLOGY.—Lithology; Palaeontology of Protozoa, Anthozoa, and Echino-dermata.

SURVEYING.—The same as Third Section.

MATHEMATICS.—Differential and Integral Calculus.

3. Studies by the Civil Engineering Section.

MATHEMATICS.—Differential and Integral Calculus.

ENGINEERING.—Railroad Location. Spherical Projections, Shades, Shadows, and Perspective.

STATICS.—Roof and Bridge Trusses, and Merriman's Mechanics of Materials.

DRAWING.—Topographical Charts, in ink and colors. Details of frames, joints, etc.

ARCHITECTURE.—Classical Architecture.

SURVEYING.—Field Practice; including Chain Surveying, Use of Compass, Transit and Plane Table in measuring lines and areas, Traversing, Location of Roads, Drains, etc., on Topographical Charts. Recitations from Gillespie's Land and Higher Surveying, and Earthwork Formulae, Hydrographical, Mine, and Government Surveying.

CHEMISTRY.—Qualitative Analysis.

4. Studies pursued by the Dynamical Engineering Section.

MATHEMATICS.—Differential and Integral Calculus.

STATICS.—The application of the principles of Statics to Rigid Bodies. The Elasticity and Strength of Materials. Forms of uniform strength. Theory of Framed Structures. Stability of structures. Theory of the Arch. Strains in parts of mechanism. The Equilibrium and Pressure of fluids, as water, air, steam, etc. The equilibrium of fluids with other bodies; stability of vessels; determinations of specific gravity; use of Hydrometers, Manometers, Gauges, etc. The Equilibrium of Funicular Structures.

KINEMATICS.—Slide, Valve, and Link motions. General mathematical theory of Kinematics.

DRAWING.—Copies of bolts and nuts; riveting; gudgeons, pivots, axles, shafts, couplings, pillow-blocks; shaft-hangers, pulleys, sheaves and gear-wheels; connecting rods and cranks, working beams, crossheads pipe connections, valves, steam cylinders, pistons, stuffing-boxes glands, etc., etc.

5. Studies pursued by the Architectural Section.


MATHEMATICS.—Differential and Integral Calculus.

ENGINEERING.—Graphical Statics.

SENIOR YEAR.

STUDIES PURSUED BY THE WHOLE CLASS.

PHYSICAL SCIENCE.—Special Advanced Physics.

ASTRONOMY.—Newcomb's Astronomy.

ENGLISH.—Five Compositions. Two Declamations.

SOCIAL SCIENCE.—Thompson's Elements of Political Economy, and Lectures.


OPTIONAL.

ENGLISH.—English Poets from Chaucer to Tennyson. (Selected Readings to illustrate the Development of the Language.) Two hours a week.

1. Studies pursued by the Chemical Section.

QUALITATIVE ANALYSIS.—Examination of more or less complex substances. Detection of the rarer elements and organic constituents of bodies. Qualitative analysis by the blow-pipe, in connection with reactions in the humid way, for the rapid determination of minerals and ores. Use of the Spectroscope.

MINERALOGY.—The same as Second Section.

QUANTITATIVE ANALYSIS.—Lectures, Recitations, and Laboratory Practice in gravimetric and volumetric analysis. Assaying of Ores and Fuels.

APPLIED CHEMISTRY.—Instruction in the practical production of Salts, etc., in their greatest perfection and purity. Lectures.


THEORETICAL CHEMISTRY.


2. Studies pursued by the Metallurgical and Mining Section.

MINING ENGINEERING.—Lectures on the methods used in prospecting for, and for developing ore and coal deposits. Drawing and modelling (wood and plaster) of topographical and underground surveys.

METALLURGY.—Calculating and drawing of furnaces, ore dressing machines, etc., from notes and sketches, after approved patterns. Experimental treatment of the fundamental processes of oxidation, reduction, and fusion.
MINERALOGY.—Oxides, Chlorides, and Fluorides, Sulphates, etc., Phosphates, etc., Carbonates and Silicates.

ASSAYING and Blow-pipe Analysis same as First Section.

ANALYTICAL CHEMISTRY.—Qualitative examinations of more or less complex substances. Qualitative analysis by the blow-pipe, in connection with reactions in the humid way, for the rapid determinations of minerals and ores. Lectures, Recitations, and Laboratory Practice in Quantitative Analysis.

PALAEONTOLOGY of Mollusca and Crustacea.

DYNAMICAL ENGINEERING.—The Statics and Dynamics of rigid bodies. Field excursions into the neighboring mineral districts.

MATHEMATICS.—Differential and Integral Calculus.

3. Studies pursued by the Civil Engineering Section.

DRAWING.—Shades, Shadows, and Perspective; Platting field notes; Engineering Construction and Stereotomy.


SURVEYING.—A complete course in practical topography, including special instruments and field sketching. Field practice. Reconnaissance, Use of Prismatic Compass, Level, Solar Transit, Repeating Theodolites, and Heliotropes. Sketching.

GEODESY.—Measurements of Bases, Triangulation, Determination of Meridian, Latitude, Longitude, Time, and Azimuth.


BLOW-PIPE ANALYSIS.

4. Studies pursued by Dynamical Engineering Section.

KINEMATICS.—Laws of motion. Elementary combinations of Pure Mechanism. Pulleys and belts. Trains of gearings and forms of teeth of wheels. Parallel motions. Practical design of Link and valve motions, with a consideration of the various forms of valves, illustrated by working models.

DRAWING.—From the model and original design.

CONSTRUCTION AND PRACTICAL APPLICATIONS.—Occasional visits of inspection will be made to blast-furnaces, foundries, iron and steel-rolling mills, ship-yards, steam and hydraulic forges, etc. Manual training in Machine Shop work.

DYNAMICS.—Lectures on the conditions under which Power is transmitted.

HYDRODYNAMICS.—Water metres. Turbine, Overshot, Undershot, and Breast wheels.
5. Studies pursued by the Section in Drawing and Architecture.


ENGINEERING.—Same as Section 3, so far as to include strength and properties of materials.

POST-SENIOR CLASS.

STUDIES PURSUED BY THE WHOLE CLASS.

GEOLOGY.—Structural Geology of North America with reference to that of Europe, and with the principal minerals and fossils, distribution of metals and fuels. History of Geology.

1. Studies pursued by the Chemical Section.

Theoretical Chemistry.
Lectures on Industrial Chemistry.
Practice in the production of Chemical preparations.
Determination of the constituents of cast-iron and steel; and Analysis of Manures.
Quantitative Blow-pipe Analysis. Original investigations.
Special Metallurgy—Lectures with the 2d Section.

2. Studies pursued by the Metallurgical and Mining Section.

MINING ENGINEERING.—Lectures on Ventilation and drainage of mines. Special mining problems in faulted strata, more especially in coal mining. The section goes for two weeks to the anthracite Coal region, to make an underground survey; to learn how to examine a mine and report on its condition.

METALLURGY.—Lectures on the production of pig, weld, and temper iron; of silver, copper, and lead. Experimental testing of metallurgical processes. Electricity applied to metallurgy. Visits to metallurgical works in the City and State.

ANALYTICAL CHEMISTRY.—As 1st Section.


GEOLOGY.—The topographic and structural relations of the principal ore deposits in America and Mexico.

ANALYTICAL CHEMISTRY.—Gravimetric and Volumetric Analysis, with special reference to minerals, ores, and metallurgical products; Gas Analysis; Quantitative blow-pipe analysis.

3. Studies pursued by the Civil Engineering Section.

ENGINEERING.—Observation tours, for collection of data, and critical re-

Drawing.—Details of Engineering Works, Composition, Plans, Sections, Elevations; Profiles and Cross-sections. Working drawings.

Hydromechanics.—Recitations and Lectures.

Modelling.—Construction of trusses for bridges and roofs, girders, etc. Problems in stone-cutting. Tunnels.


4. Studies pursued by the Dynamical Engineering Section.

The Analysis and Synthesis of Mechanism.—Machine Tools and their principles.

Hydromechanics.—Special experimental work in Dynamic Laboratory.


Electrodynamics.—Measurement of transmission of power by Electricity, etc.; Practical Laboratory work.


Marine Engineering and Naval Architecture.—Special instruction when desired.

Construction and Practical Applications.—Occasional visits of inspection will be made to blast-furnaces, foundries, machine-shops, iron and steel rolling-mills, ship-yards, steam and hydraulic forges, etc., etc.


Theses.—Special attention will be given to experimental work in preparation of Theses for Technical Degrees.

5. Studies pursued by the Section in Architecture and Drawing.


Engineering.—Studies of Construction in Masonry, Timber, Iron and Steel; of Roof Trusses, Girders, etc. Experiments on Strength of Materials, Beams, and Trusses.
METHODS OF STUDY.

For the first two years, all studies are required, and are the same for all students. The technical courses begin with the Junior year.

Instruction is thoroughly practical. It is given by lectures and recitations, and in the Laboratories and the Drawing and Model Rooms. These are open to the students all day, and work is required of the higher classes in the afternoon as well as in the forenoon.

In Chemistry the Juniors, having already had during the Sophomore year a full course of illustrated lectures on general inorganic chemistry, receive instruction in mineralogy and qualitative analysis.

They also begin work in the laboratories by making the characteristic reactions of inorganic bases and acids— which are followed by easy qualitative separations. Occasional written reports on the results of their work must be made.

The Seniors receive instruction by lectures and recitations in qualitative and quantitative analysis in all branches thereof, applied chemistry, metallurgy, organic and theoretical chemistry.

In the laboratories the practical work, embracing all of the above branches, is continued. A thesis on some chemical subject is required at the end of the year.

During the first term of the Post Senior year, the work of the Seniors may be continued, if deemed advisable. In the meanwhile the subject for thesis must be chosen in order to allow the student time to read up all accessible matter relating to it, so that the greater portion of the second term can be devoted almost exclusively to the necessary experimental researches in the preparation of the same.

The Post Seniors also attend a course of lectures on the applications of Organic Chemistry in the Industrial Art. This course is fully illustrated by lantern projections, and by suites of specimens from the chemical collections.

Students in Metallurgy and Mining are trained to take intelligent care of the ever growing, important interests represented by those industries. In recognition of the extent of knowledge embraced in this field, the students are given the option to devote themselves more particularly to either branch. Those inclining to become managers of mines, or examining and reporting engineers, will take more studies in civil and mechanical engineering, and those who possess greater aptitude for chemical studies will devote themselves rather to experimental Metallurgy; whilst the lectures provided for the course are participated in by all.—A greater thoroughness is expected to result from this provision. The instruction aims to develop the student’s power of self-action and initiative.
Students in Civil Engineering are instructed by recitations, lectures, and practical work, in order to develop the qualities most required of the practical engineer. Afternoons and Saturdays are devoted to drawing and practical work in the shop, or to surveying or visiting public or private works, manufactories, etc.

During the last year the student's time is devoted largely to examinations and reports upon engineering works in process of construction; to making estimates and designs for new projects, from data collected in the field; and to the preparation of Theses.

In visiting shops and manufactories, students are required to collect all the practical information possible, and to embody it in a written report, noting particularly any new or special features for economizing time or materials, improved methods of assembling parts, etc., as well as the general plant, apparatus, and facilities for receiving and shipping materials.

The field practice embraces the various problems in chain surveying, the measurement of areas, and the computation of results; line surveys and location, cross sections and levels for estimating quantities, hydrography, topography with the plane-table, and the solution of such geodetic problems as relate to the orientation of maps.

The Course in Drawing includes the projection of maps; various methods of representing Topography; conventional signs; problems in shades, shadows and perspective; details of framing; composition; general drawing for constructions in wood, stone, and iron; special designs; working drawings for modelling; plotting; drawing of profiles and cross sections and drawing for theses.

Students of Dynamical Engineering are required to give particular attention to the kinematics of mechanism, to the conditions under which work and power act, and the means of regulating and transmitting the same; to the problems of hydraulics and hydraulic motors, and to the mechanical theories of heat and electro-dynamics with applications to the steam engine, etc., as will appear from the detailed course of study already given.

Special attention is given to the execution of drawings, first from designs and models, and afterwards from calculations; and also to the methods of casting and working in iron, and of making and using machine tools.

Adequate instruction is also provided in Marine Engineering and Naval Architecture.

Visits of inspection will be made during two years of the course to blast-furnaces, foundries, machine shops, and iron and steel rolling-mills.

A special Laboratory is devoted to measurements in Thermodynamics, Electrodynamics, and Hydrodynamics.
The course in manual training covers three afternoons a week for two years. The latter year is given to practical work in the Dynamic Laboratory; to special technical work, and to the preparation of a Thesis.

The instruction in Physics extends over three years. In the Junior year the subjects treated are Sound, Heat, Light, and Electricity, the exercises consisting of lectures, illustrated by experiments, with recitations. In the Senior year, special instruction is given in Advanced Physics. Practical instruction in the Physical Laboratory is given throughout the year. The course is optional and is intended for such students only as are competent to take it with advantage.

SPECIAL COURSES.

Special students, not candidates for a Degree, may be received into any of the courses, when the Professor in charge of that course is satisfied of their competency to profit by his instruction. They take all the studies that the Professor thinks necessary to complete the course, together with such others as the Faculty may require. At the end of the course, upon passing the examinations required, and presenting a satisfactory thesis, they receive a Certificate of Proficiency. Application should be made to the Professor in charge of the course which the student wishes to take, and definite arrangements may be made with him—subject, however, to the approval of the Faculty.

LIBRARY.

The Rogers' Engineering Library is composed of standard works treating of drawing, mathematics, astronomy, physics, surveying and explorations, technical works on roads, strength and properties of materials, railroads, tunnels, canals, water supply, drainage, architecture, mechanics, navigation, harbor improvements, and park and landscape engineering; together with a valuable collection of Reports of American, English, and French Engineering Societies, periodicals, Coast Survey and hydrographic charts, maps, diagrams, and drawings.

DEGREES.

The Degree of Bachelor of Science (B.S.) is conferred on students who have passed creditably through the first four years of the curriculum of this school. An additional Degree indicating the Special Course which they have pursued is conferred at the close of the Fifth Year. These Special Degrees are Mining Engineer, Civil Engineer, Mechanical Engineer, Architect, and Practical Chemist. A satisfactory Thesis must be prepared and presented by each Candidate for a Degree.

For further information address Professor E. O. Kendall, LL.D., Dean of the Faculty.
A COURSE IN PHILOSOPHY FOR UNDERGRADUATES.

This course provides instruction in Latin, English, French, and German, Mathematics, and Natural Science. During the Junior and Senior years, a large amount of time is devoted to Biological studies, with practical laboratory work, under Prof. Joseph Leidy, the Director of the Biological Department, and the other members of the Biological Faculty. The new Biological Building, with its lecture-room, laboratories for general and special work, its cabinets, herbarium, library, and abundant supplies of material for practical work, affords ample facilities for these studies.

ENTRANCE EXAMINATIONS.

For the Freshman Class, candidates are examined in all subjects required for admission to the Towne Scientific School, and in the Latin required for the Course in Arts, or its equivalent.

For Advanced standing, candidates must pass satisfactorily in all the subjects pursued by the lower class or classes. The examinations are held in June and September. Circulars stating the days and the subjects of examination for each day can be had after April 1st, on application to the Clerk of the College Faculty.

COURSE OF STUDY.

FRESHMAN CLASS.

LATIN.—Selections from Livy.
ENGLISH.—Lectures on Prose Composition, with Illustrative Readings from English prose authors, and Compositions on Themes selected from these Readings. Rhetoric (McElroy's Structure of English Prose, Part First).
FRENCH.—Modern French Prose.
HISTORY.—Freeman's General Sketch of History.
MATHEMATICS.—Newcomb's Algebra. Chanvenet's Trigonometry.
DRAWING.—Freehand Drawing.

SOPHOMORE CLASS.

LATIN.—Horace (Selected Odes or Satires).
ENGLISH.—Rhetoric completed. Lounsbury's English Language. Six Compositions, Two Declamations.
GERMAN.—Selections from Virchow & Holtzendorff's Wissenschaftliche Vorträge. Practical Exercises. Specimens of the Modern Drama.
A COURSE IN PHILOSOPHY.

FRENCH.—Modern French Prose. Molière.

HISTORY.—Lectures.

MATHEMATICS.—Analytical Geometry.

PHYSICS.—Mechanics.

CHEMISTRY.—Inorganic and Organic Chemistry (Experimental Lectures, with Examinations).

JUNIOR CLASS.


HISTORY.—Lectures on Modern History with Wilhelm Muller's Modern History as a Text-book, and Compositions on historical subjects.

LOGIC.—Jevon's Lessons in Logic; Ethics (Whewell's Elements); Murray's Outlines of Hamilton's Philosophy; Lectures.

PHYSICS.—Sound, Heat, Light, Electricity. (Stewart's Physics.)

CHEMISTRY.—Inorganic Analytical Chemistry.


MAMMALIAN ANATOMY.—Lectures and laboratory exercises. Mivart's The Cat. Wilder's Anatomical Technology.


SENIOR CLASS.


PHILOSOPHY.—Berkeley's Principles; Studies in the History of Philosophy; Butler's Analogy; Lectures.

SOCIAL SCIENCE.—Thompson's Elements of Political Economy and Lectures.

ASTRONOMY.—Newcomb's Astronomy.

GEOLGY.—Systematic and Stratigraphic Geology.

MINERALOGY.—Descriptive Mineralogy.

BOTANY.—1. (a) Medical Botany; the plants used in Medicine, adulteration of foods and drugs, or (b) Vegetal Morphology. 2. The life histories of plants. Practical exercises. Bessey's Botany, Sach's Textbook of Botany.


ANIMAL HISTOLOGY.—Lectures and laboratory exercises on Microscopic Anatomy. Schafer's Essentials of Histology.

* Seniors in this course are also admitted to the optional course in English, described on page 43.
EMBRYOLOGY.—Lectures and laboratory exercises and the development of the chick. Foster and Balfour's *Elementary Embryology*

PHYSIOLOGY.—The Elements of Physiology. Lectures and practical work. Dalton's *Physiology*.

At the close of Sophomore Year, students may elect to enter the Junior Class in the Course in Arts or in the Wharton School. The Degree of Bachelor of Philosophy is conferred upon students who complete the full course.

Instruction is given by lectures and recitations, and in the Laboratories of the College and Biological buildings. These latter are open all day, and by the higher classes a part of the work is done in the afternoon. Latin, History, Philosophy, Mathematics, and the Physical Sciences are assigned in proportions suitable to the general purpose of the Course. French and German receive special attention in the first two years, with a view to the effective use of text-books in these languages in the Junior and Senior years.

The study of the English Language and Literature extends through the four years, and is intended to be thorough and critical. In Chemistry, the Sophomores attend illustrated lectures on Inorganic and Organic Chemistry, followed in the Junior year by a course of analytical work in the Laboratory.

The instruction in General Biology is in the form of practical laboratory exercises, accompanied by explanatory lectures, and comprises the study of the structure, functions, and development of a series of plants and animals. The student in this manner gains a general knowledge of the vital phenomena, manifested in the different forms of living matter, before beginning the study either of Botany or Zoology. The series studied are: (1) Amoeba, Paramaeicum, Vorticella, Bacterium, Yeast-plant, and Protococcus, as unicellular forms of life; (2) Moulds, Chara, Bracken-fern, and Bean-plant as exhibiting the structure and activities of plants. (3) These compared with Sponge, Hydra, Star-fish, Earthworm, Leech, Cyclops, Crayfish, Cockroach, Clam, Squid, Amphioxus, Skate, Cod, Frog, Snake, Terrapin, Pigeon, and Rabbit as animals.

The course in Mammalian Anatomy consists of lectures on the methods of anatomical investigation, a detailed description of the anatomy of one of the higher mammals, and comparisons with human anatomy. In the laboratory the class carefully dissects the cat.

The work in Botany, during the Junior year, consists in exercises in the determination and classification of plants, and begins in the second term after the student has finished the first half of the course in General Biology, and has acquired a sufficient knowledge of vegetal structure and physiology. In the first term of the Senior year some choice is permitted. The student may take up Medical Botany, if intending to study medicine, or
may devote his attention to more advanced work in plant structure. During the second term the life-histories of plants, their development, growth, and reproduction are studied.

General Zoology and Comparative Anatomy embrace the study of the differences between organic and inorganic bodies; animals and plants; individuals and colonies; cells and cell aggregates; a short account of the tissues; growth and division of labor; organs, their structure; reproduction, general facts of embryology; metamorphosis, alternation of generation, polymorphism and heterogeneity; systems of classification; the Darwinian theory; species and varieties; a succinct account of the various groups of animals, their anatomy, development and distribution.

Histology is taught, during the first term in the Senior year, mainly by practical work with the microscope. The structure of animal tissues and organs, and the methods of examining and preparing microscopic specimens, are thoroughly studied.

Embryology is taught in the second term, and the student is instructed in the processes by which the complex tissues and organs are built up from the simple egg. The instruction consists in lectures on the Embryology of the chick, with laboratory exercises in the preparation and study of the principal stages of development.

The instruction in the elements of Human and Comparative Physiology embraces the following subjects: nutrition, food-stuffs and digestion; circulation; respiration; reproduction; muscular function, including locomotion, speech, etc.; and the functional activity of nerve and brain.

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THE COURSE IN FINANCE AND ECONOMY IN THE WHARTON SCHOOL.

This school aims to give a thorough, liberal, and professional training to young men who intend to engage in business, or upon whom will devolve the management of property. It also equips more completely persons who are preparing for the profession of Law, for Journalism, or for Public Service. The Founder of the School has remarked that "a great boon would be bestowed upon the nation if its young men of inherited intellect, means, and refinement could be drawn into careers of unselfish legislation and administration; and, as the possession of any power is usually accompanied by taste for its exercise, it is reasonable to expect that adequate education in the principles underlying successful civil government would aid in producing such a class of men."
The instruction of the Wharton School is of immediate practical importance to persons who are looking forward to a business career; to legal students desirous of acquiring the best preparation possible for successful practice, and to those who expect to enter the ranks of journalism; while to persons who aim to serve the public in a legislative or administrative capacity, it should be indispensable. The success of the lawyer is often due as much to an extensive acquaintance with business, as to a knowledge of legal principles. For those who are desirous of becoming proficient in economics and finance—and especially for those who expect to teach political science—the Wharton School provides excellent opportunities.

LIBRARY.

The University possesses a large and valuable library of works relating to finance and political economy. The foundation was laid by the great collection of the late Stephen Colwell, comprising between seven and eight thousand volumes, and including nearly every important book on these subjects in the English, French, and Italian languages, published before 1860. This has been supplemented (1) by the gift from Mr. McCalmont, of London, of a collection of about three thousand English pamphlets, covering the period from the close of the seventeenth century to our own time, and bound in chronological order; (2) by the bequest of the library of the late Henry C. Carey, which includes many works and pamphlets that appeared since Mr. Colwell's death, and is especially rich in statistical literature, European government reports, and the like.

Original research by the students, under the direction of the professors, is a part of the work of the School.

COURSE OF STUDY.

The course of study extends through two years, and embraces the following studies:

JUNIOR YEAR.

FIRST TERM.


LOGIC.—Jevons's Logic. [2]

PHYSICS.—Elementary Physics, Sound and Heat. Lectures. [4]

INTERNATIONAL LAW.—Lectures. (Optional.)

SECOND TERM.


MORAL PHILOSOPHY.—Whewell's Elements. [2]

PHYSICS.—Elementary Physics. Light and Electricity. [4]

SENIOR YEAR.

FIRST TERM.

EXPOSITION OF LEADING PRINCIPLES OF POLITICAL ECONOMY AND THEIR APPLICATIONS. Compositions and Lectures. [3]


ENGLISH CONSTITUTIONAL HISTORY.—Stubb's Constitutional History of England. (Optional.)

SECOND TERM.

EXPOSITION OF LEADING PRINCIPLES OF POLITICAL ECONOMY AND THEIR APPLICATIONS.—Composition and Lectures. (Continued.) [3]

MERCANTILE LAW.—Parsons's Laws of Business. [4]

RAILROADS.—Kirkman's Railway Expenditures, their Extent, Object, and Economy. Hadley's Railroad Transportation. (Ten Lectures.)

AMERICAN CONSTITUTIONAL HISTORY.—Second Period, 1825-1885. (Lectures and Text-books.) [3]


CIVIL GOVERNMENT.—Principles and Comparative Methods of Public Administration—general and local. Lectures. [2]

STATISTICS.—Principle and Methods of Statistical Science. (Ten Lectures.)
CONSTITUTIONAL LAW.—(Optional.)*

ROMAN LAW.—(Optional.)*

PREPARATION OF THESIS.

The instruction in Political Economy during the Junior year is that which is usually given to the Junior and Senior classes in colleges. During the Senior year instruction in this branch is given through compositions and discussions by the class, followed by a review, exposition and application of principles by the professor.

Instruction in European Finance comprises the history, and a description and comparison of the financial systems of the principal countries of Europe. American Finance comprises a history of the national, state and municipal systems, and a comparison of them with foreign systems.

The subject of Legislation and Administration is treated comparatively, including the practice of all the principal European countries and our own, beside the varying practice of the several States of the Union.

Instruction in Statistics embraces an investigation of the sphere and function of statistics, with practical training in the proper method of collecting and arranging them.

During the first term, the course in American Politics covers the period from the formation of the Constitution to the close of Jackson's administration. This subject is studied with the aid of text-books and special works; and essays are required on collateral topics. The Senior year is devoted to the Constitutional History of the United States. Much of the work is done by students in libraries. A series of lectures is given on the more important Constitutional questions, and essays thereon are prepared by the students and read in the class-room.

Instruction in Railroads pertains to their organization, cost of construction and operation, and their relation to other industries.

Mercantile Practice covers the usages and methods of business, the management of property and the administration of trusts, and is supplemented and completed by an exposition of the leading principles of Mercantile Law.

SUPPLEMENTARY LECTURES.

Several lecturers not otherwise connected with the Faculty of the School have been engaged to treat special points relating to the regular subjects of instruction. The following lectures are for the year 1886–7:

1. Twelve lectures on the "Constitutional Law of the United States," by Dr. F. N. Thorpe, Professor of History in the Manual Training High School of Philadelphia, and Fellow in Political Science of the University.

* These courses are given in the Law School, but are open to Wharton School students.
of Pennsylvania. Four of these lectures are devoted to a discussion of the "Fundamental Rights," two to the Legislative Departments, two to the Judiciary, two to the Executive, one to the Law of Administration, and one to the Historical Development.


4. Two lectures on "German Socialism," by William W. Carlile, Ph.B., Graduate of the Wharton School, recently a member of the Economic Seminaries at Halle and Berlin.

EXAMINATIONS FOR ADMISSION AND ADVANCED STANDING.

Students are admitted to full standing in the Wharton School as candidates for a Degree, who have completed the Freshman and Sophomore years of any American college, whose course is recognized as equivalent to that offered in the corresponding years of the College Department of this University. Students in the Department of Arts, the Towne Scientific School or the Course in Philosophy, who enter the Wharton School Course at the beginning of the Junior year, receive, at graduation, the degree of A.B., B.S., or Ph.B., according to the course from which they have come. Students from other colleges are admitted on the same conditions. Graduates in any course of colleges in good standing may enter the Senior Class without preliminary examination.

Any persons who do not desire to pursue the full course, and who are properly qualified, may take either a special or a partial course in any subject or subjects taught in the School.

DEGREES.

The degree of Bachelor of Philosophy (Ph.B.) is conferred after satisfactory examination, on all regular students who have pursued the two years' course, and on graduates in Arts or Science of the University of Pennsylvania or of colleges of equal standing who have pursued the course in this School for the senior year.

For additional information, apply to the Secretary, Professor Albert S. Bolles.
## COURSES OF STUDY IN THE COLLEGE FACULTY.

[Including all extra (Saturday, Machine Shop, etc.) hours.]

### SUBJECT OF STUDY

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*Elective.*
THE COURSE IN MUSIC.

The qualifications required to enter the department are, first, a knowledge of the rudiments of music, and, second, the ability to play on some instrument—preferably the piano or organ.

The course extends over two years. The year begins on the first Monday in October, and is divided into three terms of ten weeks each. The first year is devoted to Harmony, the second to Counterpoint and Composition.

Persons of both sexes are admitted. The fees are ten dollars ($10) for each term, payable in advance.

A Certificate of Study is awarded to the student who has completed the full course, passed the required examination, and presented as a thesis a satisfactory original composition. It is intended to hold this year and hereafter a Commencement of the Department of Music for the granting of Degrees and awarding of Certificates, and from the theses of the graduating class a certain number will be selected by the Professor to be performed on that occasion. Persons holding these Certificates, may at any subsequent time proceed to the Degree of Bachelor of Music (Mus. Bac.) on the following conditions:

1. They must be examined in Harmony, Counterpoint, and Composition, by three examiners appointed by the Professor, subject to the approval of the Provost; the examination to be oral or written, or both, at the discretion of the examiners.

2. They must submit to the examiners an original composition in the form of a cantata for solos and chorus, with an accompaniment of at least a quintette of string-instruments.

3. This composition must be of such length as to require at least twenty minutes for its performance; it must contain a four-part fugue; and the accompaniment must be independent, except in the fugue.

4. The composition must be accompanied by a written statement that it is the student's own unaided effort.

For detailed information, apply to

Prof. H. A. Clarke, Mus. D., 223 S. 38th Street.
DEPARTMENT OF MEDICINE.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
HENRY H. SMITH, M.D., Emeritus Professor of Surgery.
ALFRED STILLE, M.D., LL.D., Emeritus Professor of the Theory and Practice of Medicine, and of Clinical Medicine.
HARRISON ALLEN, M.D., Emeritus Professor of Physiology.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.
RICHARD A. F. PENROSE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children.
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WILLIAM PEPPER, M.D., LL.D., Professor of Theory and Practice of Medicine and of Clinical Medicine.
WILLIAM GOODELL, M.D., Professor of Clinical Gynaecology.
JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.
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THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry and Toxicology.
JOHN ASHHEURST, JR., M.D., Professor of Clinical Surgery.
WILLIAM OSLER, M.D., Professor of Clinical Medicine.
EDWARD T. REICHERT, M.D., Professor of Physiology.

CLINICAL PROFESSORS.

WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.
GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.
HORATIO C. WOOD, M.D., LL.D., Clinical Professor of Nervous Diseases.
LOUIS A. DUHRING, M.D., Clinical Professor of Skin Diseases.
LOUIS STARR, M.D., Clinical Professor of Diseases of Children.
J. WILLIAM WHITE, Clinical Professor of Genito-Urinary Diseases.
ASSISTANT PROFESSOR.
EDWARD T. BRUEN, M.D., Assistant Professor of Physical Diagnosis.

AUXILIARY PROFESSORS.
JOHN J. REESE, M.D., Professor of Medical Jurisprudence, including Toxicology.
*JOSEPH G. RICHARDSON, M.D., Professor of Hygiene.
N. ARCHER RANDOLPH, M.D., Professor of Hygiene.

LECTURERS AND DEMONSTRATORS.
ROLAND G. CURTIN, M.D., Lecturer on Physical Diagnosis.
CHARLES K. MILLS, M.D., Lecturer on Mental Diseases.
ADOLPH W. MILLER, M.D., Lecturer on Materia Medica and Pharmacy, and Instructor in Practical Pharmacy.
DE FOREST WILLARD, M.D., Lecturer on Orthopedic Surgery.
ELLIOTT RICHARDSON, M.D., Lecturer on Clinical and Operative Obstetrics, and Demonstrator of Operative Obstetrics.
JOHN MARSHALL, M.D., Nat. Sc. D., Demonstrator of Practical Chemistry.
J. WILLIAM WHITE, M.D., Demonstrator of Surgery.
GEORGE A. PIERSOL, M.D., Demonstrator of Normal Histology.
HENRY F. FORMAD, M.D., Demonstrator of Morbid Anatomy and Pathological Histology, Lecturer on Experimental Pathology and Librarian of the Still Medical Library.
HARRY R. WHARTON, M.D., Instructor in Clinical Surgery, Lecturer on Surgical Diseases of Children.
JOHN B. DEAVER, M.D., Demonstrator of Anatomy.
RICHARD H. HARTE, M.D., Demonstrator of Osteology.
THOMAS R. NEILSON M.D., EDMUND W. HOLMES, M.D., Assistant Demonstrators of Anatomy.
ALBERT L. A. TOBOLDT, M.D., Assistant Demonstrator of Practical Pharmacy.
WILLIAM A. EDWARDS, M.D., JUDSON DALAND, M.D., J. P. CROZER GRIFFITH, M.D., Assistant to the Professor of Theory and Practice of Medicine.
GEORGE E. DE SCHWEINITZ, M.D., Prosector to the Professor of Anatomy.
SAMUEL D. RISLEY, M.D., Instructor in Ophthalmology.
W. M. L. ZIEGLER, M.D., Instructor in Otoology.
CARL SEILER, M.D., Instructor in Laryngology.

* Deceased.
FRANCIS X. DERCUM, M.D., Instructor in Nervous Diseases.
J. HENDRIE LLOYD, M.D., Instructor in Electro-Therapeutics.
A. SYDNEY ROBERTS, M.D., Instructor in Orthopedic Surgery.
HENRY W. STELWAGON, M.D., Instructor in Dermatology.
HOBART A. HARE, M.D., Demonstrator of Experimental Therapeutics.
THOMAS R. NEILSON, M.D., Instructor in Venereal Diseases.
WILLIAM L. TAYLOR, M.D., Instructor in Clinical Gynecology.
GWILLYM G. DAVIS, M.D., Assistant Demonstrator of Surgery.
EDWARD MARTIN, M.D., Instructor in Operative Surgery, Assistant Demonstrator of Surgery.
JOHN K. MITCHELL, M.D., Instructor in Clinical Medicine.
GEORGE T. KEMP, Ph.D., Demonstrator of Practical Physiology.
W. FRANK HAEHNLEN, M.D., Assistant Demonstrator of Normal Histology.
GEORGE H. CHAMBERS, M.D., Assistant Demonstrator of Normal Histology.
JAMES K. YOUNG, M.D., Assistant Demonstrator of Surgery.
ROBERT P. ROBINS, M.D., Assistant in Physical Diagnosis.
WILLIAM M. POWELL, M.D., Assistant in Physical Diagnosis.
JAMES R. McCAUSLAND, M.D., Acting Assistant Demonstrator of Normal Histology.

The following Students, selected on account of their proficiency in Chemistry, act as Assistants in the Chemical Laboratory:—

John Bacon ........................................ Haverford College.
N. M. Baker ........................................ University of Minnesota.
H. B. Bashore .................................... Yale College.
J. R. Bryan .......................................... Central High School.
E. A. Curry ........................................ Dickinson College.
A. H. Cleveland .................................. Lafayette College.
F. East ............................................... Rochester University.
W. D. W. Hall ..................................... Princeton College.
J. M. Hamme ....................................... Lafayette College.
J. S. Heilman ...................................... Lehigh University.
C. L. Leonard ...................................... Harvard University.
Murray G. Motter ................................ Pennsylvania College.
W. H. Price ........................................ Central High School.
R. W. Sharp ........................................ Dickinson College.
C. D. Sheaffer .................................... Franklin and Marshall College.
The following Students of the third year, selected for their proficiency in Anatomy, act as Assistant Demonstrators of Anatomy:—

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The following Graduates of the School conduct the admission examinations in the several cities in which they reside:—

- Dr. C. H. Mastin, 110 St. Francis Street, Mobile, Ala.
- Dr. Jos. M. Towler, 6 N. Main Street, Columbia, Tenn.
- Dr. Eugene A. Grissom, North Carolina Insane Asylum, Raleigh, N. C.
- Dr. C. D. Fishburn, 70 McMicken Avenue, Cincinnati, Ohio.
- Dr. E. C. Bullard, 185 Harrison Avenue, Boston, Mass.
- Dr. C. Gilman Smith, 2220 Calumet Avenue, Chicago, Ill.
- Dr. C. H. Boardman, 503 Wabasha Street, St. Paul, Minn.
- Dr. W. Fitz Hugh Edwards, 205 Fort Street, Detroit, Mich.
- Dr. W. S. Elkin, 70½ Whitehall Street, Atlanta, Ga.
- Dr. J. W. Whitchurch, 125 East Avenue, Rochester, N. Y.
- Dr. W. T. Bell, City and County Hospital, San Francisco, Cal.
- Dr. W. D. Hamaker, Meadville, Penna.

HOSPITAL STAFF.

- WILLIAM PEPPER, M.D., LL.D., Professor of Clinical Medicine.
- D. HAYES AGNEW, M.D., LL.D., Professor of Clinical Surgery.
- WILLIAM GOODELL, M.D., Professor of Clinical Gynaecology.
- JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.
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ROLAND G. CURTIN, M.D., Assistant Physicians.
EDWARD T. BRUEN, M.D., Assistant Physicians.
J. WM. WHITE, M.D., Assistant Surgeons.
H. R. WHARTON, M.D., Assistant Surgeons.
RICHARD H. H ARTE, M.D., Assistant Surgeons.
WALTER M. L. ZIEGLER, M.D., Assistant Aural Surgeon.
HENRY W. STELWAGON, M.D., Assistant Dermatologist.
FRANCIS H. DERCUM, M.D., Assistant Neurologist.

CHARLOTTE M. HUGO, Superintendent of the Hospital.
WILLIAM E. HUGHES, M.D., Medical Registrar.
BARTON C. HIRST, M.D., Surgical Registrar.
HENRY F. FORMAD, M.D., Pathologist.
JUDSON DALAND, M.D., Curator.
W. M. POWELL, M.D., Surgical Anæsthetizer.
F. A. ACEY, M.D., Resident Physicians.
T. S. WESTCOTT, M.D., Resident Physicians.
F. A. PACKARD, M.D., Resident Physicians.
C. B. K IRBY, Ph. G., Apothecary.

DISPENSARY SERVICE.
SAMUEL D. RISLEY, M.D., Surgeon in the Dispensary for Diseases of the Eye.
WALTER M. L. ZIEGLER, M.D., Surgeon in the Dispensary for Diseases of the Ear.
WILLIAM L. TAYLOR, M.D., Surgeon in the Dispensary for Diseases of Women.

DE FOREST WILLARD, M.D., Attending Surgeons in the Orthopaedic Dispensary.
A. SYDNEY ROBERTS, M.D., Attending Surgeons in the Orthopaedic Dispensary.

JOHN H. MUSSER, M.D., Physician in the Medical Dispensary.
CARL SEILER, M.D., Physician in the Dispensary for Diseases of the Throat.
FRANCIS X. DERCUM, M.D., Physician in the Dispensary for Nervous Diseases.
H. W. STELWAGON, M.D., Physician in the Dispensary for Diseases of the Skin.

M. HOWARD FUSELL, M.D., Assistant Physician in the Medical Dispensary.
RICHARD H. HARTE, M.D., CHARLES W. DULLES, M.D.,
JOSEPH M. FOX, M.D., JOHN B. DEAVER, M.D.,
WILLIAM A. DAVIS, M.D., Assistant Surgeon in the Dispensary for Diseases of Women.
JAMES WALLACE, M.D., G. E. DE SCHWEINITZ, M.D.,
JAMES HENDRIE LLOYD, M.D., Assistant Physician in the Dispensary for Nervous Diseases.
THOMAS R. NEILSON, M.D., Attending Surgeon in the Dispensary for Venereal Diseases.
JOHN SHEETS, M.D., LEDRU P. SMOCK, M.D.,
WILLIAM J. TAYLOR, M.D., Hobart A. Hare, M.D.,
FREDERIC H. MILLIKEN, M.D., James K. Young, M.D.,
WILLIAM R. HOCH, M.D., Assistant Surgeon in the Dispensary for Diseases of the Ear.
HOWARD REEVES, M.D., Assistant Physician in the Dispensary for Diseases of the Throat.

All communications should be addressed to

JAMES TYSON, M.D.,
Secretary of the Faculty of Medicine, University of Penna.,
Philadelphia, Penna.

The Secretary's office is in Medical Hall, where all business is transacted.

MATRICULATES.

FIFTH YEAR.

McDonald, John J., M.D., Cove, Oregon, Univ. of California.
Stevens, Arthur A., A.B. M.D., Philadelphia, Univ. of Penna.

Students of the Fourth Year, 4.
Third Year.

Addison, Thomas G., Jr., Washington, D. C., John W. Bayne.
Allen, Americus R., Carlisle, S. B. Kieffer.
Andrews, George E., A.B. (Univ. of Rochester), R. M. Moore.
Balliet, Tilghman M., A.B. (Franklin and Marshall), M. J. Williams.
Barney, Delbert, A.B. (Lafayette), Wilkes-Barre, University.
Bemish, Reuben H., Rochester, N. Y., Whitbeck & Williams.
Bermudez, Salvador, Philadelphia, B. Berens.
Bowen, Cuthbert F., B.A. (Durham University), Judson Daland.
Bowman, David P., B.E., Koiner's Store, Va., Wm. H. Freeman.
Bradley, Edward T., Gallitzin, University.
Brinkmann, Leon, Philadelphia, Jno. B. Deaver.
Burns, Samuel W., Philadelphia, University.
Cameron, George A., Zion, Md., P. B. Housekeeper.
Carlisle, Paris T., Jr., Frederica, Del., Thomas Cahall.
Chamorro, Filadelfo, B.S., Granada, Nicaragua, University.
Clarkson, J. A. Coleman, A.B. Altoona, Jno. Fay.
(Dickinson Seminary),
Clewell, Cary K., Telford, J. E. Bauman.
Crandall, R. Percy, Brooklyn, N. Y., T. V. Crandall and Judson Daland.
Cyphers, Millard F., Wilkes-Barre, J. A. Murphy.
Davis, James A., Ph.G., Greensburg, R. B. Hammer.
Dongion, Giragos, Dearbeker, Armenia, University.
Douglas, Malcolm, Jr., E. Wareham, Mass., P. Hooper.
Ely, Thomas C., Jr., Ph. B. (Madison University), T. V. Crandall and Judson Daland.
Espinoza, Alexandro, Managua, Nicaragua, University.
Fell, Alexander G., B.S. (Princeton), Wilkes-Barre, J. A. Murphy.
Ferrer, Adolfo Leon, Tabasco, Mexico, University.
Fitzpatrick, Charles, Jr., Chattanooga, Tenn., R. J. Levis.
Frost, William M., A.B. (Dickinson), Shamokin, University.
Fundenberg, George B., Jr., A.M. Pittsburgh, W. F. Fundenberg.
(Gale, John P., Woodland, Cal., Jonas Clark.
Gallagher, Thomas D., A.B. Mt. Carmel, (Georgetown),
Givin, S. A. Mercer,
Glover, George B., A.B. (Emory),
Grant, Horace S.,
Grigg, Thomas A.,
Hartwick, Thomas H.,
Hartzell, Charles A.,
Head, Joseph, D.D.S.,
Heisler, John Clement, Ph.G.,
Henkel, Alfred Davis,
Huber, William S., D.D.S.,
Hugenschmidt, Arthur C., D.D.S.,
Hunt, Charles D.,
Hutchinson, Randall, A.B. (Princeton),
Jennings, John E.,
Johnson, Theodore M., Ph.G.,
Jones, Kent C.,
Jones, Le Roy H.,
Juat, Francis, A.B. (Cheseaux),
Keller, Harry M.,
Kintzing, Pearce, B.S. (Lafayette),
Kirby, Ellwood R.,
Knotts, Ira D.,
Lacayo, Alfonso, A.B.,
Lake, Wilson A.,
Lambach, Frederick, Jr.,
Leaman, William G.,
Leidy, Joseph, Jr., A.B. (Central High School),
Lord, Jere W., A.B. (Johns Hopkins),
Macias, José J., Ph. B.,
Marchand, Jacob F., A.M. (Wash. Irwin, & Jefferson),
Maercklein, Bernhard G., D.D.S.,
Martin, Charles B.,
Martin, Peter J., J.,
Maurer, James M., A.B. (Lafayette)
Mial, Leonidas L., A.B. (Univ. of N. C.),
Moylan, Peter F.,
McAlister, John B., A.B. (Penna. College),
McCauley, Charles A.,
McCauley, John W., A.B. (Union College),
McCready, Robert, Ph.G.,
Nicke, S. Pusey,
Norris, Richard C., A.B. (Dickinson),
O'Brien, Thomas C.,
D. J. McKibben.
J. H. Musser.
Robert Battey.
Jas. Fraunfelter.
University.
J. G. Hartwick.
M. B. Hartzell.
N. A. Randolph.
University.
M. A. Henkel.
Wm. M. Guilford.
Thos. W. Evans.
University.
J. T. Dunnott.
James Mccray.
R. D. Jones.
Wm. & C. P. Russell.
University.
T. C. Walton.
R. Armstrong.
University.
Spencer Morris.
University.
J. H. Ingram.
John Knox.
University.
Joseph Leidy.
University.
W. D. Hamaker.
University.
University.
L. Ott.
E. Samuel.
E. B. Haywood.
J. B. Scott.
University.
A. D. Allen.
University.
Robt. E. Bromwell.
University.
Hiram Corson.
(Univ. of Penna.),
Reeder, Jeremiah V., Muncy, H. M. Essick.
Rodgers, Robert, Jr., Philadelphia, J. Howard Evans.
Roessler, George F., Ph.G., Berlin, Germany, Henry Beates.
Rudderow, Francis, A.B. (Univ. of Pa.), B. J. Rudderow.
Beeder, Jeremiah V., Muncy, University.
Rodgers, Robert, Jr., Philadelphia, H. Bobb.
Roessler, George F., Ph.G., Berlin, Germany, C. W. Weaver.
Rudderow, Francis, A.B. (Univ. of Pa.), L. H. Dravo.
Salinas, Sebastian, B.S., Leon, Nicaragua, S. B. McCleary.
Shissler, Alfred G., Shamokin, University.
Smith, Joseph R., Lancaster, J. H. Grove.
Snavely, Harry B., Ph.G., West Chester, J. C. Biddle.
Spencer, Elwood P., Philadelphia, J. J. Walsh.
Sprissler, Theodore, Ph.G., Philadelphia, Abraham Stout.
Stuhl, B. Franklin, Ph.G., Pittsburgh, D. W. Maull.
Stein, James, Bethlehem, R. S. Sutton.
Stiles, William E., Wilmington, Del., University.
Stout, C. Edwin, Philadelphia, P. M. Kelly.
Talley, Frank W., Philadelphia, Wm. B. Breed.
Taylor, William B., A.B. (Univ. of Wooster), N. J., Jno. J. Black & D.
Townes, William C., Ph.B. (Univ. Oxford, Miss., F. Woods.
.Turtle Creek, Q. C. & C.T. N. Farquhar.
Of Miss.), Jeff. Med. College.
Trout, John Harry, Ph.G., Landisville, J. P. Waterhouse.
Turnbull, Thomas, Jr., Hartford, Conn., Lewis D. Harlow.
Tybout, Richard Raymond, New Castle, Del., University.
Walker, William J., E. Bethlehem, Robert Pillow.
Warder, Charles B., M.D., Philadelphia, Spencer Trotter.
Waterhouse, Charles F., A.B., Cincinnati, Ohio, J. J. B. Ribble.
Weston, George D., B.S. (Dartmouth), Windsor, Vt.,
Windurfva, Sven, M.F.C. (Univ. Philadelphia, University.
Upsala),
(Yale),

Students of Third Year, 120.

SECOND YEAR.

(lafayette),
(Dickinson Seminary),
Baker, James H., A.B. (Hamilton Clinton, N. Y., University.
<table>
<thead>
<tr>
<th>Name</th>
<th>City, State, University</th>
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<tbody>
<tr>
<td>Barberena, Narciso, B.S.</td>
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<td>Blake, Lewis J., A.B.</td>
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<td>Bowman, John H., B.S.</td>
<td>Mifflinville, J. J. Brown</td>
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<td>Downes, Randolph H., Ph. G.</td>
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<td>Duer, S. Naudain, A.B.</td>
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<td>Easter, Daniel M.</td>
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<td>Eckman, Philip N.</td>
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<td>Rochester, N. Y., Jos. A. Biegler and Judson Daland</td>
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Pierce, William Chandler, Wilmington, Del.,
Prevost, Washington Mallet, Philadelphia,
Rabe, James W., Cleveland, Ohio,
Randolph, Philip J. S., Philadelphia,
Ray, Frank W., A.B. (Union Coll.) Columbia, S. C.,
Rea, William F., Philadelphia,
Riegel, William A., A.B. (Penna. Catasaqua, College),
Riley, Gustavus T., Washington, D. C.,
Ross, Thomas Haven, Chestnut Hill,
Roth, Emil, Philadelphia,
Rothrock, John L., A.B. (Penna. Catsauqua College),
Salade, Louis Audenried, A.B. Tamaqua, Franklin and Marshall,
Schoch, Lester E., Philadelphia,
Schoch, Will E., Easton,
Schrader, Charles B., A.B. (Lafayette), Lock Haven,
Seibert, Albert A., Pottsville,
Sharples, Caspar Wistar, A.B. (Oregon University), Eugene City, Ore.,
Sharpless, William T., West Chester,
Shick, William F., Easton,
Shurtleff, Harry C., Philadelphia,
Spellissy, Joseph M., A.B. (Georgetown University), Philadelphia,
Stavely, A. Livingston, A.B. (Princeton), Lahaska,
Stevens, John C., B.S. (Dickinson), Duncan cannon,
Steltz, P. Harry, Allentown,
Sweringen, Budd V., Port Wayne, Ind.,
Tailliacq, Ricardo, Cienfuegos, Cuba,
Tam, John L., Georgetown, Del.,
Taylor, Harry B., Ph. G., Philadelphia,
Thomas, Thomas Brook, Wilkes-Barre,
Thompson, Jesse B., Huf f ville, N. J.,
Troxell, Jere. S., Jr., Siegfried's Bridge,
Vanneman, William S., Salem, N. J.,
Voorhees, Shepard, Daggetts Mills,
Walter, Charles, A.B. (Central High School), Philadelphia,
Webster, Charles F., Whalleyville, Md.,
Whaley, Benton Harris, Philadelphia,
Wheeler, Harry S., Whalleyville, Md.,
DEPARTMENT OF MEDICINE.

Yeager, Frank N., Berriesburg, E. L. Yeager,
Zayas, Fernando A. de, A.B., Matanzas, Cuba, Judson Daland.
Zimmerman, Mason W., Ph. G., Philadelphia, University.
Zuniga, Francisco J., A.B., Masaya, Nicaragua, University.

Students of the Second Year, 136.

First Year.

Adams, J. Howe, Philadelphia, D. Hayes Agnew.
Anderson, Charles, Philadelphia, University.
Anderson, Willis E., Shelby, Ohio, University.
Applebach, Harry E., Sellersville, N. Applebach.
Bacon, John, Greenwich, N. J., H. C. Wood.
Baker, Nathan M., B.S. (Univ. of St. Peter, Minn., Chas. N. Hewitt.
Minn.),
Bashore, Harvey B., A.B. (Yale), West Fairview, D. W. Bashore.
Boiling, Robert H., Chestnut Hill, Robt. Bolling.
Brooke, Benjamin, Philadelphia, J. Brooke.
Canby, Edmund, Wilmingtion, Del., D. W. Maul.
Carpenter, John T., Jr., Pottsville, J.T. & J.S. Carpenter.
Clarke, James F., B.S. (Iowa State Univ., University.
Fairfield, Iowa, University.
Clark, Robert, Philadelphia, N. A. Randolph.
yette), Philadelphia,
Clifford, Lawrence B., Latrobe, B. R. Peltz.
Cressman, George S., Lafayette Hill, R. H. Milner.
Cross, George D., Chester, R. E. Crothers.
Crothers, Augustus C., A.B., Oakwood, Md., J. D. Strawbridge.
Curry, Edwin Adams, A.B. (Dickinson), University.
Davies, Charles N., Bryn Mawr, J. Davis & B. B.
Durborrow, Samuel Z., Philadelphia, Judson Daland.
Ferguson, Albert D., Philadelphia, J. F. Holt.
Fowler, Charles C., A.B. (Emory Coll.), Spartanburg, S. C., University.

University.
<table>
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<tr>
<th>Name</th>
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<th>School or College</th>
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<td>Fox, Horace</td>
<td>Philadelphia</td>
<td>Wm. Osler</td>
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<td>Frasse, Irwin N.</td>
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<td>French, Edward M.</td>
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<td>San Francisco, Cal.</td>
<td>Jno. C. Sundberg</td>
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<td>Gallbraith, James L., A.B.</td>
<td>Philadelphia</td>
<td>A. G. Reed</td>
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<td>Gallagher, George W.</td>
<td>Dawson</td>
<td>E. Phillips</td>
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<td>Gallaher, Thomas J., Jr.</td>
<td>Pittsburgh</td>
<td>Thos. J. Gallaher</td>
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<td>Galloway, Albert B., A.B.</td>
<td>Philadelphia</td>
<td>University</td>
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<td>Geissenger, Henry G.</td>
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<td>G. W. Griffith</td>
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<td>Gillespie, Frank</td>
<td>Principio, Md.</td>
<td>R. R. Crothers</td>
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<td>Coosawhatchie, S. C.</td>
<td>F. X. Dercum</td>
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<td>David Hall</td>
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<td>Harris, Thomas J., A.B.</td>
<td>Claremont, N. H.</td>
<td>University</td>
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<td>(Dartmouth)</td>
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<td>M. T. Prendergast</td>
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<td>C. W. Heffner</td>
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<td>Horning, Frank L.</td>
<td>Montpelier</td>
<td>D. Dechert</td>
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<td>Howarter, Emanuel L., B.E.</td>
<td>Walpole</td>
<td>University</td>
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<td>Hull, Waldo W.</td>
<td>Skowhegan</td>
<td>W. R. Hull</td>
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<td>Hunsberger, J. Newton</td>
<td>Westfield</td>
<td>Sam'l Wolfe</td>
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<td>Jenkins, Thomas H.</td>
<td>Alton</td>
<td>W. J. Butler</td>
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<td>Johnson, Albert T. W.</td>
<td>New Alton</td>
<td>T. W. Johnson</td>
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<tr>
<td>Johnston, William G.</td>
<td>Trenton</td>
<td>University</td>
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<td>Keeser, Frank R., Ph. B.</td>
<td>Philadelphia</td>
<td>C. De Witt</td>
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<td>(Dickinson Coll.)</td>
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<td>Keiser, Elmer E., A.B.</td>
<td>Lewisburg</td>
<td>University</td>
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<td>(Bucknell Univ.)</td>
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<td>Kneass, Samuel S., A.B.</td>
<td>Philadelphia</td>
<td>J. A. Murphy</td>
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<td>(Univ. Penna.)</td>
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<td>Ch. F. Mason</td>
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<td>Kulp, John Stewart</td>
<td>Wilkes-Barre</td>
<td>University</td>
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<td>La Motte, Harry</td>
<td>Plattsburgh, N. Y.</td>
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<td>Lear, John, A.B. (Lafayette)</td>
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<td>University</td>
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<td>Lederman, Moses D.</td>
<td>Lancaster</td>
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<td>(Univ. of Penna. and Harvard)</td>
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<td>Jno. L. Dickey</td>
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<td>G. D. O'Farrell</td>
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<td>List, Charles W.</td>
<td>Wheeling, W. Va.</td>
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<td>Longshore, James B.</td>
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<td>University</td>
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<td>Mercer, Charles P., Ph. B.</td>
<td>Philadelphia</td>
<td>S. T. Neuber</td>
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<td>Miles, Thomas J.</td>
<td>Sac's &amp; Fox Agency, University</td>
<td>Ind. Ter.</td>
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<td>Miller, Charles L.</td>
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<td>S. T. Weiss</td>
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<td>Miller, Horace W.</td>
<td>Urbana, Ill.</td>
<td>J. T. Miller</td>
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<td>Miller, Morris Booth</td>
<td>Media</td>
<td>Chas. J. Essig</td>
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<td>Milnor, William S., A.B.</td>
<td>Philadelphia</td>
<td>University</td>
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<td>(C.H.S.)</td>
<td>Moore's Salt Works, D. W. Jones</td>
<td>Ohio</td>
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<td>Moore, Cyrus Chester</td>
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McClure, John T., Philadelphia, University.
McConnell, James W., Manayunk, University.
McCormick, Louis P., Connelsville, University.
McGalliard, Benjamin W., Ph.B. (Lafayette), Bridgeton, N. J., University.
McGill, Will B., Marionville, Mo., University.
McNaugher, Samuel N., A.B. (Westminster), Allegheny, University.
Neuber, George G. E., A.B. (Univ. of Penna.), New Hope, University.
Naylor, Walter W., Philadelphia, University.
Patrick, William S., Allentown, University.
Phillips, Horace, Philadelphia, University.
Pickett, Evan, Minerva, Ky., University.
Posey, William C., A.B. (Univ. of Penna.), Philadelphia, University.
Quin, Granville P., Philadelphia, University.
Rawlins, Benjamin L., Dallas, Texas, University.
Rhodes, Oreon S., E. Stroudsburg, University.
Rote, John P., A.B. (K.S.U.), San Antonio, Texas, University.
Rothermel, Pius, Molltown, University.
Salter, William Homes, Philadelphia, University.
Schneider, Louis T., Philadelphia, University.
Scott, Charles G., Roarkee, India, University.
Scott, J. Allison, A.B. (Univ. of Penna.), Philadelphia, University.
Sharp, J. Riddle, Harrington, Del., University.
Sharp, Richard W., Ph.B. (Dickinson), Carlisle, University.
Sinnamon, George, Philadelphia, University.
Small, J. Frank, York, University.
Smith, Rolla L., Oakville, University.
Snyder, Elmer R., Hilltown, University.
Speers, Albert C., Speers, University.
Stanton, Howard, Philadelphia, University.
Stengel, Alfred, Pittsburgh, University.
Striegel, Charles A., Shenandoah, University.
Swaving, J. Harry, Pottsville, University.
Swift, Elisha P., A.B. (Lafayette), Allegheny, University.
Thompson, Alexander S., York, University.
Toulmin, Harry, Ph.B. (Lehigh), Philadelphia, University.
Trexler, Jacob F., Mertztown, University.
Tyson, T. Mellor, Philadelphia, James Tyson.
Umsaid, William M., Coatesville, Wm. R. Blakeslee.
Van Buskirk, Frederic W., Pottstown, Henry Beates.
Vannemier, Seymour D., San Antonio, Texas, Judson Daland.
Weiss, George T., Lebanon, S. Weiss.
Weiszgerber, John, Ph.B. (Univ. Philadelphia, University of Penna.), University.
Wethered, John L., Chestertown, Md., University.
Whiting, Albert D., Philadelphia, University.
of Penna.),
Wilson, George B., Kittery, Me., C. J. Cleborne.
Wilson, Richard, Philadelphia, University.
Wilson, Samuel M., B.A., Holliam, Jas. 1st Wilson.
Wolf, Charles N., Philadelphia, J. A. Armstrong.
Woodland, George Y., Norristown, J. Wm. White.

Students of the first year 137.

SPECIAL STUDENTS.
Bell, R. Newton, M.B.C.M., Philadelphia, Univ. of Edinburgh.
Cotiart, Edward M., Haverton Sta., University.
Craig, Harvey A., M.D., Galesburg, Ill., Bellevue Hospital,
Noot, Simon C., New York, N. Y., Univ. of Buffalo.
Shull, John D., M.D., Markelville, University.
Warwick, Hill S., M.D., Baltimore, University of Md.
Willson, William G. G., M.D., Jersey City, N. J.,

TOTAL.
Students of the fourth year 4
Students of the third year 120
Students of the second year 136
Students of the first year 137
Special Students 9

406

The total number of new matriculates the present session, including those admitted to advanced standing, is 159.
SUMMARY.

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<td>Nova Scotia</td>
<td>1</td>
</tr>
<tr>
<td>Ohio</td>
<td>6</td>
</tr>
<tr>
<td>Oregon</td>
<td>2</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>262</td>
</tr>
<tr>
<td>Pr. Edward's Island</td>
<td>1</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>1</td>
</tr>
<tr>
<td>South Carolina</td>
<td>4</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1</td>
</tr>
<tr>
<td>Tennessee</td>
<td>4</td>
</tr>
<tr>
<td>Texas</td>
<td>3</td>
</tr>
<tr>
<td>Vermont</td>
<td>1</td>
</tr>
<tr>
<td>Virginia</td>
<td>3</td>
</tr>
<tr>
<td>West Indies</td>
<td>1</td>
</tr>
<tr>
<td>West Virginia</td>
<td>1</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>406</td>
</tr>
</tbody>
</table>

ORGANIZATION OF THE MEDICAL SCHOOL.

This venerable Institution, the oldest of its class in the United States, was founded in 1765, by Dr. John Morgan, who filled it the first medical professorship created in America. Through Dr. Morgan, the pupil of Hunter in London and of Cullen in Edinburgh, the graduates of this school take a just pride in regard to it as the lineal descendant of the best medical schools of Great Britain in the last century. To Dr. Morgan was soon joined another pupil of Cullen, Dr. Wm. Shippen, as Professor of Anatomy and Surgery, thus forming another tie of relationship to the celebrated University of Edinburgh, whose methods of instruction were substantially adopted here. In the next year Dr. Adam Kuhn was added as Professor of Botany and Materia Medica, and in June, 1768, a “Commencement was held” at which medical honors were bestowed, the first in point of time in America. In 1769, Dr. Benjamin Rush was elected Professor of Chemistry, and Dr. Thos. Bond of Clinical Medicine.

To the Faculty thus composed of Morgan, Shippen, Kuhn, Rush and Bond have succeeded, at various times, professors whose reputation has been national, such as Barton, Wistar, Chapman, Physick, Dewees, Horner, Hare, Gibson, Jackson, George B. Wood, Hodge, James B. Rodgers, Carson, the elder Pepper, Francis Gurney Smith and Neill.

The number of its graduates is ten thousand and four.

ADMISSION.

Candidates for admission are required: First, to write an Essay (not exceeding in length a page of foolscap), as a test of Orthography and Gram-
mar; second, to pass an examination in Elementary Physics (Part I. of Fowne’s Chemistry). A Candidate who has received a collegiate degree, or passed the matriculate examination of a recognized college, or who has a certificate covering the required subjects from a recognized normal or high school, or a duly organized county medical society that has instituted a preliminary examination—such as that adopted by the Medical Society of the State of Pennsylvania—may enter without examination. *

Students may report to the Secretary for examination at any time after the third Monday in September. Arrangements may be made for examination at other times throughout the year, upon application to the Secretary.*

The attention of those looking toward the study of Medicine is particularly called to the unusual advantages of the Course in Philosophy in the College Department of the University. Students who have pursued satisfactorily the last two years of that course will be exempted from the preliminary examination.

Students who have attended one course in a Medical School (not Homœopathic or Eclectic), are admitted to the Second Year of the University course, upon passing a satisfactory examination in General Chemistry, Materia Medica and Pharmacy, and the elements of General Pathology. Students who have attended two courses in a regular Medical School are admitted to the third year, upon passing satisfactorily an examination in General and Medical Chemistry, Materia Medica and Pharmacy, Anatomy, Physiology and the elements of General Pathology.

Graduates of regular medical schools in good standing are admitted to the third year without an examination. The diplomas of graduates from other schools are not endorsed by the Faculty of this school for registration except after an examination of their holders, similar in all respects to that required of its own graduates. The fee for such examination is thirty dollars.

Graduates of Colleges of Pharmacy and Dental Colleges in good standing are admitted to the second year upon passing the entrance examination only.

Examinations for admission to advanced standing for Session 1887–8 will be held Thursday, September 29th, at noon.†

* Examinations for admission will also be held annually during the last week in June in Boston, Mass., Rochester, N. Y., Meadville, Pa., Pittsburgh, Pa., Raleigh, N. C., Columbia, Tenn., Atlanta, Ga., Mobile, Ala., Cincinnati, O., Chicago, Ill., Detroit, Mich., St. Louis, Mo., St. Paul, Minn., San Francisco, Cal. The names of the examiners will be found on page 66.

† Students from other colleges admitted to the second year who have not had instruction in Practical Histology are expected to make up such deficiency by taking a special course, as the second year’s work presupposes a knowledge of the technique of the microscope. Students admitted to the third year must make up deficiencies in Pathological Histology as well.
COURSE OF STUDY.

The course of study earnestly recommended to students extends over four years, but the course is also arranged for three years, at the end of which the degree may be conferred. For the Fourth Year, almost wholly practical in character, a certificate is granted in addition to the diploma, to those passing a satisfactory examination in the studies of that year.

The First Year is largely occupied with work in the various laboratories of Chemistry, Pharmacy, Osteology, Histology, and Physiology, and in Dissection. The first year student may also attend clinical lectures in general medicine and general surgery. In the Second Year, in addition to didactic and clinical teaching, practical instruction is given in Medical Chemistry, Pathological Histology and Physical Diagnosis. Dissection is continued. Throughout the Second and Third years, the student is required to attend the general medical and surgical clinics at the University and Philadelphia Hospitals, and the clinics in special departments at the former. Special bedside instruction in Clinical Medicine, including Physical Diagnosis and Laryngology, in Surgery, and in Gynecology is given in the third year, as well as opportunities for the practical study of diseases of the eye, ear, throat, and skin, and for acquiring proficiency with the various instruments employed. For this purpose, the third-year class is divided into sections, each of which receives direct personal instruction.

The course of instruction is so arranged as to permit mainly constant introduction of new material, while retaining the repetition of essential subjects aimed at by the old methods. The laboratory instruction is so co-ordinated with the oral teaching as to illustrate the subjects of the lectures.

Advanced students are encouraged to make original researches in the laboratories of pharmacy, chemistry, physiology, pathology, and experimental therapeutics.

The result of the adoption of the prolonged and graded course on the composition of the classes and on their proficiency has been most gratifying. A proportion of students, much larger than ever before, have had a good education, either in colleges or in academies, and their deportment has been characterized by increased earnestness and zeal. The annual examinations have steadily advanced in grade, while those for graduation have shown a degree of merit, and the graduation Theses an amount of scientific attainment and literary culture, higher than has heretofore been found.

Students of the University may attend, without additional charge, the lectures and recitations in all other departments, provided that the consent of the Dean of the department has first been obtained.
# OUTLINE OF THE COURSE

## FIRST YEAR

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Total hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>3 lectures</td>
<td>13</td>
</tr>
<tr>
<td>Topographical Anatomy</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>Histology</td>
<td>2½ hours</td>
<td>3</td>
</tr>
<tr>
<td>Materia Medica and Pharmacy</td>
<td>1 lecture</td>
<td>3</td>
</tr>
<tr>
<td>General Chemistry, including Chemical Physics</td>
<td>2 lectures</td>
<td>6</td>
</tr>
<tr>
<td>Physiology</td>
<td>3 lectures</td>
<td>4</td>
</tr>
<tr>
<td>General Pathology</td>
<td>1 lecture</td>
<td>1</td>
</tr>
<tr>
<td>Hygiene</td>
<td>1 lecture</td>
<td>2</td>
</tr>
<tr>
<td>General Clinics, Medical and Surgical</td>
<td>1 lecture</td>
<td>1</td>
</tr>
</tbody>
</table>

Final Examinations at the end of the Course: General Chemistry, Materia Medica and Pharmacy, and Elements of General Pathology.

## SECOND YEAR

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Total hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>3 lectures</td>
<td>13</td>
</tr>
<tr>
<td>Topographical Anatomy</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>Medical Chemistry</td>
<td>1 lecture</td>
<td>5</td>
</tr>
<tr>
<td>Physiology</td>
<td>3 lectures</td>
<td>3</td>
</tr>
<tr>
<td>General Pathology and Morbid Anatomy</td>
<td>2 lectures</td>
<td>3½</td>
</tr>
<tr>
<td>Physical Diagnosis</td>
<td>1 lecture</td>
<td>2</td>
</tr>
<tr>
<td>Therapeutics</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>Theory and Practice of Medicine</td>
<td>3 lectures</td>
<td>3</td>
</tr>
<tr>
<td>Surgery</td>
<td>3 lectures</td>
<td>3</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>General Clinics, Medical and Surgical</td>
<td>1 lecture</td>
<td>1</td>
</tr>
<tr>
<td>Special Clinics (Nervous Diseases, Diseases of Skin, Eye, Ear, Gynecology)</td>
<td>1 lecture</td>
<td>1</td>
</tr>
</tbody>
</table>

Final examinations at the end of the Course: Anatomy, including Topographical Anatomy, Medical Chemistry, and Physiology.

## THIRD YEAR

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Total hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Pathology and Morbid Anatomy</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>Demonstrations in Morbid Anatomy</td>
<td>1 hour</td>
<td>1</td>
</tr>
<tr>
<td>Therapeutics</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>Theory and Practice of Medicine</td>
<td>3 lectures</td>
<td>3</td>
</tr>
<tr>
<td>Surgery</td>
<td>3 lectures</td>
<td>3</td>
</tr>
<tr>
<td>Operative Surgery and Minor Surgery</td>
<td>1 lecture</td>
<td>3</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>2 lectures</td>
<td>2</td>
</tr>
<tr>
<td>Operative Obstetrics</td>
<td>1 hour</td>
<td>1</td>
</tr>
</tbody>
</table>

Diseases of Woman and Children—1 lecture per week
Gynaecology—1 lecture per week, 1 hour bedside teaching 2
*Bedside Instruction in Practical Medicine 1
*Bedside Instruction in Practical Surgery 1
General Clinics, Medical and Surgical, including Philadelphia Hospital Clinics 8
Special Clinics (Nervous Diseases, Diseases of the Skin, Eye, Ear, Paediatrics, Gynaecology at both University and Philadelphia Hospitals), Genito-Urinary Diseases 8½
Medical Jurisprudence and Toxicology 1

Final examinations at the end of the Course: General and Special Pathological Anatomy, Therapeutics, Theory and Practice of Medicine, Clinical Medicine, Surgery, Obstetrics, and Diseases of Women and Children.

FOURTH YEAR.

Clinical Medicine and Physical Diagnosis, including Laryngology—2 hours clinical lecture—2 hours practical instruction 4
Clinical Surgery—2 hours clinical lecture, 1 hour practical instruction 3
Operative Surgery—1 hour practical instruction, for half the term ½
Nervous Diseases and Electro-Therapeutics—1 hour clinical lecture, 1½ hours practical instruction 2½
Mental Diseases—1 hour lecture 1
Gynaecology—1 hour didactic lecture, 1 hour clinical lecture, 1 hour practical instruction 3
Paediatrics—1 hour practical instruction, for half the session, 1 hour clinical lecture, for half the session 1
Dermatology—1 hour didactic lecture, for half the session, 1 hour clinical lecture, 1 hour practical instruction 2½
Ophthalmology—1 hour didactic lecture, 1 hour clinical lecture, 1 hour practical instruction 3
Otology—1 hour didactic lecture for half the session, 1 hour clinical lecture, 1 hour practical instruction for half the session 2
Clinical and Operative Obstetrics—1 hour practical instruction for half the session ½
Orthopaedic Surgery—1 hour didactic lecture for half the session, 1 hour practical instruction for half the session 1
Genito-Urinary Diseases—1 hour clinical lecture, for half the term ½
Medical Jurisprudence and Toxicology—1-hour lecture 1

To all Students who pursue a four years' course, and who pass a satisfactory examination in the studies of the fourth year, will be awarded a certificate in addition to the diploma. The degree of Doctor of Medicine will also be conferred on graduates of other medical schools in good standing who take the third year of the three years' curriculum, or who attend the fourth year, and who pass a satisfactory examination in Morbid Anatomy, Therapeutics, Practice of Medicine, Surgery, and Obstetrics.

* For these courses the class is divided into sections, so that each student may receive direct personal instruction.
TEXT-BOOKS IN MEDICINE.

TEXT-BOOKS.

FIRST YEAR.

Chemistry: Fownes's Chemistry; Mutter's Analytical Chemistry.
Anatomy: Leidy; Gray; Schaeffer's Practical Histology.
Physiology: Yeo.
General Pathology: Kinkelisch's Elements of Pathology, translated by Mercier; Tyson's Cell Doctrine, pp. 127-152.

COLLATERAL READING.

Wurtz's Elements of Modern Chemistry; Richter's Chemistry.
Wood & Bache's Dispensatory.
Quain; Wilson; Allen; Stricker's Histology.
Foster.

SECOND AND THIRD YEARS.

Medical Chemistry: Greene; Tyson's Practical Examination of Urine; Marshall & Smith's Chemical Analysis of Urine.
Anatomy: Leidy, Gray.
Physiology: Foster.
General Pathology and Morbid Anatomy: Kinkelisch's Elements; Coats's Manual of Pathology.
Therapeutics: H. C. Wood.
Practice of Medicine: Flint or Roberts; Bruen's Physical Diagnosis.

Surgery: Agnew; Ashhurst.

Obstetrics: Playfair's Midwifery.

Gynecology: Goodell's Lessons in Gynecology.
Medical Jurisprudence and Toxicology: Reese.

Quain; Allen; Wilson; Stricker.
Carpenter.
Green, Pathology and Morbid Anatomy; Orth's Diagnosis in Pathological Anatomy.
Wood & Bache's Dispensatory.
Pepper's System of Practical Medicine; Stille's Therapeutics; Stille's & Maisch's Dispensatory; Duhring on Diseases of the Skin; Tyson on Bright's Disease and Diabetes; Seiler, Diseases of Throat and Nose.
Smith's Principles and Practice; Ashhurst's International Encyclopaedia of Surgery; Ehrichsen; Billroth's Surgical Pathology.
Hodge's Obstetrics; West on Diseases of Women; West on Diseases of Children; Meigs and Pepper on Children. Starr on Children.

Gynecology: Goodell's Lessons in Gynecology.
Medical Jurisprudence and Toxicology: Reese.

The cost of the necessary text-books is within $50, distributed over the three years.
ORDER OF LECTURES, DAILY.—FIRST YEAR.

<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 A.M.</td>
<td>General Chemistry.</td>
<td>General Chemistry.</td>
<td>Chemical Laboratory, two hrs.</td>
<td>Topographical Anatomy.</td>
<td>Dissection.</td>
<td>Philadelphia Hospital, Medical and Surgical Clinics, 10 to 12.</td>
</tr>
<tr>
<td>10 A.M.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 M.</td>
<td>Practical Normal Histology. One section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology. One section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology. One section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology. One section two hours. Others Osteology, Practical Physiology or Dissection.</td>
<td>Practical Physiology. One section two hours. Others dissect.</td>
<td></td>
</tr>
<tr>
<td>1 P.M.</td>
<td>Osteology or Dissection.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7½ to 10 P.M.</td>
<td>Pharmacy, Laboratory.</td>
<td>Bandaging.</td>
<td>Pharmacy, Laboratory.</td>
<td>Bandaging.</td>
<td>Bandaging.</td>
<td></td>
</tr>
</tbody>
</table>

U. H. University Hospital.

For the study of Histology, Practical Physiology, Osteology and Syndesmology, the class is divided into sections, one of which is occupied at a time. Students not thus engaged dissect or attend Clinics.—See Special Roster.
ORDER OF LECTURES, DAILY.—SECOND YEAR.

<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>8½ A.M.</td>
<td></td>
<td></td>
<td></td>
<td>Medical Chemistry</td>
<td></td>
<td>Medical Chemistry, Laboratory, two hours.</td>
</tr>
<tr>
<td>9 A.M.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 A.M.</td>
<td>Topographical Anatomy</td>
<td>Morbid Anatomy</td>
<td></td>
<td>Medical Clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 P.M.</td>
<td>Clinic, Diseases of the Ear, U. H.</td>
<td>Practical Pathol. Histology</td>
<td></td>
<td>Practical Pathol. Histology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3½ P.M.</td>
<td>Obstetrics</td>
<td>Anatomy</td>
<td>Obstetrics</td>
<td>Anatomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4½ P.M.</td>
<td>Physiology</td>
<td>Phys. Diagnosis Lecture</td>
<td>Physiology</td>
<td>Therapeutics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5½ P.M.</td>
<td>Practice</td>
<td></td>
<td></td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7½ to 10 P.M.</td>
<td>Dissection</td>
<td>Dissection</td>
<td>Dissection</td>
<td>Dissection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

U. H. University Hospital.

For the study of Pathological Histology and Physical Diagnosis the Class is divided into sections, one of which is occupied at a time; those of the second-year students not thus engaged attend Clinics.
<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
</table>

U. H. University Hospital.

For WARD CLASS instruction the third-year class is divided in sections. See SPECIAL ROSTER.
<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
</table>

U. H. University Hospital.

*Children’s Hospital.
# Roster of Bedside Instruction and Special Clinics

For students of the third year, 
Session 1886-7.

For attendance upon these Courses, the Third Year Class is divided into four sections, A, B, C, and D, which attend as follows:

## First Period, from Monday, Oct. 4th, to Friday, Nov. 12th, inclusive.

<table>
<thead>
<tr>
<th>Section</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>C</td>
<td>B</td>
<td></td>
<td>D</td>
</tr>
<tr>
<td>Special Clinics</td>
<td>D</td>
<td>A &amp; D</td>
<td>A &amp; C</td>
<td>A &amp; B</td>
</tr>
</tbody>
</table>

## Second Period, from Monday, Nov. 15th, to Friday, Jan. 14th, inclusive.

<table>
<thead>
<tr>
<th>Section</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>B</td>
<td></td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>C</td>
<td>D</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>D</td>
<td>A</td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>Special Clinics</td>
<td>A</td>
<td>B &amp; C</td>
<td>B &amp; D</td>
<td>A &amp; B</td>
</tr>
</tbody>
</table>

## Third Period, from Monday, Jan. 17th, to Friday, February 25th, inclusive.

<table>
<thead>
<tr>
<th>Section</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>B</td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>D</td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>A</td>
<td>C</td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Special Clinics</td>
<td>B</td>
<td>B &amp; D</td>
<td>A &amp; C</td>
<td>C &amp; D</td>
</tr>
</tbody>
</table>

## Fourth Period, from Monday, February 28th, to Friday, April 8th, inclusive.

<table>
<thead>
<tr>
<th>Section</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>B</td>
<td>D</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Special Clinics</td>
<td>C</td>
<td>A &amp; C</td>
<td>B &amp; D</td>
<td>C &amp; D</td>
</tr>
</tbody>
</table>

The instruction is given at the University Hospital at 1 o'clock. Professor Osler meets the sections of the Third Class in the Front Ward, Gibson Wing; Prof. Goodell, in the Lower Lecture Room; and Prof. Ashhurst in the Front Ward, first floor. The Special Clinics are held in the Upper Lecture Room.

This arrangement enables each section to attend, during an equal portion of the term, the clinical lectures on special subjects, as follows:

## 1 P.M.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Strawbridge</td>
<td>Dr. Stelwagon</td>
<td>Prof. Norris</td>
<td>Prof. Wood</td>
</tr>
<tr>
<td>Otology</td>
<td>Dermatology</td>
<td>Ophthalmology</td>
<td>Nervous Diseases</td>
</tr>
</tbody>
</table>
The entire Third Year Class will attend the General Medical, Surgical, and Gynecological Clinics, held on Wednesday and Saturday, from 12 to 2 o’clock, in the Upper Lecture Room; also Medical Clinic on Thursday, at 11 o’clock, and the Demonstrations in Morbid Anatomy by Prof. Tyson and Dr. Formad at 10 and 11 o’clock on Monday.

SPECIAL ROSTER OF LABORATORY INSTRUCTION IN HISTOLOGY, BIOLOGY, OSTEOLOGY, AND SYNDENOMOSCOPY, FOR STUDENTS OF THE FIRST YEAR, SESSION 1885-6.

For instruction in these Laboratories the First Year Class is divided into four sections, A, B, C, D, which attend as follows:

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<th>From Monday, October 4th to November 5th, inclusive.</th>
<th>2d Period</th>
<th>From Monday, November 8th to January 11th, inclusive.</th>
<th>3d Period</th>
<th>From December 13th to January 22nd, inclusive.</th>
<th>4th Period</th>
<th>From January 24th to February 26th, inclusive.</th>
<th>5th Period</th>
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All students not occupied during the above hours dissect from 12 to 2 daily, and from 9 to 11 Friday.
GRADUATION.

At the close of the third year, a student who has passed all examinations satisfactorily, receives the degree of Doctor of Medicine on the following conditions:

I. He must be of age and of good moral character.

II. He must have passed a satisfactory examination in all the branches of the curriculum; and his last course of instruction must have been at this School. (A Thesis is no longer required, but students are recommended to prepare Theses in competition for the various Prizes.)

III. After notice of having successfully passed the final examination, he must enter his name on the Register of Candidates for the Degree.

IV. He must be present at Commencement, unless excused by the Faculty.

ADDITIONAL INSTRUCTION.

In addition to the required Course and to the voluntary fourth year, Clinics, both general and special, and Lectures, both Theoretical and Practical, are continued after Commencement until the middle of June. All subjects connected with the fundamental departments of medicine, or with its several subdivisions, as determined by usage, are thoroughly taught in one or other of these courses; and it is strongly urged upon all students, especially those of the second and third years, to continue their studies during the spring and summer, and, by all means, to pursue the studies of the fourth year.

ARRANGEMENT OF SESSIONS.

The Academic Year is divided into two Sessions: the WINTER SESSION, on which alone attendance is required, which is preceded by an INTRODUCTORY COURSE of two weeks, and the SPRING SESSION.

The SPRING SESSION 1887 begins Monday, May 9th, and continues until the middle of June.

The INTRODUCTORY COURSE for the Sessions of 1887–8 begins Monday, September 19th.

The WINTER SESSION 1887–8 begins on Monday, October 3rd, and ends at Commencement, on Tuesday, May 1st, 1888.

EXPENSES.

WINTER TERM.

First Year.

Matriculation Fee .................................................. $5 00
For general ticket, admitting to all the lectures and laboratory work assigned to this year, including dissection ................................... $150 00
Dissecting material .................................................. $1 a part.
SECOND YEAR.

For general ticket, admitting to all the lectures and laboratory work assigned to this year, including dissection $150 00
Dissecting material $1 a part.

THIRD YEAR.

For general ticket, admitting to all the lectures and practical work assigned to this year, including operating and bandaging (no graduation fee) $150 00
Fee for the full third year course to graduates of other schools, including privilege of applying for graduation (no graduation fee) $150 00
Material for operating $1 a part.

FOURTH YEAR (Voluntary).

For general ticket, including all the practical courses of this year (no graduation fee) $150 00
To graduates of other schools, with the privilege of attending the didactic courses of the third year, and applying for graduation (no graduation fee) 200 00

The Tuition fee of $150 each year is on condition of its being paid before November 1st. If a division of payments is desired the fee will be $160 for the year. Eighty dollars to be paid before November 1st, and $80 before February 1st.

SPRING SESSION.

Matriculation fee (paid once only) $5 00
Tuition fee 30 00
This sum will be credited on account of the fee for the ensuing Winter Term.

FEES FOR SPECIAL COURSES.

(Students taking special or partial courses, if not graduates of the School, are required to pay the matriculation fee, in addition to the fees named below.)

For the full third Course, including bandaging and operating, to graduates of this school $75 00
For a single Course of Lectures, except Materia Medica 20 00
For Course on Materia Medica, and on Bandaging and Operating, each 10 00
For Practical Course in the Chemical Laboratory 25 00
For the Course in Practical Gynecology of the third year 25 00
For any one of the remaining Practical Courses of the third year 15 00
Graduates of the School are admitted to the lectures free of charge; but they pay the fees for the practical courses.

At the beginning of the first year, each student is required to make a deposit of $5 with the Professor of Chemistry, to cover "breakage" in the chemical laboratories. Any balance remaining is returned.

Under no circumstances are any changes made in the established fees. The only free scholarships granted are those under the regulations named below.

Board can be obtained in Philadelphia for $4 per week and upwards.

SCHOLARSHIPS.

A competitive examination of candidates to fill six free scholarships is held annually. (In 1887, on Wednesday, September 28th, at 12 o'clock, noon.) The candidates will be required—

First. To furnish satisfactory evidence that they are without means to defray the expenses of a medical education.

Second. To write a brief autobiography, not exceeding a page of foolscap, which will serve as a test of their qualifications in orthography and grammar.

Third. To pass a written examination in Latin prose translation on the first three books of Caesar, and a written examination in Physics, which may embrace questions relating to the general properties of matter, Mechanics, Heat, Light, and Electricity. The examination is not confined to the subject matter of any text-book, but Balfour Stewart's Physics covers the ground as nearly as any.

Fourth. They will be required to pay an examination fee of $5, which is not returned, but is transfered to the matriculation fee in the case of the successful candidates.

Candidates who propose to present themselves for examination will send their names, accompanied by the necessary certificate required by the first condition, to the Secretary of the Faculty of Medicine, before September 15th and appear without further notice.

FACILITIES FOR INSTRUCTION.

The instruction in the Medical Department is conducted in the Medical Hall, the Laboratory Building, and the Hospital of the University.

The Medical Hall contains the Wistar and Horner Museum, the Histological, Osteological, Physiological, Pathological, and Pharmaceutical Laboratories, and the Stillé Medical Library.

The Wistar and Horner Museum, founded nearly one hundred years
ago, has been annually augmented, and is unequalled in the United States for the number and variety of its specimens illustrating the normal and morbid anatomy of every part of the human body. It also contains a large number of preparations in comparative anatomy, and an extensive collection of models, used in illustrating the lectures. The Museum is open on Wednesdays and Saturdays, from 9 A. M. to 12 M., throughout the session, to matriculated students.

The Cabinet of Morbid Anatomy, collected by Dr. George B. Wood, and given by him to the University, contains an extensive series of wet preparations, drawings, and models in wax and other materials, a collection unrivalled in extent and value, for illustrating diseases of the internal organs and of the skin.

The late distinguished Professor of Obstetrics, Dr. Hugh L. Hodge, enriched the facilities of instruction in that special branch by the gift of his valuable Cabinet.

Through a like liberality of Dr. Henry H. Smith, Emeritus Professor of Surgery, and of the late Professor of Clinical Surgery, Dr. John Neill, the University has a further extensive and valuable gift of morbid specimens, models and drawings.

The HistoLogical Laboratory is under the supervision of the Professor of Anatomy, and the direct guidance of the Demonstrators of Histology. The laboratory is furnished with excellent microscopes, and all apparatus necessary to enable the first course student to become practically familiar with the most approved methods of microscopical technology, as well as with the Normal Histology of all the tissues and organs. During the spring months it is open for those who desire a course embracing those refinements and minutiae, which of necessity are omitted in the regular winter's work. Special facilities are afforded for original research; for this purpose the laboratory is open throughout the year, except during July and August.

The Osteo-Syndesmological Laboratory is under the supervision of the Professor of Anatomy and Demonstrator of Osteology. The first year student is required, in this Laboratory, to make himself familiar with the skeleton and the articulations, as a part of his instruction in practical anatomy.

The Physiological Laboratory is under the personal direction of the Professor of Physiology and the Demonstrator. It is furnished with every form of apparatus likely to be used by the practical physiologist. An elementary practical course in physiology, designed especially for first year students who are deficient in preliminary training in Biology, is continued throughout the Session; while every facility is afforded advanced students
and graduates pursuing special studies in that subject. The Laboratory is open throughout the year, except during July and August.

The Pathological Laboratory, under the direction of the Professor of General Pathology and Morbid Anatomy, and the Demonstrator of Pathological Histology, was opened in 1874, and attracts, from remote sections of the country, a large number of physicians and students who desire special preparation in Microscopic Technology, Normal and Pathological Histology, and Experimental Pathology. It is furnished with microscopes, and all appliances requisite for practical study and for original research.

This Laboratory is also supplied with a complete outfit for the investigation of Bacteria in their relation to infectious diseases, and for the study of the lower fungi.

Each student of the second year is provided with a separate table and microscope, with material and reagents, and receives personal instruction in Pathological Histology, in Mycology, and in the microscopy of urine.

Each student of the third year receives advanced practical instruction in Morbid Anatomy, and in the making of autopsies. Weekly demonstrations of the gross appearance of specimens, embracing all known morbid products, mostly in fresh condition, along with the microscopic sections, are features of this course.

The practical work, during the regular winter session, is obligatory on students of both the second and the third year.

Special instruction and guidance in original research are given by the demonstrators to advanced students.

The laboratory is open throughout the year, except during July and August.

The Pharmaceutical Laboratory is in charge of the Professor of Materia Medica and Pharmacy and the Demonstrators of Pharmacy. It is furnished with tables and all necessary apparatus. In it the student learns not only the various pharmaceutical processes, but also that familiarity with drugs which can be acquired only by handling them.

The Laboratory of Experimental Therapeutics, under the direction of the Professor of Materia Medica and Therapeutics, is furnished with all apparatus and instruments necessary for the study of the physiological action of medicines.

The Department of Practical Obstetrics is under the care of the Professor of Obstetrics and the Demonstrator. It includes operations on the cadaver and with the manikin, while lying-in cases are given to advanced students.

The Stillé Medical Library, founded by Professor Alfred Stillé, now contains over four thousand volumes. During the Winter and Spring
Courses it is accessible to advanced students and graduates of the Medical Department under appropriate regulations.

THE LABORATORY BUILDING.

The first floor is arranged for the Operating Room or Infirmary of the Dental Department, and has the necessary waiting-rooms, etc., carefully adapted to the requirements of this department. The entrance is on Spruce Street.

The second and third floors are fitted up as chemical laboratories; on the second is the laboratory of General Chemistry, and on the third that of Medical Chemistry. In addition to the main room, on each story, there are four balance rooms, provided with instruments for attaining accuracy in Chemical research.

The fourth floor is occupied by the Dissecting Room.

CHEMICAL LABORATORIES.—The Working Laboratories for Practical Chemistry are under the supervision of the Professor of Chemistry and the Demonstrator, with assistants. Students of the First Year devote four hours each week to the study of General Chemistry. The course includes chemical manipulations and the detailed study of the chemical reactions of the principal metals, acids, and their combinations, with the general principles of Qualitative Analysis, especially as they relate to the detection and separation of metals and compounds of importance to the physician. Each student is provided with a separate table and apparatus, and is required to exhibit by formulae, on paper, all reactions involved in his tests.

Students of the Second Year devote four hours per week to practical work in the Laboratory. The course embraces an introduction to the general principles of Quantitative Analysis and the principles of Volumetric Analysis, with the practical examination of urine and animal fluids, and the recognition and recovery of poisons from the animal body and complex mixtures.

DISSECTING ROOM.—In constructing the new Dissecting Room of the University, care was taken to provide everything that experience suggested as being necessary or desirable. The room is at the top of the Laboratory Building, and is one hundred and forty feet in length by forty feet in width. It is lighted by windows on all sides, and by skylights. The most perfect ventilation is thus secured. The tables have stone tops, which cannot absorb moisture and can be kept perfectly clean. There are numerous washstands and private closets for the use of each student. Cleanliness is rigidly enforced. The preservation of the cadaver has been so successfully accomplished as almost to do away with the dangers of dissecting wounds. Dissection is legalized in Pennsylvania.
The Room is open throughout the year except in July and August, under the superintendence of the Professor of Anatomy and the Demonstrators.

**Practical Surgery.**—The application of bandages and dressings is taught to students in their First Year, while surgical operations on the cadaver are a part of the practical instruction to students of the Third Year, under the supervision of the Professor and Demonstrators of Surgery. Instruments, splints and bandages are supplied without expense to the student.

**The University Hospital.**

The University Hospital, constructed according to the best established principles of hospital architecture, is provided with all the appliances pertaining to such institutions of the best class. It is adjacent to the new Medical Hall, and forms an integral portion of the Medical Department. In its various departments, during 1885, there were treated 8699 cases, representing almost all of the known medical, surgical and gynaecological affections. Owing to its situation within a very short distance of numerous railroads, the Hospital is pre-eminently the refuge of cases of severe injury and of acute surgery. Attendance on the Clinical Instruction given in its amphitheatres and its wards is a part of the daily duty of the students, and ample opportunities are afforded to the more advanced among them to gain a personal and practical acquaintance with Clinical Medicine, Surgery, Gynaecology and the Specialties. These subjects are taught by the several Clinical Professors.

The new wing in the University Hospital, for chronic diseases, especially of the heart and of the lungs, is completed and thereby unusually good opportunities are afforded for the study of these important affections. This wing has been erected by the liberality of Mr. Henry C. Gibson; and its hundred beds are rapidly being endowed by friends of the University. The Peter Hahn Ward, endowed by the late Dr. George B. Wood, has been opened for the admission of patients.

The resident physicians of the University Hospital are every year selected by competitive examination from among the graduating class of the University. The next examination will be held Tuesday, April 26th, 1887, at 12 M.

**Other Hospitals and Hospital Clinics.**

In addition to the official clinical lectures and bedside instruction delivered at the University Hospital, medical students have the opportunity of attending clinical lectures in other Hospitals and in private classes formed for the special study of disease.

Close to the grounds of the University is the Philadelphia Hospital.
with its thousand beds. Here are delivered twice a week Clinical Lectures on Medicine, Surgery, and the Diseases of Women and Children. Lectures on Clinical Medicine and Surgery are also delivered twice a week during the greater part of the year by the Medical Staff of the Pennsylvania Hospital. Instruction in Clinical Surgery and Children's Diseases is given, too, at the Children's Hospital. There are also weekly Clinics in Medicine and Surgery at the German Hospital. To these institutions students are admitted without charge, except at the Pennsylvania Hospital, where a small fee is now required.

During the spring and summer private classes are also formed for Clinical Instruction, for which a moderate fee is charged.

Appointments of Resident Physicians, amounting to twenty-five or more, are made annually in the different Hospitals of the city. With one or two exceptions these positions are now filled by competitive examination of candidates.

From the preceding summary it is evident that a prolonged residence in Philadelphia must be of the utmost value to the student, by enabling him to pursue a systematic course of study and to become practically familiar with the scientific methods of investigating disease, and with the principles and results of its treatment.

STILLE MEDICAL SOCIETY, H. C. WOOD MEDICAL SOCIETY AND WILLIAM PEPPER MEDICAL SOCIETY.

These Societies are composed of Second and Third year students. Their meetings are held once a week during the winter session for the reading and discussion of papers referring to the theory and practice of medicine.

PRIZES.

The Medical News Prize of One Hundred Dollars will be awarded to the member of the Graduating Class of 1886-87 for the best Essay.

The Alumni Prize of Fifty Dollars has been instituted by the Society of the Alumni of the Medical Department of the University.

MORBID ANATOMY PRIZE.—A prize of a Zentmayer's Microscope is annually awarded by the Professor of General Pathology and Morbid Anatomy for the best thesis on any subject connected with Pathology or Morbid Anatomy, illustrated by a set of not less than twelve microscopical preparations.

A Prize of Thirty Dollars is also awarded by the Demonstrator of Anatomy to the member of the Graduating Class who shall present the best record of the anomalies found in the anatomical rooms.

Two Prizes are awarded by the Demonstrator of Surgery for proficiency
in Operating and Bandaging. The first is a copy of Agnew's Surgery, the second a pocket-case of instruments.

The names of those to whom the prizes are awarded are announced at the Annual Commencement of the Medical Department.

The address of the Secretary is Medical Department of the University of Pennsylvania, Philadelphia, Penna. His office is in Medical Hall, where all business is transacted.

SOCIETY OF THE ALUMNI OF THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.

The object of this Society is to sustain and advance the interest and influence of the Medical Department by the promotion of sentiments of general brotherhood and amity among the graduates, and by aiding in all efforts to elevate the standard of medical education and to extend the progress of medical science and art.

Any graduate in good standing may become a member by forwarding to the Treasurer the sum of one dollar; and thereafter the annual contribution shall be one dollar.

Every member receives a copy of the proceedings of the Society, and is notified of the Anniversary and Banquet, which take place on the day before Commencement Day.

It is urgently desired that as many of the Alumni of the Medical Department of the University of Pennsylvania as possible avail themselves of the opportunity to join the Society, as an increased membership will greatly strengthen the Society and thereby advance its objects.

OFFICERS FOR 1886.

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               THOMAS J. GALLAHER, M.D.
               TRAILL GREEN, M.D.
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Recording Secretary—H. R. WHARTON, M.D., 1405 Locust St., Philadelphia.
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Chairman of Executive Committee—S. D. RISLEY, M.D., 1722 Walnut St., Philadelphia.
AUXILIARY DEPARTMENT OF MEDICINE.

FACULTY.

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JOHN J. REESE, M.D., Professor of Medical Jurisprudence and Toxicology
SAMUEL B. HOWELL, M.D., Professor of Mineralogy and Geology.
JOSEPH T. ROTHROCK, B.S., M.D., Professor of Botany.
JOSEPH G. RICHARDSON, M.D., Professor of Hygiene.
JOSEPH LEIDY, M.D., LL.D., Professor of Zoology and Comparative Anatomy.

J. T. ROTHROCK, Dean.

MATRICULATES.

Aitken, H. Williamson,
Gill, Walter M.,
Hatch, John Leffingwell,
Heisler, John Clement,
Landis, Eli Barr,
Miller, Milo George,
Stahl, B. Franklin,
Warwick, Hill S., M.D.,

West Chester, Pa.
Allegheny City, Pa.
Rochester, N.Y.
Minersville, Pa.
Lancaster, Pa.
Pittsburgh, Pa.
Jersey City, N.J.

Total, 8.

The Auxiliary Faculty of Medicine supplements the customary winter course of medical instruction, by lectures on collateral branches of Science essential to the thorough education of the physician. The course is essentially post-graduate. There can be no matriculation until the student has entered upon his third year of medical study. His second year in this department should be taken in connection with the fourth year of medical instruction for which the University now provides.

The session for 1886–87 will begin on Friday, October 1st, and continue until the early part of May.

The matriculation book will be closed after November 1st, except to such students as show the Dean good reasons for longer indulgence.
FEES.

The lectures are free to the medical students, and medical graduates, of this University. Other matriculates pay fifteen dollars for each professor's course, or thirty-five dollars for all the courses. The graduation fee is ten dollars.

DEGREES.

This Faculty no longer recommends students for the degree of Doctor of Philosophy (Ph.D.); but a graduate in Medicine of this University, or of other Medical Schools on its ad eundem list, who has attended two full courses of instruction in this Auxiliary Department, has presented an original thesis on one of the subjects taught, and has passed a satisfactory examination, will receive the degree of Bachelor of Science (B.S.), on complying with the following conditions:

(1) When applying for examination the candidate must exhibit his medical diploma to the Dean, and show that he has paid all University dues.

(2) The thesis must be presented to the Dean, and the graduation fee be paid by the 15th day of May.

Candidates must be present at Commencement unless excused by the Faculty.

SPECIAL STUDENTS.

The lectures and laboratories of this Department are open, also, to those not engaged in the Study of Medicine. Admission may be obtained from the Dean, either to the whole course of Lectures, or to Lectures on a single branch. These students receive no degrees, though the Faculty may give certificates of attendance.

PRIZES.

(1) The George B. Wood Prize, founded by the Alumni Association of the Auxiliary Department of Medicine, is bestowed annually upon the candidate who passes the best examination, and presents the best original thesis on an experimental subject, satisfactory to the Faculty.

(2) Messrs. R. & J. Beck, opticians, through their manager, W. H. Walmsley, offer at the coming session one of their new "Ideal" microscopes, complete, of the value of seventy-five dollars, to the author of the best and most practical paper illustrative of any Department of Natural History, preference being given to Human Anatomy and Botany, worked out by the aid of the microscope, and accompanied by prepared objects or drawings.
MUSEUM.

The Museum of the Auxiliary Department of Medicine contains three thousand mineral specimens systematically arranged; a collection of rocks, fossils and casts, arranged according to their geological succession; a valuable philosophical apparatus; a growing collection of specimens of Comparative Anatomy and Zoölogy; chemical preparations and apparatus illustrative of Toxicology; diagrams, etc. These collections are arranged in the rooms of the Faculty.

COURSE OF STUDY.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.—Subjects of legal medicine on which the physician may be called upon to give evidence in a court of justice:—

Signs of Death; Personal identity (identification of the living and the deed); Feigned Diseases; Violent Deaths (homicidal and suicidal) from (a) wounds; (b) hanging; (c) strangling; (d) suffocation; (e) drowning; (f) heat; (g) cold; (h) starvation; (i) lightning; (k) poisoning.

Infanticide and criminal abortion; Signs of Pregnancy and of Delivery; Legitimacy; Rape; Survivorship.

The Jurisprudence of Insanity (civil and criminal responsibility; feigned insanity; rights of the insane; plea of insanity as a bar to judicial punishment).

The Legal Rights and Liabilities of Physicians; Medical Experts—their rights and compensations.

Life Insurance in its medico-legal relations.

Medical Malpractice.

Poisoning, with special reference to testing; modes of procedure in order to determine the presence of poisons in cases of homicide and suicide.

MINERALOGY.—First Year: Instruction by Lectures and Text-book study, giving leading facts and principles as a branch of general education, and also preparing for practical application to Geology. This includes crystallography, physical and chemical properties of minerals, classification and description of all the leading species, with a complete collection to illustrate these teachings. In the Laboratory the student learns blowpipe analysis to determine minerals. Use of the spectroscope is taught. The examination is both written and oral, with practical determinations.

GEOLGY.—Second Year: Lectures and practical work. This includes lithological classification, stratification of strata, fossiliferous and unfossiliferous rocks, origin of rocks, denuding agents, dissolved matter extracted by the agency of animals and plants, derivative rocks and their relations to the history of the globe, present positions of rocks, present interior and exterior conditions of the earth, causes of upheaval and contortion, origin of heat required for volcanic energy and metamorphism, changes of climate, mineral springs, geographical distribution of disease realms, soils in relation to malaria, drainage basins and
lines, permeability of rocks as related to discharge of rivers, character of river water as depending upon chemical composition of rocks, and outlines of historical geology. The practical work in the laboratory includes plotting from field notes, location of outcrops, construction of sections, reports on districts visited by students, description of strata, and determination of rocks and fossils.

Botany.—First Year: Instruction is by Lectures upon structural and physiological botany; and also as time permits, upon properties of plants. Second Year: Instruction by laboratory exercises in vegetable histology and in analytical botany. Such students as are far enough advanced can also receive instruction in methods of study and in life-histories of the lower forms of plant life.

There is an examination at the end of each year.

Under proper restriction a large herbarium is available to advanced students, for purpose of critical comparison of plants.

Hygiene.—Sanitary science, especially in the direction of Preventive Medicine, has advanced so rapidly during the past few years, that in this brief course only the more important subjects can be treated of in detail. Particular attention is directed to the practical application of sanitary knowledge, in accordance with the standard of efficient requirement in this branch justly demanded by the Illinois and other State Boards of Health.

1. Nature, causes, mode of propagation, and prophylaxis of preventable diseases—heredity and other modifying influences which affect their development—avoidance or control of maladies by quarantine, disinfection, isolation, etc. 2. Special prophylactic measures and hygienic management of cholera, typhoid fever, small-pox, glanders, trichiniasis, and the disturbances of health produced by parasites. 3. Analysis of air; sanitary meteorology; heating and ventilation; examination of drinking water; drainage and sewerage. 4. Food and drink as conditioning all physical and mental manifestations of vitality; impurities, deteriorations and adulterations of food,—their effects upon the human organism,—means of detecting their existence, and obviating their injurious action. 5. Principles of hospital construction; military, naval, school, industrial and personal hygiene.

Comparative Anatomy and Zoology.—1. An outline of the classes of animals. 2. A succinct account of their anatomy and embryology. 3. Explanation of "varieties" of human anatomy, and the proper method of studying malformations. 4. A description of human parasites. 5. An account of the more important sources of those articles of the materia medica which are derived from the animal kingdom.

The principal text-books used are:

Reese's Manual of Toxicology.
Reese's Medical Jurisprudence and Toxicology.
Dana's System of Mineralogy.
Elderhorst's Manual of Qualitative Blowpipe Analysis.
Dana's Manual of Geology.
Ganot's Éléments de Physique, translated by Atkinson.
Gray’s *Text-Book of Botany*, Vols. 1 and 2.
Gray’s *Manual of Botany*.
Parkes’ *Manual of Hygiene*.

Works of reference:—
Wharton and Stillé’s *Medical Jurisprudence*.
Taylor’s *Medical Jurisprudence*.
Tidy’s *Legal Medicine*.
Sach’s *Text-Book of Botany*.
Le Maout and Decaisne’s *General System of Botany, Descriptive and Analytical*.
Cooke and Berkely on *Fungi*.
Wilson’s *Manual of Hygiene*.
Buck’s *Hygiene and Public Health*.
Pavy or Chambers on *Diet*.
Mivart’s *Elements of Anatomy*.
Gegenbaur’s *Elements of Comparative Anatomy*.
Balfour’s *Comparative Embryology*.
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

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RICHARD WOOD, G. D. BOARDMAN, D.D., LL.D.,
JAS. H. HUTCHINSON, M.D., WILLIAM HUNT, M.D.,
HORACE HOWARD FURNESS, Ph.D., LL.D.

On the part of the Faculty.
JOSEPH LEIDY, M.D., LL.D., JOHN ASHHURST, Jr., M.D.,
THEODORE G. WORMLEY, M.D., LL.D.

On the part of the Alumni.
HORACE Y. EVANS, M.D., RICHARD A. CLEEMANN, M.D.,
SAMUEL S. STRYKER, M.D.

Chairmen of Standing Committees.
On Finance: JOHN WANAMAKER.
On Property and Repairs: J. H. HUTCHINSON, M.D.
On Supplies: HORACE Y. EVANS, M.D.
On Library and Museum: JOHN ASHHURST, Jr., M.D.

The Medical Staff and Officers of the Hospital are given on page 26.

(105)
The University Hospital is under the immediate direction of a Board of Managers, constituted as above. It is situated on a lot of ground between 34th and 36th Streets, and Spruce and Pine Streets, given by the City of Philadelphia to the University. The main building and one wing were opened for the reception of patients and for purposes of clinical instruction in 1874. In 1882, a new wing was added through the liberality of Mr. Henry G. Gibson for patients suffering from Chronic Diseases.

The Main Building, besides the offices and the rooms of the officers, has a large clinical Amphitheatre, which will seat six hundred students, and a smaller one for one hundred and fifty. It also has ten rooms for private patients. The wing adjoining has five wards, with a capacity of one hundred and ten patients, and four private rooms. The wing for Chronic Diseases has room for sixty-two patients in its six wards. There is therefore full accommodation for one hundred and eighty-six patients. In the basement are surgical and medical dispensaries, and nine special dispensaries for outdoor patients. In connection with the Orthopaedic Dispensary is a workshop, in which braces and other appliances are made.

The hallways are well-lighted and spacious, and can be used as wards, should there be any sudden demand which the capacity of the regular wards could not meet.

The Hospital is also well adapted to purposes of teaching; a large proportion of the instruction given to the students in the Medical School is given here, as will be seen by reference to the rosters.

In 1884, the fourteen hundred patients treated in the Hospital, and the seven thousand three hundred out-patients in the Dispensaries, furnished ample material for Clinical Instruction.

All cases of accident occurring in the State of Pennsylvania, which are brought to the Hospital within twenty-four hours after their occurrence, are admitted at any hour of the day or night. An ambulance will be sent for them, if notice is given by telephone or messenger.

Charity patients are admitted by the members of the Medical Staff on a written order to the Superintendent; provided that a bed be vacant in the department to which the member of the Medical Staff is attached.

Paying patients are received at the Hospital on application to the Superintendent, subject to the approval of the proper attending medical officer. The charge in the wards is $7.00 a week; in the private rooms, of which there are fourteen, the prices range from $12.00 to $25.00 a week. The friends of the patients can be accommodated in the Hospital, under certain circumstances, but it is better for them to board in the neighborhood, where rates range from $4.50 per week upwards.

No patient with acute venereal disease, or mania-à-potu, is admitted as a free patient, but is charged such rates for board as may be agreed upon. There are special departments for mania-à-potu patients.
Visitors are admitted to see patients in the private rooms at all times. Visitors are admitted to the wards on week-days between 2 and 4 P.M. Under no circumstances are they admitted on Sunday, except in the case of near relatives of patients whose condition is very critical.

There are elected annually from the graduating class of the Medical School three Resident Physicians, who come on duty for one year at intervals of four months.

There were 1098 cases treated in the hospital, and 7149 in the dispensaries during the year 1885. Of the hospital cases there were:

- Left over from 1884, .............. 96
- New entries, .................. 1002
- Pay patients, .................. 330
- Free "  .................. 476
- Recent accidents, .............. 292

- Total: ................................ 1098

### Cases Treated in Dispensaries

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<tr>
<th>Type</th>
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<td>Medical</td>
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<tr>
<td>Ear</td>
<td>387</td>
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</table>

- Total: 7149

An Annual Report of the Hospital is published, giving minute statistics of the year. Copies can be had on application to the Superintendent.
DEPARTMENT OF DENTISTRY.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.

CHARLES J. ESSIG, M.D., D.D.S., Professor of Mechanical Dentistry and Metallurgy.

EDWIN T. DARBY, M.D., D.D.S., Professor of Operative Dentistry and Dental Histology.

JAMES TRUMAN, D.D.S., Professor of Dental Pathology, Therapeutics and Materia Medica.—SECRETARY.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.

THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry.

EDWARD T. REICHERT, M.D., Professor of Physiology.

ROBERT HUEY, D.D.S., Lecturer on Operative Dentistry.

LOUIS JACK, D.D.S., Lecturer on Operative Dentistry.

CLINICAL INSTRUCTORS.

Dr. C. S. BECK, Dr. E. H. NEALL,
Dr. GEO. W. KLUMP, Dr. H. C. REGISTER,
Dr. W. G. A. BONWILL, Dr. J. A. WARDELL,
Dr. W. R. MILLARD, Dr. J. A. WOODWARD,
Dr. R. R. UNDERWOOD, Dr. H. C. LONGNECKER.

DEMONSTRATORS.


JOSEPH W. NOBLE, D.D.S., Demonstrator of Mechanical Dentistry.

J. JUDSON EDWARDS, D.D.S., Assistant Demonstrator of Mechanical Dentistry.


HARRY B. McFADDEN, D.D.S., Assistant Demonstrator of Mechanical Dentistry.


JOHN B. DEAVER, M.D., Demonstrator of Anatomy.

(108)
### MATRICULATES.
#### SECOND YEAR.

<table>
<thead>
<tr>
<th>Name</th>
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</table>

**Students of the Second Year, 53.**
DEPARTMENT OF DENTISTRY.

Ramsden, Harry M.,
Rathbun, Chauncey M.,
Reap, Edward A.,
Ree, Samuel F.,
Ruiz, Jesus,
Segar, Albertus V.,
Smith, Charles E.,
Streeter, Robert L.,
Sullivan, George A.,
Teas, Louis F.,
Tenny, Robert C.,
Thompson, Lamar L.,
Trogdon, Rosecrans,
Van sant, Wilbur M.,
Weinberg, Nathan,
Wheeler, W. Frisbie,
White, Edward A.,
Frankford,
Dunkirk, N. Y.,
Pittston,
Hightstown, N. J.,
Guayata, U. S. of Colombia,
Westerly, R. I.,
Nashua, N. H.,
Rochester, N. Y.,
Lancaster,
Philadelphia,
Eaton, N. Y.,
Rochester, N. Y.,
Paris, Ills.,
Philadelphia,
St. John, Kan.,
Spencer, Mass.,
Philadelphia,
John Ramsden.
B. Rathbun.
University.
Geo. E. Titus.
University.
Lewis & Spicer.
L. F. Locke.
University.
University.
Ambler Teas.
University.
H. S. Miller.
Ball & Whiteside.
University.
C. A. & S. J. Baird.
C. P. Barton.
H. C. Register.

SPECIAL STUDENTS.
Dumas, Victor (D.D.S),
Beers, W. George (L.D.S.),
Santiago, Cuba,
Montreal, Canada,
University.
McGill University.

Students of the Second Year ................................... 53
Students of the First Year ...................................... 56
Special Students .................................................. 2

Total .............................................................. 111

SUMMARY.

Australia ......................................................... 2
Canada ............................................................ 1
Connecticut ....................................................... 4
Cuba ............................................................... 8
Delaware .......................................................... 2
District of Columbia ........................................... 1
Ecuador ............................................................ 2
England ............................................................ 1
France ............................................................. 1
Georgia ............................................................ 1
Hayti ............................................................... 2
Illinois ............................................................ 4
Indiana ............................................................ 1
Iowa ............................................................... 1
Kansas ............................................................. 1
Maryland .......................................................... 1
Massachusetts .................................................... 1
New Brunswick .................................................... 1
New Hampshire ................................................... 2
New Jersey ........................................................ 1
New York .......................................................... 13
Nicaragua ........................................................ 2
North Carolina .................................................... 1
Ohio ............................................................... 1
Pennsylvania ...................................................... 47
Rhode Island ..................................................... 1
Scotland ........................................................... 1
Switzerland ......................................................... 1
Turkey ............................................................. 1
U. S. of Colombia ................................................ 1
Vermont ............................................................ 1
Wisconsin .......................................................... 1
Wyoming Territory ................................................ 1

Total .............................................................. 111

COURSE OF STUDY.

The Course extends over two years, and in each year there are two Sessions, the Winter and the Spring. By this arrangement, students are spared
the necessity of securing a preceptor during their stay in the city; the Faculty deem attendance during the spring and summer months equivalent to private instruction. Such attendance, however, is not to be considered in any way a substitute for the Winter Session.

During the Winter Session the following is the arrangement of studies:

**FIRST YEAR.**

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<th>Thursday</th>
<th>Friday</th>
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<tr>
<td>9 A.M.</td>
<td>General Chemistry.</td>
<td>General Chemistry.</td>
<td>Mechanical Clinic.</td>
<td>Mechanical Clinic.</td>
<td>Mechanical Clinic.</td>
<td>Dental Materia Medica.</td>
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<tr>
<td>10 A.M.</td>
<td>Mechanical Clinic.</td>
<td>Chemical Laboratory.</td>
<td>Chemical Laboratory.</td>
<td>Mechanical Clinic.</td>
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<td>11 A.M.</td>
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<td>12 M.</td>
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<tr>
<td>1 P.M.</td>
<td>Operative Clinic.</td>
<td>Operative Clinic.</td>
<td>Operative Clinic.</td>
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<td>Operative Clinic.</td>
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<tr>
<td>3 1/2 P.M.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Physiology.</td>
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<td>5 1/2 P.M.</td>
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The curriculum of the first year is identical for Medical and Dental students as far as Anatomy, Chemistry, and Physiology are concerned.

**SECOND YEAR.**

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<th>Wednesday</th>
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<tr>
<td>9 A.M.</td>
<td>Laboratory of Mechanical Dentistry. or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry. or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry. or Operative Clinic.</td>
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<td>1 P.M.</td>
<td>Operative Clinic.</td>
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<td>3 1/2 P.M.</td>
<td>Physiology.</td>
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<td>5 1/2 P.M.</td>
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</table>
INSTRUCTION IN DENTISTRY.

In order to facilitate work in the practical departments, and to give full employment to the student, the morning hours of the first year are devoted equally to dental and chemical laboratory work.

During the second year the student has the entire forenoon of each day for practical dental work. Ample opportunity is afforded for practice in operative and mechanical dentistry. In the latter branch the students of the Junior year are divided into sections, thus devoting the morning hours to practice in the operative and mechanical rooms.

COURSE OF INSTRUCTION.

The lectures on Operative Dentistry and Dental Histology embrace the comparative anatomy of the teeth, the functions and microscopical peculiarities of the dental organs, the development of teeth, their component tissues, a full description of the materials and instruments used in operative dentistry, a thorough elucidation of all dental operations, such as filling, extracting, regulating, the pathological relations of the teeth to the other parts of the system, and a minute description of all diseases related to dental surgery, or of interest to the dentist. The methods taught are demonstrated in clinics.

The instruction in Mechanical Dentistry and Dental Metallurgy embraces the proper fitting up of a dental laboratory; the use of tools; the melting, refining, alloying and working of metals and alloys used by the dentist; the chemical and physical properties of materials pertaining to ceramic dentistry, their preparation, and the most approved formulas for compounding bodies and enamels for the manufacture of block teeth and continuous gum work; the history and properties of all substances used in making artificial dentures; as well as the mechanical treatment of cleft palate, including the several methods of constructing obturators for such cases, whether congenital or acquired. The lectures in this department also include every approved mechanical means of correcting irregularities of the teeth, and are amply illustrated by specimens, models, diagrams, and practical application in the laboratory, under the supervision of accomplished mechanical dentists. Special attention will be directed to the higher branches of plate work, the continuous gum process, and carving teeth.

Every student is required to furnish his own bench tools for metal and rubber work, and will be provided with a place in which they can be locked when not in use.

The lectures in Chemistry embrace the study of chemical physics and principles of chemical philosophy, together with a detailed consideration of the principal elementary substances and their compounds, and of the fundamental principles of organic chemistry, including the classification of organic
compounds, and the special study of typical members of the different classes. Special attention is also given to the laws of chemical affinity, and the conditions under which they are modified, especially as they relate to the preparation of mixtures and prescriptions.

The course in practical chemistry in the laboratory includes exercises in chemical manipulation, the study of the chemical properties of the principal metals, and the reactions of acids and their combinations, and the general principles of qualitative analysis, especially as they relate to the detection and separation of the metals and compounds which are of interest to practitioners in all branches of medicine. Each student is provided with a separate table and apparatus, and is required to perform all the usual chemical manipulations under the direction of demonstrators, as well as to exhibit by formulas, on paper, all reactions involved in his tests.

**HUMAN ANATOMY** is taught in its relations to all the departments of medicine, including dentistry. The lectures are illustrated by fresh dissections of the human body, and by a rich museum of anatomical specimens, large and well-executed models, and drawings.

The course on **PHYSIOLOGY** includes lectures, with demonstrations, on the entire human physiology and on physiological chemistry. The study of the physiology of each organ is preceded by a full consideration of its histology. The course is amply illustrated by appropriate diagrams, chemico-physiological experiments, and vivisections.

The lectures on **DENTAL PATHOLOGY** include such portions of general pathology as have a bearing upon the special subjects taught. Dentition, and its possible pathological results, receives careful attention, followed by a detailed consideration of all the diseases to which the teeth and surrounding parts are liable, the character—normal and abnormal—of the oral secretions, and the direct and remote relations which the pathological conditions of the mouth sustain to other portions of the system.

The treatment required under each head is explained, and the recognized processes by which to secure a return to normal conditions are minutely detailed.

**MATERIA MEDICA** will be taught with special reference to the character and value of those remedies that have any bearing upon dental therapeutics.

**CLINICAL INSTRUCTION.**

Four hours daily (except Saturday) are spent in actual practice under the supervision of the Demonstrators. Every student is required to provide his own instruments, except those for extracting. He is expected to keep them in perfect order, and will be provided with a place in which they can be locked when not in use. In the operating room, wires are arranged to a number of the chairs for the use of electric pluggers.
INFIRMARY AND LABORATORY.

The Infirmary and Laboratory are open to the students for practice every day during the week excepting Saturday afternoon, this being reserved for Clinics that may be given by members of the faculty or instructors.

THE STILLÉ MEDICAL LIBRARY.

This library, founded by Professor Alfred Stillé, for the purpose of promoting scientific research and literary culture, contains upwards of four thousand volumes. During the Winter and Spring Sessions it is open to students and graduates of the Dental Department under appropriate regulations.

MUSEUM AND CABINETS.

The WISTAR AND HORNER MUSEUM, founded nearly one hundred years ago, and annually augmented, is unequalled in the United States for the number and variety of its specimens of the normal and the morbid anatomy of the human body. It also contains a large number of preparations in Comparative Anatomy, a rich collection relating to Dentistry, such as the different stages of dentition, abnormal conditions of the teeth, mandibles of the lower animals, etc., and an extensive collection of models, which are used in illustrating the course of lectures. It is open every Wednesday and Saturday from 9 A.M. to 12 M., throughout the sessions. The matriculation fee in this Department confers admission to the Museum.

SESSIONS.

The Spring Session, 1887, begins on Tuesday, May 3rd, and ends the 15th of June. The work of this session is entirely practical; no lectures are delivered.

The Introductory Session begins on Monday, September 19th, and is free to those who enter for the Winter Session.

The Winter Session, 1887-88, begins on Monday, October 3rd, 1887, and ends on May 1st, 1888.

EXAMINATIONS.

At the close of the first year, examinations in Chemistry and Materia Medica are held, which, if the student fail to pass, a second examination is afforded him at the beginning of the next Winter Session.

The final examination is in Anatomy, Physiology, Operative Dentistry, Mechanical Dentistry and Metallurgy, and Dental Pathology and Therapeutics.

Students who have attended one full term in another dental school
recognized by the Faculty, will be admitted to the graduating class without examination, upon presentation of the required certificate.

Students holding a medical diploma will be admitted to the Senior Class without examination, but will be required to spend a year in the study of practical Dentistry in the Operative and Mechanical Departments, including the regular winter's course of lectures.

Students who have attended but one course in a medical college will be required to take two winter courses in this Department.

An examination is required for entrance to the Junior year. The requirements of this examination will be a good English education.

Students who have certificates properly attested from colleges, or schools of reputable character, will be accepted without examination; all others must pass an examination in the elements of a good English education.

**DEGREES.**

At the close of the second year, after passing satisfactorily all examinations, the student will receive the degree of Doctor of Dental Surgery (D.D.S.), under the following regulations:

I. The candidate must be of age and of good moral character, and must have attended two full winter sessions—the second, in this institution.

II. He must have dissected at least two parts; and have performed thoroughly and to the satisfaction of the Professor of Operative Dentistry all the usual dental operations; and must undertake at least one artificial case, and bring it completed, with the patient, to the Professor of Mechanical Dentistry, thirty days before the close of the term; and must prepare for presentation to the Professor of Mechanical Dentistry, before the 1st of April, a specimen case to be deposited in the College collection. The operations, as well as the work on the artificial case, must be performed at the College building.

III. He must be present at Commencement, unless excused by the Faculty.

**TEXT-BOOKS AND WORKS OF REFERENCE.**

*On Operative Dentistry and Dental Histology:* Harris's *Principles and Practice*; Tomes's *Dental Surgery*; Taft's *Operative Dentistry*; Tomes's *Dental Anatomy.*

*On Mechanical Dentistry and Metallurgy:* Richardson's *Mechanical Dentistry*; Wildman's *Instruction in Vulcanite Work*; Kingley's *Oral Deformities*; Essig's *Dental Metallurgy.*

Dental Follicle: Legros and Magitot, translated by M. S. Dean.

On Chemistry: Fownes's or Wurtz's Chemistry; Wormley's Micro-Chemistry of Poisons; Muter's Analytical Chemistry.

On Physiology: Foster's Physiology with Frey's Compendium of Histology; Tyson's Cell Doctrine; Yeo's Physiology.

On Materia Medica: H. C. Wood's Therapeutics; Geo. B. Wood's Therapeutics; Wood and Bache's Dispensatory.

On Surgery: Agnew's Surgery; Ashhurst's Surgery; Billroth's Surgical Pathology.

For Fees, Expenses, Boarding, etc., see p. 163.

Third year medical students who have graduated in the Department of Dentistry are entitled to the use of the Operative Clinics and the Dental Laboratory free of charge.

Further information may be obtained from

JAMES TRUMAN, Secretary,
3249 Chestnut Street, Philadelphia, Pa.
DEPARTMENT OF VETERINARY MEDICINE.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
RUSH SHIPPEH HUIDEKOPER, M.D., Veterinarian Alfort, Dean of the Faculty, Professor of Internal Pathology and Zootechnics, and pro tempore Professor of Veterinary Anatomy.
JOSEPH LEIDY, M.D., LL.D., Professor of Zoology.
JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.
HORATIO C. WOOD, M.D., LL.D., Professor of Materia Medica, Pharmacy and General Therapeutics.
THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry and Toxicology.
JOSEPH T. ROTHROCK, M.D., B.S., Professor of Botany.
ROBERT MEADE SMITH, M.D., Professor of Comparative Physiology.
WILLIAM L. ZUILL, M.D., D.V.S., Professor of Surgical Pathology and Obstetrics.

DEMONSTRATORS.

HENRY F. FORMAD, M.D., Demonstrator of Pathology and Morbid Anatomy.
THOS. B. ROGERS, D.V.S., Demonstrator of Veterinary Anatomy.
JOHN MARSHALL, M.D., Nat. Sc. D. (Tübingen), Demonstrator of Practical Chemistry.
ALEXANDER GLASS, V.S., Demonstrator of Therapeutics, Materia Medica and Pharmacy.
GARRETT EDWARDS, Farrier, Demonstrator of Forging and Horse-shoeing.

R. S. HUIDEKOPER, M.D., Veterinarian, Dean of the Faculty, 36th and Pine Streets, Philadelphia, Pa.
### MATRICULATES, 1886-87.

#### Third Year

- Birch, William A., Philadelphia.
- Cullen, Charles M., Philadelphia.
- Eves, Hiram P., Lima.
- Formad, Robert, Philadelphia.
- Harger, Simon, Hecke town.
- Hickman, Richard W., Bustleton.
- Lintz, Charles, Holmesburg.
- Marvin, Edgar, Philadelphia.
- Montgomery, William B., Chestnut Hill.
- Vandegrift, John F., Langhorne.
- Webster, Richard G., Media.
- Williams, Charles, Fellowship, N. J.

#### Second Year

- Bachman, B. Frank, Strasburg.
- Balzer, Helmuth C., Meriden, Conn.
- Boon, George M., Philadelphia.
- Breisacher, Leo, Jr., Detroit, Mich.
- Burns, Joseph M., West Chester.
- Davis, Fred. H., Ph.G., Philadelphia.
- Earley, Thomas B., Philadelphia.
- Felton, Howard B., Olney.
- Flower, Richard, Ashbourne.
- Garrett, Caspar, Lansdowne.
- Gatchel, Enoch M., West Chester.
- Lusson, Louis Olry, Philadelphia.
- Maurise, Antoni, Philadelphia.
- Reefer, Leon. N., Meadville.
- Rush, John S., Concordville.
- Schreiber, Albert F., Philadelphia.
- Tintsman, John Z., Philadelphia.
- Werntz, William B., Philadelphia.

#### First Year

- Baer, Benjamin S. J., Mount Joy.
- Birch, Frank K., Philadelphia.
- Botto, Joseph, Philadelphia.
- Harker, Frank H., Wrightstown, N. J.
- Killbride, Thomas J., Philadelphia.
- Knight, Nelson D., Lansdale.
- Mackie, Frank C., Fair Hill, Md.
- Magill, Chalkley H., Philadelphia.
- McCann, James (3d), Philadelphia.
- McKeever, Arthur, Philadelphia.
- McNeil, James C., Pittsburgh.
- Smith, Frank L., Philadelphia.
- Smith, George R., Millford, N. J.
- Willard, Samuel B., Yardley, Pa.
SPECIAL STUDENTS.

Bonnaillon, Samuel Ashton, Philadelphia.

**TOTAL.**

| Students of the Third Year | ...... | ...... | 12 |
| Students of the Second Year | ...... | ...... | 21 |
| Students of the First Year | ...... | ...... | 15 |
| Special Students | ...... | ...... | 1 |

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This Department provides a thorough education in all that pertains to Veterinary Medicine. Its facilities for instruction are unsurpassed in this country, and its courses extend from the first elements of Medicine to the latest researches in Veterinary Science at home and abroad. At every step the student is drilled under the personal guidance of professors in all the practical and technical details of the profession. Too much stress cannot be laid on the importance of thus combining, at every step, Theory and Practice. It is solely by thorough and extensive training in this way that the practitioner can meet the complex problems of veterinary pathology—problems which, owing to the lack of communication between the physician and the patients, demand a higher degree of trained powers of observation than the usual cases of ordinary medical practice.

The buildings are erected in what is to be the Botanical Garden of the University, and, with a street frontage of over 600 feet, consist of a spacious Amphitheatre, Museum, Dissecting Room, Histological and Botanical Laboratory, Hospital, with hot and cold and steam baths for horses, Blacksmith Shop with eight forges, Pharmaceutical Laboratory, etc., etc. The floors are laid in cement, with the most approved drainage. The Hospital is capable of accommodating over fifty horses, dogs and other animals.

**ADMISSIONS.**

Candidates for admission are required: *First,* to write an essay (not exceeding a page of foolscap), which may serve as a test in orthography and grammar; *Second,* to pass an examination in Elementary Physics (Part I. of Fownes's *Chemistry*). Candidates who have either received a collegiate degree, or passed the matriculate examination of a recognized college, or who have a certificate covering the required subjects from a recognized Normal or High School, or a duly organized County Medical Society that has instituted a preliminary examination—such as that adopted by the Medical Society of the State of Pennsylvania—may enter without examination.

**INSTRUCTION.**

The Course of Instruction extends over three years, with one session
from the first of October to the last of June in each year. The following are the studies:

**THE FIRST YEAR.**—Chemistry, Materia Medica and Pharmacy, Physiology, Histology, Botany, Zoology, Veterinary Anatomy and Forging.

**SECOND YEAR.**—Medical Chemistry, Physiology, Therapeutics, General Pathology and Morbid Anatomy, Veterinary Anatomy, Surgical Pathology, Internal Pathology and the Contagious Diseases, Botany, Zoology, and Practical Farriery.

**THIRD YEAR.**—Therapeutics, General Pathology and Morbid Anatomy, Surgical Pathology and Operative Surgery, Internal Pathology and the Contagious Diseases, Sanitary Police Obstetrics and Zootechnics.

In the second year the student will attend clinics, and serve as aid in the hospital; in the third year he will be placed in charge of sick animals, and be required to prepare clinical reports and make autopsies. He will also make regular visits to breeding and dairy farms and to slaughter-houses, in order to familiarize himself with the races of animals, the economical means employed in their care, and the varieties of butcher meat.

**CHEMISTRY.**

**CHEMICAL LABORATORIES.**—The working laboratories for Practical Chemistry are in a special laboratory building, and are under the supervision of the Professor of Chemistry and the Demonstrator, with assistants. Students of the first year devote four hours each week to the study of General Chemistry. The course includes chemical manipulations and the detailed study of the chemical reactions of the principal metals, acids, and their combinations, with the general principles of Qualitative Analysis, especially as they relate to the detection and separation of metals and compounds of importance in veterinary medicine. Each student is provided with a separate table and apparatus, and is required to exhibit by formulae, on paper, all reactions involved in his work.

Students of the second year devote four hours per week to practical work in the laboratory. The course embraces an introduction to the general principles of Quantitative Analysis and the principles of Volumetric Analysis, with the practical examination of urine and animal fluids, and the recognition and recovery of poisons from the animal body and from complex mixtures.

**MATERIA MEDICA AND PHARMACY.**

Materia Medica and Pharmacy are taught in a series of about sixty-four lectures and practical demonstrations by the Veterinary Assistant of the Professor of Therapeutics. This course includes the study of all the
drugs and preparations in the U. S. Pharmacopæia which are of use in Veterinary Medicine, with the addition of the other remedies, the use of which is adapted specially to any one class of animals studied in Veterinary Medicine (Herbivora or Carnivora). The student is required to handle the various drugs, in order to recognize their physical characteristics, to make the ordinary pharmaceutical preparations (infusions, tinctures, extracts, powders, balls, ointments and blisters), and is instructed practically in the manual required for the administration of remedies in powder, ball or fluid form to the Horse, Ox, Hog and carnivora.

During the second year a detail of two students serve one week in rotation in the Pharmacy of the Hospital, preparing all prescriptions used in this department.

PHYSIOLOGY.

The course in Physiology consists of lectures and demonstrations in which the chemical and physical processes and constituents of the animal body are considered, and the different functions traced from their appearance in the lowest animal forms to their highest development in the domestic animals and man. Especial attention is given to the nutritive functions in the domestic animal, rules being given for the adjustment of diet to the work required of the animal, whether in beasts of burden, milk or wool producers, or in animals destined for food purposes. The lectures are fully illustrated by experiments, diagrams, and tables. In connection with the course the students are required to work in the Physiological Laboratory, where they study the chemical properties and general characteristics of the Food Stuffs, Analysis of Milk, the Action of the Digestive Juices, etc.

A series of review examinations are held by the Professor, to ensure the thorough comprehension by the students of the subject matter of the lectures.

The Physiological Laboratory is fitted with the most approved instruments for physiological research, and opportunity is offered to advanced students for conducting original research under the immediate supervision of the Professor.

BOTANY.

The Botanical instruction extends over two years, and in it two objects are kept distinctly in view. The first is to present by lectures and by collateral study, such a comprehensive view of vegetable structure and classification as is now essential to anyone making the least claim to scientific culture.

During the first year no attempt is made to render it directly practical.
It is taught simply as a science, the aim of which is to train the mind of the student, and thus to prepare him for practical work which follows.

The second object is met by the exercises of the laboratory, and has direct relation to Veterinary Medicine. The Botanical instruction of the second year is exclusively practical in character. The student is required to analyze the various forage plants, and to learn their relative nutritive values.

The plants, which of recent years have been recognized as causes of disease and death among our domestic animals, are carefully studied. Among these, the so-called "loco plants," which grow abundantly in the south-western portion of our domain, and have produced great destruction of stock, are included. In short, it is desired to teach the veterinary student the most important relations of plants to our domestic animals, and to enable him to discover these relations for himself.

**ZOOLOGY.**

General Zoology and Comparative Anatomy embrace the study of the animal kingdom; the organic cell and its aggregates; a short account of the tissues and their production; organs, their structure; reproduction, general facts of embryology, metamorphosis, alternation of generation, polymorphism and heterogeny; systems of classification; the evolution theory; species and varieties; a succinct account of the various groups of animals, their anatomy, development and distribution.

Practical demonstrations are given of the characteristics of the organs in the various animal types, in order to prepare the student for original zoological research.

**ANATOMY.**

The instruction in Descriptive Anatomy extends over two entire sessions, and embraces the study of the bones, articulations, muscles, digestive tract, respiratory apparatus, urino-genital organs, organs of circulation of the blood and lymph, nervous system, organs of special sense, and embryology of the horse, the mule, the ass, the ox, sheep and goat, hog, dog, cat and poultry. Constant dissection is required. The horse is used as the type until the parts have been thoroughly learned, and the student is then given other animals, to learn the differences which exist. During the first year the dissections are made with special reference to the bones, articulations and muscles, while the second year is devoted to the blood vessels and nerves. The dissections are under the supervision of the Professor of Anatomy, aided by a Veterinary Assistant. A detail is made each week of students of the second year, who dissect in the laboratory of the Professor of Anatomy, preparing the pieces to be used for his lectures.
The dissecting room is unsurpassed in convenience and cleanliness. The floors are of cement, the hot and cold water facilities are ample, and the room is thoroughly lighted in day time by windows on both sides of the room, and at night by gas over each table. Iron wagons serve as dissecting tables, with movable posts, allowing the animals to be placed in any required position.

HISTOLOGY

Is taught in connection with the chair of Anatomy. The laboratory is fitted with the most approved apparatus for microscopic and biological research. The anatomical elements are studied from the tissues of each of the classes of domestic animals included in veterinary medicine, in order to allow the student to appreciate the minute differences of structure which have been the cause of such gross error in the work of histologists, who have confined themselves to the tissues of a limited number of animals.

FORGING.

While the veterinarian is not expected to be a blacksmith, he should at least know the manual of an art which he is constantly called upon to direct.

Eight forges permit the students to be worked twice a week in sections of sixteen each.

The student is required to forge the horseshoe from the mould, and to prepare the horse's foot, to remove the shoe, and to put it on. The shoeing is first learned on the dead foot, then on the living horse. Later, the practical work includes the forging of pathological and surgical shoes, with a course of lectures on farriery and pathological shoeing.

THERAPEUTICS.

This course extending over the two sessions (of the Medical Department) is devoted specially to the physiological action of drugs.

GENERAL PATHOLOGY AND MORBID ANATOMY.

Instruction in General Pathology and Morbid Anatomy is given to the students of the second and third years. It consists in lectures: 1st, on General Pathological Anatomy, in which are treated the degenerations, atrophy, hypertrophy, inflammations and tumors; 2d, on Special Pathological Anatomy, in which is considered the morbid anatomy of each organ of the body. In addition to this the students of the second year are practically taught Pathological Histology in the Pathological Laboratory, and to the students of the third year are given weekly demonstrations in Micro-
scopio Morbid Anatomy. For the latter purpose there are at the disposal of the chair a more than sufficient number of morbid specimens, both fresh and alcoholic.

In the final examinations the practical as well as the theoretical knowledge of the candidate is tested.

INTERNAL PATHOLOGY AND CONTAGIOUS DISEASES.

The instruction in theory and practice of medicine, completed in two years, is given under the following headings:

GENERAL PATHOLOGY.

1. Origin of Veterinary Medicine, Medical Doctrines, Classes of Disease.
2. ETIOLOGY.—Effects on the various domestic animals of locality, climate, food, water, habitation, work, individual, race, sex and hereditary predisposition, temperament, constitution, exciting causes, poisons, specific causes, medical constitution, idiosyncrasy and immunity.
3. SYMPTOMATOLOGY AND SEMIOLOGY.
4. PHYSICAL DIAGNOSIS.—Percussion, auscultation, examination of blood and urine.
5. DIAGNOSIS.
6. PROGNOSIS.
7. AUTOPSIES.

SPECIAL PATHOLOGY.

DISEASES OF RESPIRATORY SYSTEM.

CONTAGIOUS AND ZYMOTIC DISEASES.—With the laws of sanitary police in force in various parts of the United States and in Europe.

DISEASES OF THE DIGESTIVE APPARATUS.

" " URINO-GENITAL APPARATUS.
" " NERVOUS SYSTEM.
" " CIRCULATORY SYSTEM.
" " EAR.
" " EYE.
" " SKIN.

PARASITIC DISEASES AND HELMINTHS.

SURGICAL PATHOLOGY.

This branch of Veterinary Science is taught by a graded course of didactic lectures, and by clinical instruction, extending over a period of two years, taking in the second and third year classes.
One year is devoted to Minor Surgery, and comprises a course of about one hundred (100) lectures. The other year, given to the study of Major Surgery, comprises about ninety (90) lectures.

In addition to this, the second and third year classes are given two hours of clinical instruction daily, from 8 to 10 A.M.

The hospital and free clinics furnish an abundance of material for practical instruction, which we believe to be one of the special features of our school; as in no other school in America is this mode of instruction as thoroughly carried out.

The senior class is required to devote one entire day to Practical Operative Surgery, when the modus operandi of each and every operation likely to be met in veterinary practice is taught.

Instruction in bandaging and dressing, and the proper manner of applying them, is given in connection with Operative Surgery.

The lectures on Minor Surgery are comprised under the following headings:

**SURGICAL DIAGNOSIS.**

- **Mode of Securing Animals.**—Horse, ox, dog, etc.
- **Ligation of Arteries.**
- **Closure of Wounds, Sutures, etc.**
- **Inflammation.**—Varieties and complications, abscess, suppuration, mortification, cicatrization.
- **Wounds.**—Incised, lacerated, bruised and punctured wounds, bites, gunshot wounds, summer wounds.
- **Fractures.**—Healing of fractures, incomplete fracture, special fractures.
- **Diseases of Bone.**—Inflammation of, bone tumors, ring bones, side bones, splints, spavin, curb, osteomalacia, osteoporosis.
- **Diseases of Synovial Membranes.**
  - *Articulations.*
  - *Teeth.*
  - *Testicles and their Envelopes.*
  - *Tendons.*
  - *Muscular Tissue.*
- **Dislocations.**
- **Diseases of Veins.**—Thrombus, phlebitis.
  - *Lymphatics.*
  - *Withers, Neck and Poll.*
- **Sprains.**—Subcutaneous emphysema.
- **Physiological Horseshoeing.**
CLASSIFICATION OF LECTURES ON MAJOR SURGERY.

DISEASES OF THE FOOT.—Anatomy, Physiology, Pathology.
Corn, fissure, keraphylocele, keratoceles, pricking, burnt sole.
Quittor.—Cutaneous, cartilaginous, tendinous.
Street Nails, acute founder, navicular disease, thrush, gangrene, necrosis, caries, purulent infection.
Hernia.—Acute, chronic, inguinal, ventral, eventration, diaphragmatic, umbilical.
Tumors.—Lipoma, encondroma, osteoma, odontoma, lymphadenoma, osteosarcoma, carcinomas. Inflammation of the sinus.
Castration.—Normal, cryptorchia, female, other animals.
Pathological Shoeing.

OBSTETRICS.

A full course of instruction is given in this branch to senior students, about fifty lectures being devoted to this subject. Practical instruction will be mainly confined to demonstrations on the manican, although whenever possible cases of natural labor will be used, to the best advantage for the student.

The course of instruction is classified as follows:

OBSTETRICAL ANATOMY.—Anatomy of the hard and soft parts.

ORGANS OF GENERATION.—External—internal, reproduction, fecundation, changes and development of the embryo, differences in ruminants, pig, bitch and cat, gestation, pathology of gestation, diseases of pregnant animals, accidents, normal parturition, presentations, distokia, maternal fetal, diseases of the fetus, monstrosities, distokia from malpresentation, obstetrical operations, accidents of parturition, pathology of parturition, diseases and abnormalities of the young animal.

ZOOTECHNICS AND HYGIENE

Include the study of the origin and domestication of animals employed for profit by man, the laws of breeding and production, heredity, race characteristics and individual impressions, the effect of climate, aliment, work and the means to be employed in the selection and handling of animals to adapt them for the most economical benefit, whether destined as motors, wool or milk producers, or as articles of food.

MUSEUM.

The Museum of this department has grown rapidly since the organization of the Veterinary Department, both through the preparations made in the dissecting room, and the liberality of the Philadelphia veterinarians. Valuable specimens are constantly added to it from the animals which have died in the extensive Zoological Garden of the city. In addition to a large
number of anatomical and pathological veterinary specimens, there have been added during the last year skeletons of elephant, giraffe, camel, zebus, tapir, pecary, etc.

**HOSPITAL.**

The Hospital offers the most extensive and complete accommodations for sick animals to be found in America.

Second and third year students are placed directly in charge of cases, are required to keep the clinical records, to administer the medicines, and are allowed, under the supervision of the Clinical Professors, to perform part or all of operations that regard for the safety of the animal permits. A detail of one student from each class take "guard" duty for twenty-four hours in rotation, receive the animals which enter the hospital, give the required care at night, when other students are absent, and perform the duties usually assigned to a "resident."

A detail from the second year class compound all medicines used in the Hospital.

A large number of animals furnished from the private practice of the Clinical Professors, and by indigent persons whose animals receive free treatment, are treated at the clinic daily, from 8 to 10 A.M., giving ample material for clinical lectures and practical instruction.

**FARRIERY.**

The student removes the shoes of the animals in his charge, examines the feet and assists at the shoeing. In addition to shoeing for lameness, a large amount of ordinary shoeing is done at the forges of the Department, giving ample experience in methods demanded by different classes of horses, and by the various forms of the horse's foot.

**EXAMINATIONS AND DEGREE.**

Examinations are held at the close of each year, in which the student must duly pass before he is allowed to proceed to the studies of the next year. At the close of the course, and after passing a satisfactory examination, the student receives the degree of *Veterinarix Medicinæ Doctor* (V.M.D.)

**FEES.**

Matriculation Fee (paid once only) five dollars. Tuition Fee, annually, one hundred dollars.

For further information, address,

**RUSH SHIPPEN HUIDEKOPER,**

*Dean of Veterinary Department,*

University of Pennsylvania.
DEPARTMENT OF BIOLOGY.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy; Director of the Biological Department.
JOSEPH T. ROTHROCK, M.D., B.S., Professor of Botany.
HORACE JAYNE, M.D., Professor of Vertebrate Morphology.
JOHN A. RYDEN, Professor of Comparative Embryology.
N. ARCHER RANDOLPH, M.D., Professor of Physiology.
CHARLES S. DOLLEY, M.D., Instructor in General Biology.
EDWARD KELLY, Instructor in Mammalian Anatomy.

HORACE JAYNE, M.D., Secretary.

MATRICULATES, 1886-87.

SECOND YEAR.

George Fetterolf,  Milton J. Greenman,  Robert S. Maison,  Hyland C. Murphey,  Frank R. Remont,  Marcus A. Weems,
Girard College,  3731 Locust-st.,  6901 Woodland-ave.,  5134 Lancaster-ave.,  4204 Viola-st.,  3408 Sansom-st.,

FIRST YEAR.

The aim of this Department is:
1. To conduct the Biological studies of the students in a course in Philosophy for Undergraduates.
2. To provide a course of instruction in Biology for students of both sexes who are preparing to study medicine, or who desire systematic training in this subject.
3. To afford advanced instruction to graduates who are candidates for the degree of Doctor of Philosophy.
4. To encourage original research in Biology by offering facilities to scientists engaged in investigation, and by giving aid and instruction to advanced students prosecuting special work.

The new Laboratory building, erected for the use of this Department, contains a lecture-room, two large laboratories for undergraduate Biological work, rooms for the Zoological and Botanical collections and libraries, laboratories for advanced and special work in Botany, Zoology, Histology, Embryology, and Physiology, besides private laboratories for the use of the instructors, and rooms for Photography, with ample space for the Aquaria, Animals, and storage.

Proper and abundant material is furnished to students engaged in special work. A supply of the ordinary forms used in the practical laboratory exercises is kept, as far as possible, in the building.

An excellent collection of skeletons, typical forms, and dissected preparations is formed, and a fine Herbarium, containing about forty-five thousand specimens, is deposited in the building.

A good working library, containing important Text-books and complete sets of many valuable Journals, has been provided. The large public libraries of the city are, under regulations, open to students. The Academy of Natural Sciences, with its rich museum and large library, the most complete in Biology in the country, is accessible to students without charge.

1. COURSE FOR STUDENTS IN THE COLLEGE DEPARTMENT.

Instruction in Biology forms a part of a Course in Philosophy in the College Department. For details of this course, conditions of admission, examinations and degrees, see the General Catalogue.

2. GENERAL COURSE IN BIOLOGY.

This course forms an important branch of modern general culture, and also furnishes a peculiarly appropriate and valuable preparation for the study of medicine. With it may be combined, without extra charge, such studies in the College Department (the Languages, Chemistry, Physics
Mathematics, Drawing, etc.,) as the student, with the advice of the Secretary of the Biological Faculty, may select. A liberal course of study may be thus arranged to suit individual requirements.

The course extends through two years of two terms each and is constituted as follows:—

FIRST YEAR.

GENERAL BIOLOGY.—1. Lectures on the General Principles of Biology; Morphology and Physiology of Plants and Animals. Systematic Zoology. (1*)


MAMMALIAN ANATOMY.—1. Lectures on Descriptive Anatomy. (1)

2. Laboratory Course (dissection.) Mivart's *The Cat*. Wilder and Gage's *Anatomical Technology*. (9)


SECOND YEAR.

BOTANY.—1. (a) Medical Botany; the plants used in medicine, adulteration of foods and drugs, or (b) Vegetal Morphology.


SYSTEMATIC ZOOLOGY.—The classification and distribution of animals. (Lectures.) (1)


2. Laboratory Course, (dissection.) (4)

ANIMAL HISTOLOGY.—Lectures and laboratory exercises on Microscopic Anatomy. Schäfer's *Essentials of Histology*. (8)

EMBRYOLOGY.—Lectures and laboratory exercises on the development of the Chick. Foster and Balfour's *Elementary Embryology*. (8)

PHYSIOLOGY.—The Elements of Physiology. (Lectures and practical work.) Dalton's *Physiology*. (4)

The instruction in General Biology is in the form of lectures accompanied by practical laboratory exercises, and comprises the study of the structure, functions and development of a series of plants and animals. The student in this manner gains a general knowledge of the vital phenomena mani-
fested in the different forms of living matter, before beginning the special study of either Botany or Zoology. The series studied are: (1) Amoeba, Paramaecium, Vorticella, Bacterium, Yeast-plant, and Protococcus, as unicellular forms of life; (2) Moulds, Chara, Braken-fern and Bean-plant as exhibiting the structure and activities of Plants; (3) These compared with Sponge, Hydra, Starfish, Earthworm, Leech, Cyclops, Crayfish, Grasshopper, Clam, Squid, Amphioxus, Skate, Cod, Frog, Snake, Terrapin, and Pigeon, as Animals.

The courses in Mammalian Anatomy consist of lectures and practical work. The lectures include a detailed description of the anatomy of one of the higher mammals, and comparisons with human anatomy, and are well illustrated by preparations, models, diagrams, etc. The laboratory course embraces the careful dissection of the Cat.

The work in Botany, during the First Year, consists in exercises in the determination and classification of plants, and begins in the second term after the student has finished the first half of the course in General Biology, and has acquired a sufficient knowledge of vegetal structure and physiology. In the first term of the Second Year some choice is permitted. The student may take up Medical Botany, if intending to study medicine, or may devote his attention to more advanced work in plant structure. During the second term the life-histories of plants,—their development, growth, and reproduction are studied.

The lectures on Systematic Zoology begin in the first year and continue through the second. They embrace the structure, classification and distribution of Animals.

The instruction in Animal Morphology includes (1) a course of lectures upon the following topics: Individuals and colonies; cells and cell aggregates; a short account of the tissues; growth and division of labor; organs and their structure; reproduction and the general facts of embryology; metamorphosis, alternation of generation, polymorphism, and heterogeny; systems of classification; the Darwinian theory; species and varieties; followed by the study of a selected group of animals, and (2) a laboratory course in the dissection of typical forms and special parts chosen by the instructor.

Histology is taught, during the first term in the second year, mainly by practical work with the microscope. The structure of animal tissues and organs and the methods of examining and preparing microscopic specimens are thoroughly studied.

Embryology is taught in the second term, and the student is instructed in the processes by which the complex tissues and organs are built up from the simple egg. The instruction consists in lectures on the Embryology of the Chick, with laboratory exercises in the preparation and study of the principal stages of development.
INSTRUCTION IN BIOLOGY.

The instruction in the elements of Human and Comparative Physiology embraces the study of the phenomena of nutrition, of food-stuffs and digestion; circulation; respiration; reproduction; muscular action, including locomotion, speech, etc.; and the functional activity of nerve and brain.

3. INSTRUCTION FOR GRADUATE STUDENTS.

Students in the Department of Philosophy, who have selected Botany or Zoology as the main subject in their course for the degree of Doctor of Philosophy, and who have had the requisite training, will, on entering, begin original investigation for the required graduation thesis. If not sufficiently prepared for this work, or if Botany or Zoology, or both, have been selected as subordinate studies, the students are advised to take the General Course in Biology, or such portions of it as may be deemed necessary. The conditions of entrance, fees, examinations, and degrees are set forth in the General Catalogue, under Department of Philosophy.

4. INVESTIGATION AND ADVANCED INSTRUCTION.

Scientists engaged in the investigation of any subject in Biology can be accommodated in the laboratory by permission of the Faculty. A moderate fee will be charged for the use of the rooms and apparatus, and for attendance. Instruction of advanced students and of those engaged in special work is given by special lectures and by laboratory exercises under the personal direction of the professors. Meetings of the instructors and advanced students are held frequently for the discussion of recent discoveries in the various branches of Biology.

PRIZES.

Two Prizes, one of twenty-five dollars, and one of fifteen dollars, will be awarded to students of the first year for the best dissected preparations illustrating the anatomy of the cat.

FEES.

All students pay on entering a matriculation fee of five dollars.

The fee for tuition in the full course is one hundred and fifty dollars a year, payable in two instalments, on October 1st and February 1st. The fees for partial courses, payable in advance, are as follows: For each course of lectures fifteen dollars, for the Courses in General Biology and Mammalian Anatomy, seventy-five dollars each, for the Courses in Systematic Botany, Medical Botany, Vegetal Morphology, Vegetal Physiology, Animal Morphology, Histology, Embryology and Physiology, thirty dollars each.
A fee of ten dollars is charged to each student receiving a certificate on completion of the full course. There are no extra charges for material used in the practical classes, or for the use of instruments or reagents.

ADMISSIONS, EXAMINATIONS, AND DEGREES.

Candidates for admission to the general course must show that they are able to profit by the instruction. Students who do not desire to pursue the full course, and who are properly qualified, may take either a special or a partial course in any subject or subjects taught in the Department.

Examinations are held at the close of each college year. The student who has completed the full course in Biology, and has passed satisfactory examinations, is granted a Certificate which admits him to the Medical Department without examination. No degrees are given solely for study in this Department; but Biological students in the Department of Philosophy receive the degree of Ph.D., subject to the conditions imposed by that Department.

For further information respecting this Department, address Dr. Horace Jayne, Secretary of the Faculty, Biological Laboratory, Pine and 37th Sts., Philadelphia.

EXAMINATION QUESTIONS. JUNE, 1886.

PROFESSOR LEIDY.

General Biology. Systematic Zoology.

1. What are the characteristic distinctions in structure and shape of mineral and organized bodies?
2. Name and describe the physical properties and chemical composition of the material of organization.
3. By what organisms, solely, is the material manufactured, and what conditions are necessary for its production?
4. Where do animals obtain the material, and what plants obtain it from other organisms?
5. Why is locomotive power in general necessary to the animal and unnecessary to the plant?
6. What is the characteristic physical elemental form of organization?
7. What are the usual constituents of this elemental form in different stages?
8. Which is the chief and essential constituent always present in the active state?
9. How is this elemental form or body related with the germ of the seed and egg; with the simplest plant and animal; and with the complex forms of plants and animals?

10. By what usual mode are the complex organisms developed from the primitive or elemental form?

11. Give characteristic examples of the primitive form of a green plant, of a fungus, and of an animal.

12. What are the two ordinary hard substances which sustain the softer structures in invertebrates and vertebrates, and how do they differ in chemical composition?

13. Name the chief sub-divisions or sub-kingdoms of the animal kingdom.

14. Name the classes of vertebrata, and give the chief distinctive characters.

15. To which classes belong eels, snakes, porpoises, turtles, armadillos, frogs, bats, and the narwhal?

16. In which class is the sacrum absent, in which is it present constantly, and in which orders of two other classes is it also absent?

17. Describe the difference in the osseous frame-work of the wing of the bat, bird, and pterodactyl.

18. What is the difference in the osseous structure of the leg and foot of mammals and reptiles compared with that of birds?

19. How would you distinguish the old and new world Primates by differences in the nose and ear and the dentition?

20. What is the difference in the sternum of the Cursores and other birds, and what determines the difference?

21. What condition of the mandible and occipital articulation distinguishes the Mammalia and Sauropsida?

22. How do the teeth of Rodentia and Proboscidia accord?

23. To what teeth are the tusks of the walrus and elephant referred?

24. To which orders belong the porcupine, hedge-hog, echidna, manis bat, mole, mouse, weasel, opossum, sloth, hawk, robin, owl, crow, woodpecker, alligator, and salamander?

25. What is usual dental formula in Ungulates?

26. How does it vary from this in the Catarrhine Primates?

27. In which order of mammals are the teeth most numerous?

28. How do the teeth of mammals differ in their attachment from those of most other classes?

29. What relation is observed in the number of toes and horns, with the arrangement of the molar teeth in Ungulata, and what two sub-orders are based on the difference?

30. What is the difference in the construction of the articulation of the mandible in Carnivora, Ungulata, and Rodentia.
1. Describe an Amoeba; (a) class, (b) habitat, (c) details of structure, (d) modes of locomotion and prehension of food, (e) behavior to reagents, heat and cold, (f) methods of multiplication. With what elemental form of organization does the Amoeba correspond?

2. Define an Infusorian and distinguish between the main groups or orders. Describe the methods of (a) locomotion, (b) prehension of food, (c) multiplication. Give in detail the structure of Vorticella and Paramaecium.

3. What is the theory of "Spontaneous Generation," and how is it proven untenable? What are Bacteria? How are they classified? Describe their (a) habitat, (b) modes of multiplication, (c) relation to putrefaction, fermentation, and disease.

4. What is "Brownian movement"? How distinguished from the movement of Bacteria or other minute living bodies?

5. What process is instituted sooner or later in sweetened fluids exposed to the air? What are the products of this process? How do you prove the cause to be a living particle? Give details of its structure, modes of reproduction, and relation to light and heat.

6. What is Chlorophyll? What is its role in the vital processes of the plant? What are the conditions necessary to its formation? What plants are destitute of chlorophyll? Is chlorophyll found in organisms other than plants?

7. To what class of plants do Moulds belong? How do the members of this class differ in respect to the source of their nourishment from green plants?

8. What is meant by (a) mycelium, (b) hyphae, (c) conidiophors, (d) sporangia or asci, (e) conidia, (f) ascospores? Draw diagram of a Mucor and of Penicillium.

9. Describe in general terms Chara and Nitella. Name and give details as to position and structure of the male and female organs. What is cyclosis?

10. Define rhizome, rhizoid, rachis, frond, pinna, pinnule, sorus, sporangia, and indusium, as seen in the Bracken-fern.

11. What is meant by alternation of generations? Describe this as illustrated by ferns, naming the essential structural features in the plants concerned.

12. What relation have fibro-vascular bundles to stomata, and what is the function and distribution of each in the Bracken-fern?

13. How are scalariform ducts and spiral vessels formed?

14. What material fills the parenchymatous cells of the rhizome in winter;
of what use is this to the plant and how is it made use of? What is osmo-
sis? What substances are capable and what incapable of osmosis?
15. What substance forms the woody tissue of plants; with what other
vegetal substance is it isomeric, and is it found outside the vegetal kingdom,
if so, where?
16. Distinguish between respiration and nutrition as carried on in the
foliage of plants. How does the respiration of plants compare with that of
animals?
17. Describe the general structure of a Calcareous Sponge? Draw a
diagram illustrating the arrangement of body cavity or cloaca; the osculum;
the radiating tubes; the spicules, and the sponge flesh. How does a sponge
reproduce?
18. Describe, with the aid of a diagram, the arrangement and relations
of the madreporic body; stone-canal; ambulacral-feet; ambulacral vesicles
or ampullae; circumoral water tube, and radial water tubes of a Star-fish?
19. Describe, with the aid of a diagram, the location and relations of the
hepatic ceca; the reproductive organs, and stomach of a Star-fish?
20. From what portion of the alimentary canal does the respiratory tree
of a Holothurian arise?
21. Describe, with the aid of a diagram, the divisions of the alimentary
canal, and the arrangement of the segmental organs in an Earth-worm.
22. Name and enumerate the appendages of a Cray-fish in order, begin-
ning with the most anterior; include in brackets those belonging to the
various regions of the body.
23. What is the arrangement of the nervous system in the Cray-fish?
24. Describe the means possessed by a Cray-fish of comminuting its food.
25. Sketch diagrammatically the anatomy of a Clam, naming the various
parts.
26. Describe the shoulder girdle of the Frog.
27. Describe, with aid of a diagram, the heart of the Frog, the vessels
connected with it; the mechanism of the circulation.
28. Draw diagrams of the brain of the Frog, showing the parts and ven-
tricles. From what primary cerebral vesicle are the optic lobes developed?
What is the lamina terminalis?
29. Give the cranial nerves of the Frog. Describe the facial nerve.
30. Describe the male and female generative organs of the Frog. What
relation do the testes bear to the kidneys?

PROF. JAYNE.

Mammalian Anatomy.

1. How many bones in the skeleton of a cat? Name them.
2. How may you distinguish cervical from lumbar vertebrae?
3. With what bones are the frontal bones united?
4. Give the different parts of the humerus—its processes and articulating surfaces.
5. What muscles are inserted into the humerus?
6. What muscles arise from the humerus?
7. Give origin and insertion of following muscles:—Flexor profundus digitorum; Digastric; Obturator externus; Serratus magnus.
8. Describe the External and Internal intercostal muscles.
9. With what two muscles is the tendon of the Obturator internus associated?
10. Give the dentition of the cat.
11. Where is the Parotid gland, and where does its duct empty?
12. What is the Cæcum?
13. Describe the Pancreas.
14. Describe the Heart and its vessels.
15. Give the branches of the Celiac Axis.
16. What is the origin, course, and distribution of the Vertebral artery?
17. Give the parts of the Brain; the Cranial Nerves, their foramina of exit from the skull and their general distribution.
18. Describe the origin of a spinal nerve.
20. What are the Splanchnic Nerves?

PROFS. SHARP AND JAYNE.

Animal Morphology, Histology and Embryology.

1. Give three points where animals and plants seem to differ and explain how these differences fail.
2. Define antimere, metemere and paramere.
3. Define a cell, and give examples.
4. Give in general the changes that take place in the nucleus in cell division.
5. Give the three principal parts of vertebrate blood. From what layer of the embryo is the blood developed?
6. Define epithelium, and tell how the vertebrata, in general, differ from the invertebrata in the formation of the epithelium.
7. What are cilia, and what two motions are produced by them in reference to the body on which they are formed?
8. Describe cartilage and bone, and tell from what layer of the embryo they are formed.
9. Describe the two kinds of muscular tissue, and tell how the inverte-
brata groups, with one exception, differ as regards muscular tissue from the vertebrate; give the exception.

10. Describe a ganglion and nerve; in general how do they differ physiologically?

11. Give in general the process of segmentation, and the formation of the gastrula. What are the two layers of the gastrula called?

12. What is the primary and what is the secondary function of the vascular system?

13. Define a venous heart and an arterial heart. How do they differ?

14. Describe the mammalian circulation.

15. Give the evolution of a gill, and tell how it differs from a lung.

16. Describe the tracheal system of insects.

17. How do the vertebrata and invertebrata differ as regards the position of the nervous system?

18. Give in general the anatomy of the human eye.

19. What is meant by “alternation of generation,” and “parthenogenesis?”

20. What is the chorda dorsalis and what does it partly form in the higher vertebrata?

21. Describe the somites of the chick embryo. How are they placed as regards the chorda dorsalis, and from what layer of the embryo are they formed?

22. Give the names of the three segments of the anterior part of the medullary canal of the chick embryo.

23. Describe the formation of the amnion.

24. What is connective tissue? Give some examples.

25. What is meant by a “water vascular system”?

26. Define the mammalia.

27. Describe the different kinds of horns.

28. Give the development of the shoulder-girdle in mammals.

29. Describe the shoulder-girdle and sternum of Ornithorhynchus.

30. Give a classification of the Ungulata.

DR. DOLLEY.

Comparative Physiology.

1. Give the various steps in the process of digestion, stating the peculiar action of the different digestive fluids.

2. Give the different groups of foods, with examples under each.

3. Give the constituents of mammalian blood.

4. Describe the formation and elements of blood-clot, and the circumstances necessary for the formation of clot.
5. Describe the origin, function, and fate of the red blood corpuscles.
6. Give the mechanism of the circulation of the blood.
7. How is lymph returned to the blood? Describe the special mechanism for this purpose found in certain animals.
8. Describe respiration in plants.
9. How does the arrangement of the respiratory surfaces vary in aquatic and land animals?
11. Describe the gradual evolution of a vertebrate lung. How do Amphibians fill the lungs?
12. How is heat generated and regulated in living organisms?
13. Give examples of the evolution of heat in plants.
15. What chemical processes take place in muscles during contraction?
16. What is a muscle note?
17. On what does the force of a muscle depend?
18. Distinguish between Tetanus and Rigor Mortis.
19. Give examples of syringograde locomotion.
20. Describe the evolution of the kidney.
21. What is the main product carried off by the excretory fluids?
22. Give instances of the evolution of light in plants and animals. State the cause.
23. Give an outline of the evolution of a nervous system.
24. What is a Reflex Action?

PROF. ROTHROCK.

Structural Botany.

1. What can you say about fixation and precision of botanical names?
2. Give in tabular form an outline of the present system of classification of flowering plants; down to, but excluding, orders.
3. Explain the doctrine of Natural Selection. What name is most prominently associated with it?
4. What are Genera? Give your views in full in answer to this question.
5. Define the term Achenium. Give an illustration.
6. Tell all you can about the production of the Embryo.
7. What is Polyembryony, and where found?
8. What can you tell concerning the structure and fertilization of Lythrum salicaria?
9. Explain the structure and function of the Pollen.
10. What is the Placenta; what is its function, and how many kinds can you illustrate?

11. Tell what you can concerning a Pine Cone. How are its ovules fertilized?

12. What are Cleistogamous flowers? Name an illustration.

13. What is a neutral flower?

14. Explain fertilization of the so-called compound flowers.

15. What do you mean by "suppression of parts," and what does it lead to in the plan of the flower?

16. What are Syngenesious flowers?

17. Explain the structure of the genus Euphorbia.

18. With what organ in Campanula is the pappus of an Aster homologous?

19. What are the characteristics of the Protophyta?
DEPARTMENT OF LAW.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
P. PEMBERTON MORRIS, A.M., LL.D., Emeritus Professor of Practice, Pleading, and Evidence at Law and in Equity.
HON. J. I. CLARK HARE, LL.D., Professor of the Institutes of Law including, inter alia, International, Constitutional, and Commercial Law.
E. COPPEE MITCHELL, LL.D.,* Professor of the Law of Real Estate and Conveyancing, and of Equity Jurisprudence.
JAMES PARSONS, A.M., Professor of the Law of Personal Relations and Personal Property.
JOHN J. REESE, A.M., M.D., Professor of Medical Jurisprudence.
GEORGE TUCKER BISPHAM, A.M., Professor of Practice, Pleading, and Evidence at Law and in Equity.

E. C. MITCHELL, Dean of the Law Faculty,
518 Walnut Street, Philadelphia.

MATRICULATES.

SENIOR CLASS.

Bond, William C., Sugar Hill, Hon. B. H. Brewster.
Boswell, Russell T., Philadelphia, J. S. Williams.
Dallett, Morris, Philadelphia, P. Archer.
Finletter, Leonard, Philadelphia, Jerome Carty.
Fletcher, Robert P., Philadelphia, J. A. Abrams.
Fries, Harry K., Philadelphia, E. Coppee Mitchell.
Fronfeld, W. Roger, West Chester, O. B. Dickinson.
Garrett, John Lentz, Chester, J. M. Collins.
DEPARTMENT OF LAW.

Heckler, Calvin F.,
Hunter, Ernest H.,
Jones, James Collins,
Kirkpatrick, Samuel
Huckel,
Krebs, Frank P.,
Kuni, Charles, Jr.,
Lloyd, Horatio G., Jr.,
Lodge, R. Gardner,
Lowrie, Roberts,
McGrath, Robert
Hunter, Jr.,
McLanahan, J. Craig,
McMurrow, Henry A.,
McNeil, Thomas W.,
Marter, George W.,
Mershon, Abner H.,
Mills, Daniel, Jr.,
Mitchell, S. Duffield,
Moon, Everett,
Moore, Ziba T.,
Orleman, Harry P.,
Ot, Albert M.,
Schiedt, Jacob A.,
Siggons, Louis K.,
Smith, Henry Washington
Smith, Wm. L.,
Smithers, Wm. W.,
Snyder, Arthur C.,
Stackhouse, J. Burton,
Starr, Lewis,
Taylor, Joseph T.,
Tesnow, Henry,
Thompson, Joseph W.,
Wilson, William C.,
Work, Milton C.,
Wooters, Wm. W.,
Wyeth, Stuart,

Ericks, Philadelphia,
Philadelphia,
Frankford,
Tamaqua,
Philadelphia,
Camden, N. J.,
Philadelphia,
Tyrone,
Philadelphia,
Philadelphia,
Philadelphia,
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Hon. Henry M. Hoyt.
H. J. Lukens.
Hon. B. H. Brewster.
Wm. B. Lane.
F. T. Lloyd.
M. Stevenson.
J. S. Gerhard.
Geo. Tucker Bispham.
B. Coppee Mitchell.
J. G. Leach.
W. M. Hayes.
A. Zane, Jr.
Hon. A. Briggs.
E. Cooper Shapley.
Alfred P. Reid.
McVeagh & Bispham.
James Parson.
W. H. Stanke.
Geo. S. Graham.
A. L. Hennershotz.
Hon. B. F. Hughes.
Wm. L. Nevin.
E. P. Smithers.
J. R. Morgan.
Hon. A. Briggs.
Garrison & French.
F. S. Cantrell.
G. W. Reed.
S. W. Pennypacker.
R. F. Fisher.
R. E. Shapley.
Furth & Singer.

Bedford, J. Claude,
Benners, G. Bartleson,
Bethell, J. Uhle,
Bourgeois, Anderson,
Bourgeois, George A., Jr.,
Bright, O. Percy,
Brooks, T. Fernley,
Bullitt, James F.,
Burt, Horace B.,
Cassell, John R.,
Cassidy, H. Gibert,
Carille, W. Wilson,

Lost Creek,
Philadelphia,
Philadelphia,
Esteville, N. J.,
Mauricetown, N. J.,
Wilmington, Del.,
Philadelphia,
Philadelphia,
Philadelphia,
Cedar, P. O.,
Philadelphia,

Geo. R. Kaercher.
G. M. & W. L. Wagner.
H. A. L. Pyle.
Walton Penniwill.
A. J. Maloney.
Jno. C. Bullitt.
Admitted.
Aaron S. Swartz.
L. C. Cassidy.
R. E. Shapley.
Chew, David S. B., Philadelphia, R. C. McMutrie.
Conrade, David Howard, Philadelphia, Alfred Moore.
Cooper, A. Morton, Philadelphia, R. E. Wright.
Crilly, Francis J., Philadelphia, Crawford & Dallas.
Dickson, Franklin Strawn, Philadelphia, MacVeagh & Bispham.
Dohan, Joseph M., Philadelphia, Wm. S. Lane.
Felton, Cornelius C., Philadelphia, R. H. Hinckley.
Gallagher, Francis G., Philadelphia, J. F. Budd.
Gohm, Charles W., Philadelphia, James Parsons.
Geuther, Charles W., Philadelphia, Lowrey & Hall.
Goepp, Philip H., Philadelphia, S. F. Flood.
Howitz, George Q., Thurlow, W. E. Littleton.
Jacobs, George W., Jr., Philadelphia, Gendell & Reeves.
Littleton, William G., Philadelphia, E. S. Daly.
Litzenberg, C. Collins, Philadelphia, MacVeagh & Bispham.
McCaffrey, Harry S., Pittsburgh, F. K. Dunn.
McDevitt, Henry C., Philadelphia, Jno. G. Johnson.
Mayer, Clinton O., Philadelphia, MacVeagh & Bispham.
Morrell, Edward, Philadelphia, A. M. Burton.
Patterson, Henry L., Philadelphia, H. K. Weand.
Peirce, W. Grant, Philadelphia, MacVeagh & Bispham.
Rommel, J. Martin, West Chester, MacVeagh & Bispham.
Rumsey, Horace M., Philadelphia, R. J. Williams.
Sawada, Shunzo Z., Philadelphia, MacVeagh & Bispham.
Sheive, Conrad S., Norristown, W. L. C. Biddle.
Smith, Alfred P., Philadelphia, C. E. Morgan, Jr.
Smith, H. Austie, Philadelphia, Learning, Black & Rhoads.
Smith, Wm. Wharton, Philadelphia, Jno. G. Johnson.
Steick, Guy L. R., Philadelphia,
Stitzell, Harry F., Philadelphia, Boston & Coates.
Stockley, Frank B., Philadelphia, H. Browne.
DEPARTMENT OF LAW.

Tustin, Ernest L., Lewisburg, Hon. S. P. Wolverton.
Vaux, George, Jr., Philadelphia, P. P. Morris.
Varney, William W., Philadelphia, MacVeagh & Bispham.
Waldron, Harry E., Philadelphia, C. O. Beasley.
Worman, George W., Frenchtown, N. J., Jno M. Strong.
Wray, Henry Russell, Philadelphia.

SPECIAL STUDENTS.

Keely, Oliver S., Philadelphia, L. H. Redner.
Zebley, J. Walter, Philadelphia.

SUMMARY.

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<tr>
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The aim of this Department is to aid students who are preparing for admission to the Bar, as well as others who are desirous of acquiring knowledge in any branch of legal learning. The Conveyancer or the Merchant may attend with profit the particular lectures appropriate to his pursuits.

COURSE OF STUDY.

Students may matriculate in this Department at any stage of their professional preparation. No entrance examination is required.

The Course occupies two years. Each year is divided into two terms, the First beginning on the first of October, the Second on the first of February. Each term continues four months. The course is so arranged that a student entering at the beginning of any October term will complete his studies in two years.

SESSION OF 1887–8.

OCTOBER TERM.

Evidence.
Contracts, Bills of Exchange and Promissory Notes; Bills of Lading.
Equity Jurisprudence.
Agency, Partnership.

FEBRUARY TERM.

Practice and Pleading in Equity.
Conflict of Laws, Criminal Law.
Equity Jurisprudence.
Corporations, Bailment, Life Insurance.
Medical Jurisprudence.
Instruction is given by lectures, and by books and portions of books upon the subjects of the lectures, which are recommended by the Professors. The students are frequently and carefully examined.

Moot Courts are held, at which questions, prepared by the Professors, are argued. These Courts meet once a week during each term; and an evening is assigned to each case, so that a continuous discussion can be had of the points raised for argument. The Law Academy of Philadelphia, also, an institution of long standing, to which not only students, but many practicing lawyers belong, gives opportunity for debate and argument that has been found of the greatest practical advantage.

The Supreme Court of Pennsylvania, the County Courts, and the Federal Courts are in session in Philadelphia during a great part of the year; so that students can have ample facilities for observing judicial proceedings.

FEES.

The Tuition Fee for the full course (except Medical Jurisprudence) is forty dollars a term. Each Professor will issue tickets for his own lectures to students who do not desire to attend the full course, and will fix the fee at his own discretion. Students who take the full course pay, also, a matriculation fee of five dollars. No other charges are made.

Students who have received the degree of Bachelor of Laws may attend all lectures free of charge.

The students of this Department are also permitted to attend the Lectures given in the other Departments free of charge. Some of these, especially the Lectures on English History and Literature, Rhetoric, Intellectual and Moral Philosophy and Social Science, are of value to the Lawyer, and an opportunity is thus offered to those whose previous training has been to some extent limited to make up the deficiency.

The law students have the free use of the University Library, under the usual regulations.

The Library of the Law Association of Philadelphia (one of the largest in the country) is also open to students of Law in the University for a fee of three dollars per annum, under proper regulations.
EXAMINATIONS AND DEGREES.

The following is the statute of the University which fixes the qualifications of candidates for graduation:

"In order to obtain the degree of the Bachelor of Laws, there shall be required of every candidate—

1. That he shall have attended upon the full course of instruction (both Lectures and Examinations) given in the Law Department, except the Lectures on Medical Jurisprudence.

2. He shall have prepared and submitted to the Faculty, at some time to be fixed by them, an essay, composed by himself, on some legal subject, sufficient in merit to satisfy the Faculty of his fitness to receive the degree.

3. He shall have passed an examination at the end of each session upon the subjects of study during that session. The examination shall be conducted by the Faculty, either orally or in writing, as they may determine, in the presence of such of the members of the committee on the said Law Department belonging to this Board as may choose to attend. And the members of the Board of Examiners appointed by the Courts of Philadelphia may be present at the examination if they desire to do so."

The Essay required from each candidate must be handed to the Dean of the Faculty by the 15th of February.

Errors in spelling or grammar, or other evidence of the want of a good English education, will preclude a candidate from receiving a degree.

The examinations required by the statute are both written and oral, and are held during the last week in May. The questions used at the written examination in May, 1886, will be found on a subsequent page.

Students are not admitted to advanced standing. Actual attendance on the full course of two years is required for graduation.

Students who have attended the lectures of any of the Professors, without taking a full course, may receive certificates of proficiency.

PRIZES.

The Alumni of this Department have established two prizes, one of seventy-five dollars, called the SHARWOOD PRIZE, and one of fifty dollars, called the MEREDITH PRIZE, to be competed for by the Graduating Class for the best and the second best graduation essay. They are awarded by the Faculty.

A Faculty prize of fifty dollars is given to the student in either class who passes the best written examination with all the Professors, the answers to the questions proposed to be completed within a limited time.

ADMISSION TO THE BAR.

Graduates of this Department having complied with the Rules of Court,
are admitted to practice in the Courts of Common Pleas and Orphans' Court of Philadelphia, in accordance with the following rule adopted by those courts in June, 1875,—

"Any citizen of the United States, of full age, who shall have been graduated Bachelor of Laws by the University of Pennsylvania, after the course of study required in the University, may be admitted to practice as an attorney of this court, if he shall have complied with the rule now in force as to the preliminary examination and been registered for one year in the Prothonotary's office as a student of law in said University by the Dean of the Law Faculty thereof."

The preliminary examination referred to in this rule is conducted by the Board of Examiners appointed by the courts of Philadelphia County, and embraces all the branches of a good English education. No person can be registered as a student of law without passing this examination.

Application for admission and for information should be made to Prof. Parsons, at his office, 1534 Locust street, Philadelphia.

EXAMINATION QUESTIONS, MAY, 1886.

PROFESSOR HARE.

1. What were the four principal heads of contracts under the Roman law? Enumerate and describe their subdivisions.
2. Describe the pretorian jurisdiction, and how it was exercised.
3. State the doctrine of consideration and its origin.
4. Is a consideration essential to the validity of a promissory note? What is the rule as to covenants?
5. Must the consideration be adequate, and what inadequacy vitiates?
6. Is the seller of a specific chattel answerable for the goodness and qualities of his wares in the absence of fraud, warranty and descriptive words; and what is the rule in this regard as to contracts for the sale and delivery of goods of a certain kind?
7. Define a sale by description, and state wherein it differs from a sale with warranty?
8. What remedies are open to the buyer when the thing tendered under an executory contract of sale does not answer to its terms?
9. What are the requisites to a recovery in an action of deceit for a false representation?
10. Must performance be literally exact, and may the goods be declined and an action maintained against the seller for a variance as to time, quality or kind, which does not impair their value?
1. What are the three principal points in which Courts of Equity differ from those of the Common Law, according to Blackstone? Explain each of them.

2. How were equitable principles administered in Pennsylvania during the time when equitable forms were not practiced in our courts? Give an illustration of your answer, showing how the equity would have been administered by the Court of Chancery, and how it was actually administered here.

3. How far are precatory words operative to create a trust?

4. What effect does the Statute of Frauds have upon trusts of land created without writing? When is such a trust within the Statute?

5. In what cases will a trust arise from the conduct of the person who acquires the title to property independently of any agreement, and without regard to any intention on his part to do wrong or acquire an unfair advantage?

6. Land was conveyed thus: A to B in fee, for the use of C in fee as soon as C shall have married D. Point out a resulting use and a springing use, and say in what event the resulting use would cease to be conditional and become absolute.

7. What is the \textit{prima facie} presumption as to the validity of an antenuptual contract by which the woman releases all her marital rights in her expected husband's estate, for an insufficient consideration?

8. What is "conversion out and out"? Give illustration.

9. What is "constructive notice"? What is meant by the phrase "putting a party upon inquiry"?

10. Suppose a testator, by his will, gave to A a legacy of $10,000, and in the same will devised to B land belonging to A, and A elected to keep his land. What would be the rights of B in equity?

\textbf{State in reply to each question the reason for your answer.}

1. Is the policy of a person insured in a mutual insurance company subject to alteration by the company on the ground that he is a corporator?

2. What change in practice has been introduced by the Constitution to protect the owner of property taken by eminent domain?

3. What is meant by a partnership in the profits?

4. Can a partner by estoppel be put into bankruptcy?

5. What is the effect of trading in a partner's individual name?

6. When can a partner sue his co-partner?
7. Why, except by statute, could a special partner's share not be taken in execution?
8. Upon what is a partner's equity founded?
9. What is the extent of a banker's lien?
10. How can a railroad company compete with express companies in collecting, delivering and transporting freight?

Professor Bispham.

Evidence.

1. What is evidence, and under what three subdivisions has the subject been considered?
2. Give the rules in the Duchess of Kingston's case.
3. Explain what is meant by the term res gestae, and give one or more illustrations.
4. Is the plea of nil debet a good plea in an action on a judgment of a court of a sister State? Explain your answer, and mention the leading case upon the subject.
5. If A sues the executor of B in a county court of this State, can A be a witness for any, and (if any) what, purposes?

Practice and Pleading in Equity.

1. Can the holder of an equitable title to real estate maintain ejectment in the Circuit Court of the United States sitting in Pennsylvania? Give the reasons for your answer.
3. Name the formal parts of a bill in equity.
4. What is a "speaking" demurrer?
5. Suppose you do not demur to the relief prayed for in the bill, but demur generally to the discovery, is such a demurrer good? Give the reasons for your answer.

III. By the Faculty of Law—

3. "The Faculty Prize," to Lindley M. Garrison, of the Senior Class.
DEPARTMENT OF PHILOSOPHY.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., PROVOST, and ex-officio President.
E. OTIS KENDALL, LL.D., DEAN, and Professor of Mathematics.
JOSEPH LEIDY, M.D., LL.D., Professor of Zoology.
J. PETER LESLEY, LL.D., Emeritus Professor of Geology.
REV. ROBERT E. THOMPSON, A.M., Professor of History.
FREDERICK A. GENTH, Ph.D., Professor of Inorganic Chemistry.
SAMUEL B. HOWELL, M.D., Assistant Professor of Geology.
GEORGE F. BARKER, M.D., Ph.B., Professor of Physics.
JAMES PARSONS, A.M., Professor of Law.
GEORGE A. Koenig, Ph.D., Professor of Mineralogy.
JOSEPH T. ROTHROCK, B.S., M.D., Professor of Botany.
THEO. G. WORMLEY, M.D., LL.D., Professor of Organic Chemistry.
MORTON W. EATON, Ph.D., Professor of Comparative Philology.
EDMUND J. JAMES, Ph.D., Professor of Political and Social Science.
REV. GEORGE S. FULLERTON, A.M., B.D., Prof. Adj. in Intellectual and Moral Philosophy.
JOHN P. PETERS, Ph.D., Professor of Hebrew.
DANIEL G. BRINTON, M.D., Professor of American Languages and Archeology.
HERMANN V. HILPRECHT, Ph.D., Professor of Assyrian.
MORRIS JASTROW, Jr., Ph.D., Professor of Arabic and Rabbinical Literature.
JAMES McKEEEN CATTELL, Ph.D., Lecturer in Psycho-Physics.

EDMUND J. JAMES, Ph.D., Secretary.

MATRICULATES.

Arthur W. GOODSPEED, A.B. (Harvard), University.
William C. Scott, A.B., A.M. (Princeton), 210 South Fourth St.
J. Burnet Crane, A.B. (Univ. Penn.), 42d and Spruce Sts.
Frank S. Ballentine, A.M. (Univ. Penn.), do.

The object of this department is to supervise advanced studies, and, as far as possible, to afford advanced instruction in the various branches of Literature and Science. In those subjects which are ordinarily taught in
the undergraduate courses of our American colleges, the only instruction given will be of an advanced character. In those which are usually not represented at all, or only very inadequately, both advanced and elementary courses will be offered. The opportunities of the department in each branch of study are open to all who in the judgment of the professor in charge are qualified to profit by the instruction given.

Instruction suitable for advanced students is at present offered in the following subjects:

1. American Archaeology and Languages.
3. Biology, Lectures and Laboratory practice.
4. Botany, Lectures and Laboratory practice.
5. Comparative Anatomy.
6. Comparative Philology and Sanskrit.
7. Chemistry Inorganic, Lectures and Laboratory practice.
8. Law, Roman and History of Common Law.
9. Mineralogy, Lectures and Laboratory practice.
10. Political and Social Science.
   (a) Political Economy—Courses in Theoretical and applied Political Economy and in the History of Economic Theories and Institutions.
   (b) Political Science—Theory of the State and Comparative Constitutional Law.
   (c) Public Finance and Administration.
11. Philosophy—Mental, Moral, and History of Speculative Philosophy.
13. Semitic Languages.
   (a) Hebrew—Classical and Rabbinical.
   (b) Aramaean.
   (c) Assyrian and Babylonian (Sumerian and Akkadian).
   (d) Ethiopic.
   (e) Arabic.
   (f) Other dialects like Phenician and Himjaritic known only from a few inscriptions.

FEES.

For Fees, Expenses, etc., see p. 164.

DEGREES.

The Degree of Doctor of Philosophy is conferred upon the following conditions:
1. The candidate must be either a Collegiate Bachelor of Arts or of Science, or must satisfy the Faculty, by examination or otherwise, that he possesses an equivalent preparation.

2. He must pursue during two years, under the supervision of the Faculty, a course of study in at least three branches of literature or science (the choice to be approved by the Faculty), one of which shall be designated as the principal branch, and the other two as subordinate branches.

3. He must pursue detailed investigations in the principal study, must present a satisfactory thesis therein, and must pass an examination in all three branches.

For further information respecting this Department, address the Secretary of the Faculty.

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**POST-GRADUATE COURSE IN LAW.**

**MATRICULATES.**

**SENIORS.**


**JUNIORS.**

Harding, Butler K., 901 Walnut-st., Philadelphia.
McCourt, Thomas, 263 S. 4th-st., Horsham, Pa.
Melcher, Webster A., Philadelphia.
Scott, William C., Philadelphia.

This course has for its aim to broaden and deepen the foundation of legal education. The first step required for the student's progress is the thorough training of a Law School. In the drill of an ordinary course at such an institution, he acquires a practical experience in the machinery of litigation, and he also acquires the lawyer's process of handling cases or of reasoning from them by analogy, while at the same time he masters the leading principles as they are applied in the main departments of law.

The advanced student starts with this equipment. His task is now that of the true lawyer, to find out the reason for every legal proposition which is established, and also to discover its relative importance in the hierarchy
of principles which make up the system of law. The investigation involves researches in two directions: First, the source of each principle must be discovered, and the germ when found must be traced through the changes which it has undergone in the course of its growth or decay. The soundness of a principle or the range of its application can thus be illustrated and tested by experience. Owing to the conservative energy of the English race, pre-eminently exemplified in its lawyers, legal doctrines have maintained their continuity in spite of conquests and revolutions, thus furnishing an opportunity for the study of principles in operation under different institutions.

The material for investigating the sources of our law are abundant. The Anglo-Saxon laws exist in a state of exceptional completeness; the Feudal system has been wrought out almost before our eyes and stands before us in its rigid symmetry. The mediæval trade customs which entered England with commerce have been preserved in municipal statutes; the Pandects are a repository from which common lawyers have pilfered, from Glanville to Story. A lawyer who reads the Digest of Justinian for the first time will be struck by the familiar ideas which he encounters at every turn and which he thought were inspired by the common law until he met them in Justinian's compilation.

The sources of our law have been explored, but they have not been turned to account. A history of legal thought must be written in order to make our precious archives available, and until that desideratum is obtained, the full benefit of experience, which is the only guide for the application of any legal doctrine, will not be at command. In the absence of such a history, the scattered information bearing upon the genesis and evolution of legal tenets must be gathered at a disadvantage.

The second study is to classify the law and reduce it to a system. The Profession shares the aspiration of the lay public for a body of law which everyone can understand. It is this professional craving which accounts for the multitude of text-books professing to abridge different parts of the law, and for the frequent attempts to embody sections of the law in a series of propositions. The common aim of the bar and of the public is to simplify the law. The profession, however, knows that this can be accomplished in but one way, and that is by mastering the principles which underlie the different phases of the law. Not only must every part be known, but its relation to every other part must be ascertained in order to organize a system. The epitomes, made of different parts, serve to counteract the segregation of law according to the objects to which it is applied, and to correct this retrograde tendency. The principles which are universal, extracted from digests of all the parts, will form a body by themselves, and the rank of each principle will be regulated by its relative importance. The
modifications which the principles undergo in special parts of the law will be the only qualifications requiring special mention. The principles, for instance, of patent law will then be severed from the arts and sciences and form an integral portion of the legal system. The best professional opinion could readily furnish such an analysis of this, as well as of other specialties. The law is not absorbed by the material in which it works; on the contrary, by classifying matter the law brings it under the sway of reason. The law will be simplified because it will be scientific. It will not be petrified by enactment.

COURSE OF STUDY.

The course of study covers two years. The student, however, can begin at the opening of either year, November 1st.

One year of the study is devoted to the study of the Roman law and of the principles that have grown out of it.

The text-books used in this course are Hadley's *Introduction to the Roman Law*, Mackelday's *Roman Law* and Holland's *Jurisprudence*. But these text-books serve simply as an outline of the subject. The works of Austin, Clark, Markby, Hunter, Moyle, Roby and others in English, besides authors in German and French, are consulted and utilized to fill out the framework of study.

In the analysis of an act, an important element in legal investigation, Aquinas and the Jesuit writers of to-day furnish the only source of information. Gury's *Compendium Morale* is used, though any Catholic manual would serve the purpose.

The year devoted to a study of the Common law is taken up with the Anglo-Saxon law, the Feudal system, and the principles peculiar to the Common law and developed in the course of its history. There is no adequate history of the English law, and the results of German investigations, of great importance during the past fifty years, lie scattered through separate treatises and periodicals, and have not been collected and made accessible to English students. The work of Glasson, *Histoire du droit et des Institutions d'Angleterre*, comprehends in its first and second volumes a summary of the modern researches into the early periods of our law, both Saxon and Norman. The second volume on the Norman period is used as text-book in connection with Gunderman's *Die Common Law* and Digby's *History of the Law of Real Property*. Kemble's *Anglo-Saxons in England* is the only available work in English for the Saxon period, and is adopted as the text-book for the class.

The primary principles of the Common law have been investigated by Judge Holmes, and his work on the Common law will serve as the guide for a study of them. The comparison of English and Continental theories
of law is forced upon the profession in controversies between citizens of different countries where the rules of the various systems compete for the control of the legal relations between the parties. The work of Westlake on Private International Law is the most convenient text-book, though Story, Wharton, Foote and other writers will be consulted.

ADMISSION AND FEES.

Graduates of any law school of recognized standing and members of the bar are eligible as students in this department. The annual fee for tuition is twenty-five dollars.

EXAMINATIONS AND DEGREES.

Examinations are held annually in May, and are both oral and written. The written questions put at the last examination are appended.

Graduates of this Course receive the degree of Master of Laws, unless the post-graduate course of law is combined with two other courses of study in the Department of Philosophy. Then the degree of Doctor of Philosophy is conferred, on conditions stated on pp. 150–51.

A thesis upon some topic connected with the course is required to be handed in as early as possible during the second year. It is expected to contain an exhaustive analysis of the subject-matter.

For further information apply to the Dean,

JAMES PARSONS,
1534 Locust Street,
Philadelphia.

ANNUAL EXAMINATION, MAY, 1886.

PROFESSOR PARSONS.

State in reply to each question the reason for your answer.

1. Give the origin and purpose of the Interdicts Uti possidetis and Utrubi?

2. What were res mancipi?

3. What was the consultatio veteris Icti?

4. How do actions concur?

5. What is a tacit pledge?

6. How did the Civil Law regard joint contracts?

7. What was the depositum irregulare?

8. How were pacts introduced?

9. Who could claim beneficium separationis?

10. What are the elements of a right?
DEPARTMENT OF PHYSICAL EDUCATION.

This Department carries into practical operation the conviction that during the period of growth the body needs quite as much training as the mind, and that a college which holds out incentives to intellectual progress should not overlook the bodily progress without which all intellectual prizes, when won, are useless. To what other cause than the neglect of physical culture is it due that, in times past, the first scholars in college generally failed in after life to make good their early promise? Impressed with the belief that those who seek to develop the mind should also exercise a supervision over the body, the University has instituted this Department, and, through the liberality of the City and the zeal of the Alumni, has provided the means, and, what is equally important, the system, for the due care and development of the Physical Education of its students.

The means are supplied in the Athletic Grounds, obtained from the City, lying next to and partly surrounded by the College buildings, and comprising four acres, which have been fenced, graded and improved, a fine quarter-mile track laid, the middle of the lot prepared for cricket, base-ball, football, etc., a grand stand erected, and a competent person engaged to supervise and restrict the use of the grounds, and to see that the intentions of the Trustees that they are to serve the purpose of Physical Education, as well as of healthful relaxation, shall be thoroughly carried out. The boat-house of the Athletic Association, situated on the Schuylkill, above the dam, is open to all matriculates in the Department of Physical Education upon the payment of a small additional sum.

The University has also fitted up a gymnasium, wherein are to be found all the latest appliances for the proper, systematic and symmetrical development of the body. These are to be used by each student only after undergoing his physical examination, and receiving advice from the Director of this Department as to the particular needs of his body, and as to the weak points which need strengthening and development. This advice is founded upon a careful study not only of his present condition, but of his personal and family history, taking thus into consideration hereditary predisposition to disease, if any exists.

The system consists in direct, personal, individual care of each student, who, immediately after entrance to College, receives a thorough physical
examination in regard to his general health, strength, and muscular development, which is duly recorded. An extract from this record is sent to his parent or guardian as follows:

**Dear Sir:**

The following extract from the University Records represents the general physical condition of

- **Development**
- **Strength**
- **Condition, viz.: Relation of Strength to development**
- **Chest Capacity**
- **Muscles especially requiring development**
- **Exercise recommended**
- **General Advice**

Average Development
Average Strength
Average Condition
Average Capacity

It is hoped that he will follow the line of physical work thus indicated with sufficient persistence to effect some permanent improvement.

[Signed] **Director of Physical Education.**

This examination is repeated at stated intervals, certainly once every year of his college life, and the record will show the improvement or deterioration of each student, and the amount and the quality of exercise which each one demands, both of which must be administered or recommended by an experienced teacher. Merely competitive sports do not of themselves supply these demands. Some men, naturally athletic and fond of exercise, need to be guided and directed, sometimes to be restrained; others, of sluggish temperament or of too studious habits, must be stimulated; all require to have their work, whether voluntary or compulsory, directed by proper methods, so that the result may be a harmonious and symmetrical development of the entire organism.

It is not proposed to make the attendance on this Department compulsory; all that can be hoped for is that its importance will become so manifest to the students themselves that the small demand which it makes upon their time will be responded to with alacrity and zeal.

For further information apply to

**J. William White, M.D.**, Director of Physical Education,
1810 South Rittenhouse Square.
LIBRARY.

The University possesses one of the largest and most complete libraries of works relating to Finance and Political Economy to be found in any educational institution of the world. The foundation was laid by the great COLLECTION OF THE LATE STEPHEN COLWELL, comprising between seven and eight thousand volumes, and including nearly every important book on these subjects in the English, French, and Italian languages, besides many in German. This has been supplemented by the gift from Mr. McCalmont, of London, of a collection of about three thousand English pamphlets, covering the period from the close of the seventeenth century to our own time, and bound in chronological order; and also by the bequest of the LIBRARY OF THE LATE HENRY C. CAREY, which includes many works that appeared since Mr. Colwell's death, and is especially rich in statistical literature, European government reports, and the like.

The Rogers Engineering Library is composed of standard works in this Department, together with a valuable collection of Reports of American, English, and French Engineering Societies, periodicals, etc.


Besides these, there is a large collection of works on General Literature, some of them the gifts of the early friends of the University, among them BENJAMIN FRANKLIN, DR. RICHARD PETERS, and LOUIS XVI. The income of the Tobias Wagner Library Fund is expended in the purchase of books in the department of History. The Libraries of the Literary and Scientific Societies are of considerable value.

The entire collection is open to all undergraduates, and as an evidence of the high estimation in which it is held, it may be stated that students from other institutions of learning have, on a number of occasions, come to Philadelphia for the purpose of pursuing investigations in this library, which the means at hand in their own did not permit.

A card catalogue is now in preparation which will embrace in a single alphabet, references under author, title and subject, to the entire contents of the Library. The subject references are made more than usually copious, to the end that the resources of the Library may be utilized in the highest possible degree.

The Library is open every College day from 9 A.M. to 3 P.M., and students are permitted to withdraw, for home perusal, two volumes at a time, for two weeks, subject to a renewal for a like period, if not needed by others. The use of the library for consultation is also freely accorded to graduates, and to strangers under proper regulations.

(159)
FEES AND EXPENSES.

TUITION FEES.

The Tuition Fee in the College Department is one hundred and fifty dollars a year, except that for the last three years in the Towne Scientific School, and for the last two years in the course in Philosophy it is two hundred dollars a year, and for the course in Music thirty dollars a year.

The Tuition Fee in the Departments of Medicine, Biology and Philosophy is one hundred and fifty dollars a year; in the Departments of Dentistry and Veterinary Medicine, one hundred dollars a year; in the Department of Law, eighty dollars a year; and in the Auxiliary Department of Medicine, except to students and graduates of the Department of Medicine, thirty-five dollars for the course.

For time at which these tuition fees are payable, see tabulated statement below. All fees for special or partial courses are payable in advance.

Students in one department may attend lectures given in any other department, by consent of the Dean, without charge, but they shall pay the regular special fees for all practical work.

Graduates of a department may attend the lectures in that department, but shall also pay regular special fees for all practical work.

Under no circumstances are any changes made in the established fees.

GRADUATION FEE.

In the College Department the Graduation Fee is for the Baccalaureate degree twenty dollars, for the Master's degree ten dollars.

The Graduation Fee in the Department of Dentistry is thirty dollars; in the Department of Philosophy, thirty-five dollars; and in the Auxiliary Department of Medicine, ten dollars.

No graduation fee is required in the Departments of Medicine, of Veterinary Medicine, and of Law.

CERTIFICATE FEE.

A fee of ten dollars is charged each student receiving a certificate on completion of a special or partial course.

(160)
FEES AND EXPENSES.

COLLEGE DEPARTMENT.

Freshman Year and Sophomore Year.

Annual Tuition Fee

\[
\begin{align*}
\text{Course in Arts,} & \quad \text{\$150.00} \\
\text{Course in Philosophy,} & \\
\text{Course in Science,} & \quad \text{\$5.00}
\end{align*}
\]

Annual Fee for Department of Physical Culture, \( \text{\$5.00} \)

Junior Year and Senior Year.

\[
\begin{align*}
\text{Course in Arts,} & \quad \text{\$150.00} \\
\text{Course in Philosophy,} & \quad \text{\$200.00} \\
\text{Course in Technical Science,} & \quad \text{\$200.00} \\
\text{Course in Finance and Economy,} & \quad \text{\$150.00} \\
\text{Course in Music,} & \quad \text{\$30.00}
\end{align*}
\]

*Annual Fee for Department of Physical Culture, \( \text{\$5.00} \)

Deposit required in Chemical Laboratory to cover breakage, balance refunded, \( \text{\$20.00} \)

The Annual Tuition Fees are payable to the Treasurer of the University in two instalments, on October 1st and February 1st.

Graduation Fee, Baccalaureate degree, \( \text{\$20.00} \)

" " Master's degree, \( \text{\$10.00} \)

Fee for Certificate of Special or Partial Course, \( \text{\$10.00} \)

MEDICAL DEPARTMENT.

Winter Term.

First Year.

Matriculation Fee, \( \text{\$5.00} \)

For general ticket, admitting to all the lectures and laboratory work assigned to this year, including dissection, \( \text{\$150.00} \)

Dissecting material, \( \text{\$1 a part.} \)

Second Year.

For general ticket, admitting to all the lectures and laboratory work assigned to this year, including dissection, \( \text{\$150.00} \)

Dissecting material, \( \text{\$1 a part.} \)

Third Year.

For general ticket, admitting to all the lectures and practical work assigned to this year, including operating and bandaging (no graduation fee), \( \text{\$150.00} \)

*This fee is not required of students in the course of Music.
Fee for the full third year course to graduates of other schools, including privilege of applying for graduation (no graduation fee), $150.00
Material for operating, $1 a part.

Fourth Year (Voluntary).
For general ticket, including all the practical courses of this year (no graduation fee), $150.00
To graduates of other schools, with the privilege of attending the didactic courses of the third year, and applying for graduation (no graduation fee), $200.00

SPRING SESSION.
Matriculation fee (paid once only), $5.00
Tuition fee, $30.00
This sum will be credited on account of the fee for the ensuing Winter Term.
The Tuition Fee of $150 each year is conditioned on its being paid before November 1st. If a division of payments is desired, the fee will be $160 for the year, of which at least $80 must be paid before November 1st.

FEES FOR SPECIAL COURSES.
(Students taking special or partial courses, if not graduates of the School, are required to pay the matriculation fee, in addition to the fees named below.)
For the full third Course, including for bandaging and operating, to graduates of this School, $75.00
For a single Course of Lectures, except Materia Medica, $20.00
For Course on Materia Medica, and on Bandaging and Operating, each, $10.00
For Practical Course in the Chemical Laboratory, $25.00
For the Course in Practical Gynecology of the third year, $25.00
For any one of the remaining practical courses of the third year, $15.00

Graduates of the School are admitted to the lectures free of charge; but they pay the fees for the practical courses.
At the beginning of the first year, each student is required to make a deposit of five dollars with the Professor of Chemistry, to cover “breakage” in the chemical laboratories. Any balance remaining is returned.
All fees are payable in advance to the Secretary of the Faculty, who will issue a general ticket of admission to all the lectures and practical instruction.
Under no circumstances are any changes made in the established fees. The only free scholarships granted are those under the regulations named below.
Board can be obtained in Philadelphia for $4 per week and upwards.
**FEES AND EXPENSES.**

### AUXILIARY DEPARTMENT OF MEDICINE.

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matriculation Fee</td>
<td>$5 00</td>
</tr>
<tr>
<td>Tuition Fee for the course</td>
<td>$35 00</td>
</tr>
</tbody>
</table>

Students and Graduates of the Department of Medicine may attend the lectures in this department without charge.

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduation Fee</td>
<td>10 00</td>
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</tbody>
</table>

### PARTIAL COURSES.

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Tuition Fee for any one or more of the five courses, each</td>
<td>$15 00</td>
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</table>

### DEPARTMENT OF DENTISTRY.

<table>
<thead>
<tr>
<th>Fee Description</th>
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<tbody>
<tr>
<td>Matriculation Fee</td>
<td>$5 00</td>
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</tbody>
</table>

### WINTER TERM.

#### First Year.

<table>
<thead>
<tr>
<th>Fee Description</th>
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</tr>
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<tbody>
<tr>
<td>Tuition Fee</td>
<td>$100 00</td>
</tr>
</tbody>
</table>

#### Second Year.

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition Fee</td>
<td>$100 00</td>
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<tr>
<td>Fee for Dissection</td>
<td>10 00</td>
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<tr>
<td>Graduation Fee</td>
<td>30 00</td>
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</table>

The payment of the $100 Tuition Fee may be divided as follows: $50 on entering, and the balance on or before November 1st. If any part is left unpaid after this date, $10 will be added to the Tuition Fee.

### DEPARTMENT OF BIOLOGY.

<table>
<thead>
<tr>
<th>Fee Description</th>
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<tbody>
<tr>
<td>Matriculation Fee</td>
<td>$5 00</td>
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</tbody>
</table>

### GENERAL COURSE.

#### First Year and Second Year.

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Tuition Fee</td>
<td>$150 00</td>
</tr>
<tr>
<td>Fee for Certificate</td>
<td>10 00</td>
</tr>
</tbody>
</table>

#### Fees for Partial Courses.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>General Biology</td>
<td>$90 00</td>
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<tr>
<td>Mammalian Anatomy</td>
<td>30 00</td>
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<tr>
<td>Botany, plant analysis</td>
<td>30 00</td>
</tr>
<tr>
<td>Histology</td>
<td>30 00</td>
</tr>
<tr>
<td>Embryology</td>
<td>30 00</td>
</tr>
<tr>
<td>Zoology and Comparative Anatomy</td>
<td>30 00</td>
</tr>
<tr>
<td>Botany and Morphology</td>
<td>75 00</td>
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<tr>
<td>Physiology</td>
<td>25 00</td>
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</table>
DEPARTMENT OF VETERINARY MEDICINE.
Matriculation Fee, ........................................ $5 00
Annual Tuition Fee, ...................................... 100 00

DEPARTMENT OF LAW.
Matriculation Fee, ........................................ $5 00

*First Year and Second Year.*
Annual Tuition Fee, ...................................... $80 00
A graduation fee is not required.

DEPARTMENT OF PHILOSOPHY.
Matriculation Fee, ........................................ $5 00

*First Year and Second Year.*
Annual Tuition Fee, ...................................... $150 00
Graduation Fee, .......................................... 35 00

The cases of Applicants for a degree on examination alone, without instruction or supervision, will be considered separately.

POST-GRADUATE COURSE OF LAW.
*First Year and Second Year.*
Annual Tuition Fee, ...................................... $25 00

ACCOMMODATIONS.
Good board can be had near the University at from five to seven dollars a week; and a list of recommended boarding-houses can be seen on application to the Rev. Jesse Y. Burk, Secretary of the Board of Trustees, at the University.

EXPENSES.

<table>
<thead>
<tr>
<th></th>
<th>Min.</th>
<th>Max.</th>
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<tbody>
<tr>
<td>Board, thirty weeks*</td>
<td>$150 00</td>
<td>$210 00</td>
</tr>
<tr>
<td>Tuition (according to Department and Year of the Course)</td>
<td>100 00</td>
<td>200 00</td>
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<tr>
<td>Text-books,</td>
<td>10 00</td>
<td>50 00</td>
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<tr>
<td></td>
<td>$260 00</td>
<td>$460 00</td>
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*The session in some of the Departments is from five to nine weeks longer.*
DEGREES, HONORS, AND PRIZES, 1885–1886.

HONORARY DEGREES.
JUNE 15, 1886.

Bachelor of Arts.—ROBERT M. PATTERSON.

Master of Arts.—SAMUEL POWEL, JR., A.M. (Brown), WILLIAM H. KLAPP, A.M. (Harvard), M.D.

Doctor of Music.—HUGH ARCHIBALD CLARKE.

Doctor of Divinity.—REV. JOSEPH D. NEWLIN, REV. JOHN ANDREWS HARRIS, REV. THEODORE LORENZO SEIP.

Doctor of Laws.—MOST REV. PATRICK J. RYAN, Archbishop; JOSEPH PARSONS COMEGYS, Chief Justice.

DEGREES IN COURSE—CERTIFICATES.
JUNE 15, 1886.

Bachelor of Arts.—
David Sands Brown Chew, William Campbell Posey,
James Burnet Crane, Jacob Martin Rommel, Jr.,
George Christian Eisenhardt, Edwin Jaquett Sellers,
William West Frazier, 3d, Walter Moore Shaw,
James Biddle Halsey, Frederick Thibault,
Robert Murray Hogg, Howard James Truman,
George Quintard Horwitz, Joseph Price Tunis,
John Chester Hyde, Jr., Thomas Holmes Walker,
Edward Miller Jefferys, George W. Wilgus,
Samuel Stryker Kneass, Charles Baeder Williams,
Irvin Polev Knipe, Charles Elmer Woodruff,
Albert William Manifold, Samuel Megargee Wright,
George Petry,

Bachelor of Science.—
(POST SENIORS.)
Enoch Jones Acker, Herman Herzog, Jr.,
Percy Ash, Thomas Hill Brinton Jacobs,
William Henry Bower, Jerome Thomas Kelly,
George Whitefield Chance, Wilmer Francis Lubbe,
George Howland Chase, David Lincoln Luke,
Samuel Williamson Cheyney, John Gibson McCall,
Allen Brooks Cuthbert,  
Valentine Sherman Doebler,  
John Stephens Durham,  
George Kingsbury Fischer,  
Stephen Harris,  
John Lincoln Harvey,  
Edwin Newberry Hawkins,  
Hermann Siegfried Hering,

Marshall Rogers Pugh,  
Lino Francesco Rondinella,  
Samuel McMurray Smith,  
Morris Stephen Solomon,  
Henry Szlapka,  
Francis Thibault,  
Herbert Coleman Whitaker,  
William Schmoele Wolfe.

(Seniors.)

Richard McCall,  
Percy McGeorge,  
Henry Jackson Mullen,  
Edward Arnott Pearson,  
William Green Ridgway,  
Henry Alexander Robb,  
Robert Lewis Rutter,  
Harry Randolph Stoops,  
Earl Thomson,  
Henry Davis Todd, Jr.,  
David Edward Tracy,  
William Daniel Weikel,  
Samuel Jennings White,  
John Williamson Ziegler.

Bachelor of Philosophy.—  
Charles Price Mercer,  
Joseph Sailer, Jr.,  

John Weissgerber.

Bachelor of Laws.—  
Ephraim L. Acker,  
John S. Adams,  
Charles Y. Audenreid,  
Caldwell K. Biddle,  
John Blanchard,  
Marcus I. Brock,  
Frank A. Brunner,  
Henry G. Bryant,  
Joseph L. Cahall,  
Henry Carver,  
Charles P. Craig,  
John P. Crossdale,  
George B. Davidson,  
James A. Develin,  
Archibald R. Dewey,  
Franklin H. Evans,  
James Fitzpatrick,  
Joseph T. Foulke,  
George A. Freyer,  
Lindley Miller Garrison,  
A Jackson Gillespie,

Charles Hoffman,  
Ralph Kaufman,  
Frank Lumbader, Jr.,  
Benson Landon,  
James W. Laws,  
Eugene J. Lindsay,  
John MacDonald,  
Edward F. McGovern,  
Joseph G. Magee,  
Charles H. Marple,  
John Faber Miller,  
Howard Wurts Page,  
William Henry Price,  
G. Edward Schlegelmilch,  
William C. Scott,  
William W. Sergeant,  
Alexander Simes, Jr.,  
Lewis L. Smith,  
Frank P. Sproul,  
F. Marshall Stanger,  
James D. Steele,

Doctor of Medicine.— William H. Broughton, Ph.B.

Master of Arts.—

Practical Chemist.—

Mining Engineer.—
Samuel Williamson Cheyney, B.S., John Lincoln Harvey, B.S., Edwin Newberry Hawkins, B.S.

Civil Engineer.—

Mechanical Engineer.—

Bachelor of Sciences Auxiliary to Medicine.—
John Nathaniel Baylis, M.D., Thomas G. Lee, M.D., William George Howell, M.D.

Master of Laws.—
E. Clinton Rhoads.

Certificates.

Department of Arts.—Edmund Austin Stewardson.
Department of Science.—William Colladay Robinson, James Clay Travilla.
Department in Finance and Economy.—George J. Hopkins.

Department of Music.—Lilian F. Glenn, Marianne E. White, William F. Smith.

Department of Biology.—Ida Keller.

Doctor of Medicine.—

MAY 1, 1886.

Achey, Frederick A., Lancaster, Pennsylvania.
Aitken, Henry W., West Chester, Pennsylvania.
Albertson, William C., Vienna, New Jersey.
Avison, David, Ph.C. (London), Camden, New Jersey.
Baylis, John N., Bridgeton, New Jersey.
Beck, Charles S., Jr., Wilkes-Barre, Pennsylvania.
Benton, John W., Ogdensburg, New York.
Bevan, Andrew J., Rosemont, Pennsylvania.
Carle, Charles W., Ashley, Pennsylvania.
Carson, Alfred D., Ph.D. (Lyceum of Valparaiso), Valparaiso, Chili.
Cashman, Elmer W., Bendersville, Pennsylvania.
Crawford, James R., Jr., Allentown, Pennsylvania.
Crilly, John C., Philadelphia, do.
Culp, John F., Philadelphia, do.
Dalbey, Alvin D., A.B. (Central High School), Philadelphia, do.
Dale, Frank, Bellefonte, do.
Diller, Theodore, Lancaster, do.
Dixon, Samuel G., Philadelphia, do.
Downing, Henry M., West Chester, do.
Elmer, Albert W., A.B. (Griswold College), Davenport, Iowa.
Emerick, Charles E., Centre Hall, Pennsylvania.
Fisher, John V., Williamstown, do.
Fledderjohn, Henry E., New Bremen, Ohio.
Flexer, John R., Allentown, Pennsylvania.
Green, Walter D., A.B. (Princeton), Trenton, New Jersey.
Nock, Thomas O., Ph.G., Camden.
Novaes, Emzydio Dias, Quelez.
Orbison, J. Harris, A.M. (Prince-Bellefonte, ton),
Otto, Joseph,
Parke, William E., A.B. (Prince-Parkesburg, ton),
Pascoe, Geo. Y., Jr., A.B. (Central Philadelphia, High School),
Pownall, Elmer E., Bridge Valley,
Bath, Otto A.,
Bedmond, Henry,
Beynolds, Leon E.,
Biva, Fernando E.,
Sartain, Paul J., A.B. (Univ. of Penna.),
Schoales, Charles B.,
Schum, Frank L., Altoona,
Seymour, Alfred M., A.B., Huntingdon,
Sharp, Alexander A., A.B. (Dickinson),
Shimer, William S., A.B. (Central High School),
Shoemaker, Jesse G.,
Shoemaker, Levi L., A.B. (Yale), Wilkes-Barre,
Shoemaker, Samnel B., B.S. (Haverford),
Smith, Allen J., A.B. (Penna.), York,
Snodgrass, O. Edmund,
Stevens, Arthur A., A.B. (Central High School),
Tatum, Edward, A.B. (Yale), New York City,
Teller, William H., Philadelphia,
Thompson, James B., Allegheny City,
Thompson, William O., Summit Hill,
Tomlin, Almer N., Goshen,
Wallace, Charles H., New Castle,
Ward, F. Tillson, A.B. (Central High School),
Weaver, W. Warren, A.B. (Penna.), Hanover,
Welker, Abram T., Hillegass,
Weller, Elmer K., Trexlertown,
Westcott, Thompson S., A.B. (Univ. of Penna.), Philadelphia,
White, R. Parks,
Williams, Walter S., Pittsburgh,
Zentmayer, William,
DEGREES.

JUNE 15, 1886.

William H. Broughton,                 Kingston, Maryland.

Of the foregoing there were from:

<table>
<thead>
<tr>
<th>State</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Brazil</td>
<td>1</td>
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<tr>
<td>Chili</td>
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<tr>
<td>Connecticut</td>
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<tr>
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<td>New York</td>
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<tr>
<td>Nova Scotia</td>
<td>2</td>
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<td>Ohio</td>
<td>4</td>
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<td>Pennsylvania</td>
<td>80</td>
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<tr>
<td>Texas</td>
<td>1</td>
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</tbody>
</table>

Total: 119

MAY 1, 1886.

Doctor of Dental Surgery.—

Adams, James E.,
Bennefeld, Albert F.,
Borden, Walter A.,
Bordner, Charles M.,
Bradley, Wilmot V.,
Campbell, John,
 Chambers, William M.,
Cookingham, George T.,
Daniel, William W.,
Davis, Charles H.,
Dennison, James S.,
Dumas, Victor,
 Ensign, Charles L.,
Griffin, Frank R.,
 Hawke, Wm. Wetherill,
Hills, J. Bartlett,
Howland, Frank H.,
Huber, William S.,
Hurlbut, H. Duane,
Lamotte, Luis Alfredo,
Long, W. Laurence,
 McIntyre, Alexander A.,
Maercklein, Bernhard G.,
Maercklein, Reinhold E.,
 Miller, Louis J.,
Moore, U. S. Grant,
Nittinger, Alfred,
Paranhos, Jose,
Pereira, Francisco,
Quick, E. Payson,
Raupp, Octavio B.,
Rees, Chas. Hanson,
Richter, Charles H.,
Schwarzchild, Ferdinand J.,

Paris,
Berlin,
Allentown,
Berrysburg,
New Haven,
Philadelphia,
do.
Lee,
Freeport,
New Ipswich,
Geneva,
Santiago,
Norwich,
Bellefontaine,
Hopewell,
Washington,
Worcester,
Lebanon,
St. Albans,
Ponce,
Honeybrook,
Summerside,
Milwaukee,
Milwaukee,
Huntingdon,
Shamokin,
Philadelphia,
Porto Alegre,
Pelotas,
Philadelphia,
Porto Alegre,
Winchester,
Milwaukee,
San Francisco,

Illinois.
Germany.
New Jersey.
Pennsylvania.
Connecticut.
Pennsylvania.
do.
Massachusetts.
Illinois.
New Hampshire.
New York.
Cuba.
New York.
Ohio.
New Jersey.
District of Columbia.
Massachusetts.
Pennsylvania.
Vermont.
Porto Rico.
Pennsylvania.
Pr. Edward's Island.
Wisconsin.
do.
Pennsylvania.
do.
Brazil.
do.
Pennsylvania.
Brazil.
Kentucky.
Wisconsin.
California.
Seelye, Henry G.,
Shannon, George H.,
Sumner, Frederick I.,
Upp, Charles W.,
Webb, Albert T.,
Wible, John H.,
Wiggins, Leslie M.,

Middlebury,
Watertown,
Norwich,
Freeport,
Freeport,
Greensburg,
Central Norton,

Connecticut.
New York.
do.
Illinois.
do.
Pennsylvania.
New Brunswick.

SUMMARY.

Brazil, 3
California, 1
Connecticut, 2
Cuba,
District of Columbia,
Germany,
Illinois,
Kentucky,
Massachusetts,
New Brunswick,

New Hampshire, 1
New Jersey, 2
New York, 4
Ohio, 1
Pennsylvania, 10
Porto Rico, 1
Prince Edward's Island, 1
Vermont, 1
Wisconsin, 3

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The following list, accidentally omitted from the Catalogue of 1885–86, is here inserted to complete the record.

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Allen, William Y.,
Bailey, Edgar C.,
Bellis, Edward R.,
Bromley, Frederick W., M.D.,
Bruns, Augustus,
Carter, Ditson P.,
Couto, William S.,
Crissman, Ira B.,
Dayton, Chas. Elmer,
Dick, George W. C.,
Dickinson, Edward B.,
Ehni, Robert F.,
Englert, G. Ægidius,
Erskine, George W.,
Fergus, Oswald, L.D.S.,
Fisher, Frank W.,
Fridman, Andreas,
Gibbons, Clifford,
Gibbons, John F.,
Ginoyer, Louis,
Hayward, Thaddeus T.,
Hertz, John C.,
Howe, Edward D.,
Hugenschmidt, Arthur C.,

Boston, Mass.
Macon, Ga.
Richmond, Ind.
Palmyra, Wisc.
Hanover, Germany.
Proctorville, Ohio.
Saó Paulo, Brazil.
Freeport, Ill.
Stamford, Conn.
Sumter, S. C.
Chicopee, Mass.
Toledo, Ohio.
Orange, N. J.
Philadelphia.
Glasgow, Scotland.
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Minneapolis, Minn.
Hazelton.
Hollis, N. H.
Paris, France.
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HONORS.

In the College Faculty, at the examination for Degrees.—

In the Arts—

Of the **First Class**, to Howard James Truman.

Of the **Second Class**, to George Christian Eisenhardt, Jacob Martin Rommel, Jr., and Irvin Poley Knife.

SUMMARY.
HONORS.

Of the Third Class, to George W. Wilgus, Charles Elmer Woodruff, Edward Miller Jefferys, Albert William Mainfold, James Burnet Crane, Robert Murray Hogg, and Walter Moore Shaw.

In the Towne Scientific School—

POST SENIORS.

Of the Second Class, to Lino Francesco Rondinella, Herman Herzog, Jr., and Stephen Harris.


SENIORS.

Of the Second Class, to Charles Herman Haupt.


In the Course in Philosophy—

Of the Third Class, to Joseph Sailer, Jr.

At the Annual examination DISTINCTIONS of the First Class—

In the Arts to—

Juniors—William Romaine Newbold, George Flowers Stradling, and George Wharton Pepper.

Sophomores—Horace Clark Richards.

In the Faculty of Medicine for graduation theses—

MAY 1, 1886.

Distinguished Merit, to—

Walter D. Green.

Honorable Mention, to—

William E. Parke, Elmer K. Waller, William A. Carey.

The following graduates of the Medical Department, Class of 1886, were appointed to Hospitals on competitive examinations. They are alphabetically arranged—

To the University Hospital—

F. A. Achey,
T. S. Westcott,

To the Philadelphia Hospital—

Wm. C. Albertson,
Theodore Diller,
Michael J. Donohue,
Wm. A. N. Dorland,
Wm. B. Jameson,
E. I. Kerlin,

Damaso T. Lainè,
Ellwood Matlack,
Sherman G. T. Moyer,
Wm. E. Parke,
Alfred M. Seymour,
Wm. S. Shimer,
Allen J. Smith.
To the St. Mary's Hospital—
  John N. Bayliss,
  John C. Crilly,

To the St. Joseph's Hospital—

To the Children's Hospital—
  E. I. Kerlin,

To the St. Luke's Hospital, Bethlehem—
  Joseph Otto,

The following were appointed to Hospitals, at which an examination is not made the basis of appointment.

To the Pennsylvania Hospital—
  Fred. A. Packard,

To the Episcopal Hospital—
  Thomas Budd Bradford,
  Harry C. Deaver,
  Walter J. Freeman,

To the Germantown Hospital—
  Charles W. Burr,

To the Miner's Hospital, Scranton—
  Horace E. Merkel.

To the Presbyterian Hospital—
  Wm. R. Cochrane,
  Walter D. Green,

To the German Hospital—
  William D. Gross,

In the Faculty of Dentistry, at the examination for Degrees—Honorable Mention for averages, exceeding 90, to—

William S. Huber,  Pennsylvania.
John Campbell,  Pennsylvania.
Bernhard G. Maercklein,  Wisconsin.
George H. Shannon,  New York.
Wilmot V. Bradley,  Connecticut.
Chas. W. Upp,  Illinois.
E. Payson Quick,  Pennsylvania.

PRIZES.

June 15, 1886.

I. IN THE COLLEGE FACULTY—

1. For the best Essay in Intellectual and Moral Philosophy by a member

2. For the best examination on the "Oration of Æschines against Ctesiphon" by the members of the Junior Class, to James Alan Montgomery, with honorable mention of George Flowers Stradling.

3. For the best examination by a member of the Freshman Class on Greek Prose Composition with the Accents, equally to Charles Peabody and David Bowen Salter; with honorable mention of Matthew James Hyndman.

4. For the best examination on the "Lectures on Quaternions" given to the Voluntary Junior Class, First Prize to George Flowers Stradling; Second Prize to John Dawson Hawkins.

5. A prize of twenty dollars for the best Essay in History and English Literature by a member of the Junior Class. Subject: "Nathaniel Hawthorne," to James Alan Montgomery.

6. For the best Declamation by a member of the Sophomore Class, to Lightner Witmer; with honorable mention of Milton J. Greenman, Theodore William Kretzmann, and James Barton Longacre.

7. For the best special examinations in the Elements of Latin Prose Composition, by Freshmen on entering College, First Prize to Arthur Richard Harcourt Morrow; Second Prize to Dickinson Sergeant Miller.

8. For the best special examinations in Greek Prose Composition by Freshmen on entering College, First Prize to Arthur Richard Harcourt Morrow; Second Prize to Walter Scott.

9. To a member of the Scientific Classes for improvement in Drawing and general good conduct and application, to Edward Christian Knight of the Freshman Class.

II. THE SOCIETY OF THE ALUMNI PRIZES—

1. For the best Latin Essay, by a member of the Graduating Class, to George Christian Eisenhardt.

2. For the best Original Declamation by a member of the Junior Class, equally to Oliver Huckel and Joseph Siegemund Levin.

III. The HENRY LA BARRE JAYNE PRIZE for the best English Composition by a member of the Freshman Class, to Charles Newton Clement Brown, with honorable mention of Samuel McCune Lindsey, for their Essays on "John Quincy Adams."

IV. The JOSEPH WARNER YARDLEY PRIZE, founded by the Class of 1877, in memory of their classmate, for the best Thesis in Political Economy by a member of the Senior Class, to Robert Murray Hogg, for his Essay on "Socialism."

V. The Prize founded by D. VAN NOSTRAND, Esq., for the member of
the Junior Class in Civil Engineering who attains the highest general average of scholarship, to Joseph Christian Wagner.

II. IN THE FACULTY OF LAW---

1. The Sharswood Prize to Lewis L. Smith for his Essay, entitled "Negotiable Paper as Collateral."
2. The Meredith Prize to Thomas C. Wilson for his Essay, entitled "The Fourth Section of the Statute of Frauds."
3. The Faculty Prize for the best written examination with all the Professors to Lindley Miller Garrison, of the Senior Class.

III. IN THE FACULTY OF BIOLOGY---

The Junior Prize for the best dissected preparations, to, first, Milton J. Greenman; second, Robert S. Maison.

IV. IN THE FACULTY AUXILIARY TO MEDICINE---

The George B. Wood Prize to Thomas G. Lee, M.D., for his Thesis on "The Anther," with honorable mention of John Nathaniel Boylis, M.D., for his Thesis on "The Development of the Ordinary Fowl (Gallus domesticus)."

MAY 1, 1886.

V. BY THE FACULTY OF MEDICINE---

1. The "Medical News Prize" of One Hundred Dollars, for sufficiently meritorious thesis, was divided between Allen J. Smith, for his thesis on Micrococcus of Sewage, and Edgar M. Green, for his thesis on the Value of Brücke's Method for the Removal of Intercepting Substances from Urine in Testing for Glucose.
2. Alumni Prize of Fifty Dollars, to Elijah I. Kerlin, for his thesis on the Hygiene of Lecture Rooms and Hospitals.
3. The "Morbid Anatomy Prize," of a Zentmayer's Histological Microscope, to Geo. M. Marshall, for his thesis on A Study of Tumors removed at the Surgical Clinic of the Hospital of the University of Pennsylvania, from March, 1885, to June, 1886.
4. The "Henry M. Beates" Prize of Fifty Dollars, for the highest general average attained in examinations, to Edgar M. Green.
5. "Demonstrators' Prizes," by the Demonstrator of Surgery, Dr. J.Wm. White. The First Prize for Proficiency in Bandaging and Operating, a copy of Agnew's Surgery, to R. Parks White; Second Prize, a pocket case of instruments, to Damaso T. Lainé.
6. "Anatomical Prizes," by Dr. John B. Deaver. A Prize of Thirty Dollars to the member of the graduating class who shall present the best record of Anomalies found in the Anatomical Room, to Thomas D. King, of Ohio.
### SUMMARY.

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