

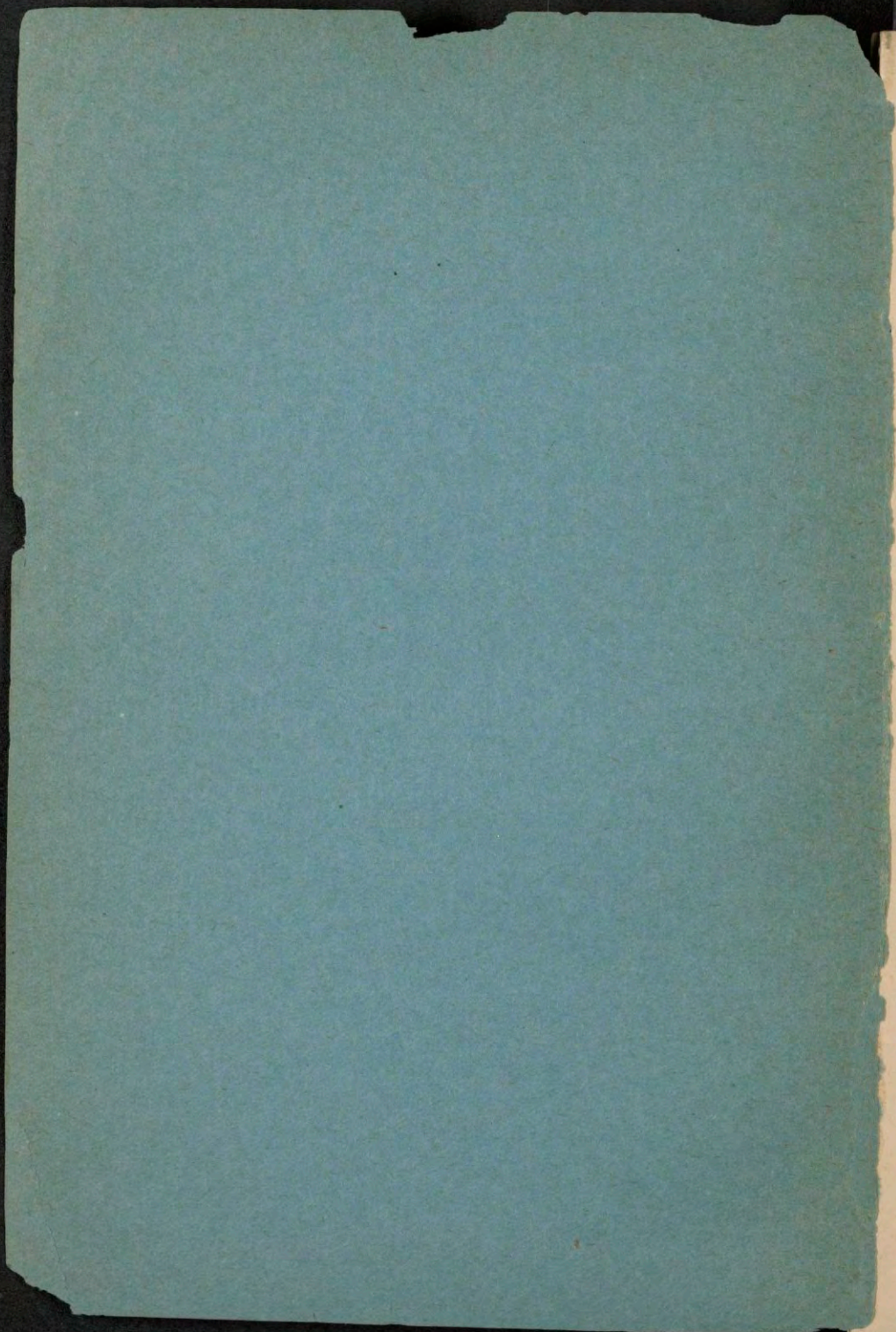
UNIVERSITY  
OF  
PENNSYLVANIA

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Catalogue and Announcements  
1888-89

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PHILADELPHIA  
PRINTED FOR THE UNIVERSITY  
1888



UNIVERSITY

*William S. Wadsworth*

OF

PENNSYLVANIA

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Catalogue and Announcements

1888-89

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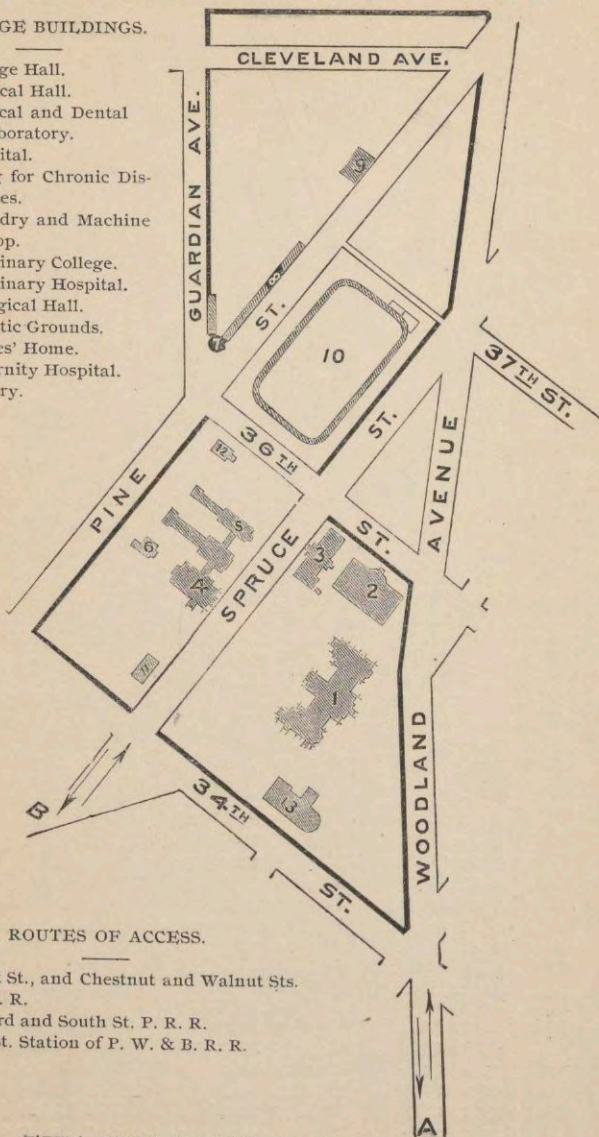
1888



## 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.
6. Laundry and Machine Shop.
7. Veterinary College.
8. Veterinary Hospital.
9. Biological Hall.
10. Athletic Grounds.
11. Nurses' Home.
12. Maternity Hospital.
13. Library.



### ROUTES OF ACCESS.

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

THE BUILDINGS AND PROPERTY.

**1889.****JANUARY.**

S . 6 13 20 27  
 M . 7 14 21 28  
 T 1 8 15 22 29  
 W 2 9 16 23 30  
 T 3 10 17 24 31  
 F 4 11 18 25 .  
 S 5 12 19 26 .

**FEBRUARY.**

S . 3 10 17 24  
 M . 4 11 18 25  
 T . 5 12 19 26  
 W . 6 13 20 27  
 T . 7 14 21 28  
 F 1 8 15 22 .  
 S 2 9 16 23 .

**MARCH.**

S . 3 10 17 24 31  
 M . 4 11 18 25 .  
 T . 5 12 19 26 .  
 W . 6 13 20 27 .  
 T . 7 14 21 28 .  
 F 1 8 15 22 29 .  
 S 2 9 16 23 30 .

**APRIL.**

S . 7 14 21 28  
 M 1 8 15 22 29  
 T 2 9 16 23 30  
 W 3 10 17 24 .  
 T 4 11 18 25 .  
 F 5 12 19 26 .  
 S 6 13 20 27 .

**MAY.**

S . 5 12 19 26  
 M . 6 13 20 27  
 T . 7 14 21 28  
 W 1 8 15 22 29  
 T 2 9 16 23 30  
 F 3 10 17 24 31  
 S 4 11 18 25 .

**JUNE.**

S . 2 9 16 23 30  
 M . 3 10 17 24 .  
 T . 4 11 18 25 .  
 W . 5 12 19 26 .  
 T . 6 13 20 27 .  
 F . 7 14 21 28 .  
 S 1 8 15 22 29 .

**1889.****JULY.**

S . 7 14 21 28  
 M 1 8 15 22 29  
 T 2 9 16 23 30  
 W 3 10 17 24 31  
 T 4 11 18 25 .  
 F 5 12 19 26 .  
 S 6 13 20 27 .

**AUGUST.**

S . 4 11 18 25  
 M . 5 12 19 26  
 T . 6 13 20 27  
 W . 7 14 21 28  
 T 1 8 15 22 29  
 F 2 9 16 23 30  
 S 3 10 17 24 31

**SEPTEMBER.**

S 1 8 15 22 29  
 M 2 9 16 23 30  
 T 3 10 17 24 .  
 W 4 11 18 25 .  
 T 5 12 19 26 .  
 F 6 13 20 27 .  
 S 7 14 21 28 .

**OCTOBER.**

S . 6 13 20 27  
 M . 7 14 21 28  
 T 1 8 15 22 29  
 W 2 9 16 23 30  
 T 3 10 17 24 31  
 F 4 11 18 25 .  
 S 5 12 19 26 .

**NOVEMBER.**

S . 3 10 17 24  
 M . 4 11 18 25  
 T . 5 12 19 26  
 W . 6 13 20 27  
 T . 7 14 21 28  
 F 1 8 15 22 29  
 S 2 9 16 23 30

**DECEMBER.**

S 1 8 15 22 29  
 M 2 9 16 23 30  
 T 3 10 17 24 31  
 W 4 11 18 25 .  
 T 5 12 19 26 .  
 F 6 13 20 27 .  
 S 7 14 21 28 .

**1890.****JANUARY.**

S . 5 12 19 26  
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 T . 7 14 21 28  
 W 1 8 15 22 29  
 T 2 9 16 23 30  
 F 3 10 17 24 31  
 S 4 11 18 25 .

**FEBRUARY.**

S . 2 9 16 23  
 M . 3 10 17 24  
 T . 4 11 18 25  
 W . 5 12 19 26  
 T . 6 13 20 27  
 F . 7 14 21 28  
 S 1 8 15 22 .

**MARCH.**

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 T . 4 11 18 25 .  
 W . 5 12 19 26 .  
 T . 6 13 20 27 .  
 F . 7 14 21 28 .  
 S 1 8 15 22 29 .

**APRIL.**

S . 6 13 20 27  
 M . 7 14 21 28  
 T 1 8 15 22 29  
 W 2 9 16 23 30  
 T 3 10 17 24 .  
 F 4 11 18 25 .  
 S 5 12 19 26 .

**MAY.**

S . 4 11 18 25  
 M . 5 12 19 26  
 T . 6 13 20 27  
 W . 7 14 21 28  
 T 1 8 15 22 29  
 F 2 9 16 23 30  
 S 3 10 17 24 31

**JUNE.**

S 1 8 15 22 29  
 M 2 9 16 23 30  
 T 3 10 17 24 .  
 W 4 11 18 25 .  
 T 5 12 19 26 .  
 F 6 13 20 27 .  
 S 7 14 21 28 .

## CALENDAR.

1888.

- |                    |   |
|--------------------|---|
| Sept. 17, Monday.  | Introductory Course begins: Departments of Medicine and Dentistry. 11 A.M.  |
| " 20, Thursday.    | First Term begins: College Department. 10 A.M.  |
| Oct. 1, Monday.    | Winter Session begins: Departments of Medicine, Dentistry, Veterinary Medicine, and Biology, and Auxiliary Department of Medicine. 12 Noon. |
| " 1, Monday.       | First Term begins: Course in Music. 2 P.M.  |
| " 1, Monday.       | First Term begins: Department of Law. 4 P.M.  |
| Nov. 29, Thursday. | Thanksgiving Day. (With Friday, 30th, holiday.)   |
| Dec. 21, Friday.   | Christmas Recess begins: College Department and Department of Biology. 5 P.M.   |
| " 22, Saturday.    | Christmas Recess begins: Departments of Medicine, etc. 5.30 P.M.  |

1889.

### CHRISTMAS RECESS.

- |                   |   |
|-------------------|---|
| Jan. 3, Thursday. | Christmas Recess ends. 9 A.M.   |
| " 31, Thursday.   | First Term ends: College Department (Chapel at 10 A.M.) and Departments of Biology and Law. |
| Feb. 1, Friday.   | Second Term begins: College Department and Departments of Biology and Law.                  |
| " 22, Friday.     | Washington's Birthday. Celebration in College Chapel, 10 A.M.                               |
| April 15, Monday. | Final and Term Examinations begin: Departments of Medicine and Dentistry.                   |
| " 17, Wednesday.  | Easter Recess begins: College Department and Department of Biology. 5 P.M.                  |

### EASTER RECESS.

- |                   |  |
|-------------------|--|
| April 19, Friday. | Good Friday. (Legal Holiday.)  |
| " 23, Tuesday.    | Examination for Resident Physicians, University Hospital. 12 Noon.       |
| " 24, Wednesday.  | Easter Recess ends: College Department and Department of Biology. 9 A.M. |
| May 1, Wednesday. | Annual Commencement: Departments of Medicine and Dentistry. 12 Noon.     |
| " 2, Thursday.    | Spring Session begins: Department of Dentistry.                          |
| " 4, Saturday.    | Senior Examinations end: College Department.                             |

May	6, Monday.	Spring Session begins : Department of Medicine. 11 A.M. Entrance Examination, Department of Medicine.
"	20, Monday.	Examinations begin: Departments of Law and Veterinary Medicine, and Auxiliary Department of Medicine.
"	31, Friday.	Second Term ends : Department of Law.
June	3, Monday.	Announcement of Results, Annual Examinations : College Department. 10 A.M.
"	5, Wednesday.	Annual Commencement : College Department, Departments of Law, Biology, and Veterinary Medicine, and Auxiliary Department of Medicine. 11 A.M.
"	6, Thursday.	Entrance Examinations begin : College Department. 9 A.M.
SUMMER VACATION.		
Sept.	12, Thursday.	Entrance Examinations begin : College Department. 9 A.M.
"	18, Wednesday.	Introductory Course begins : Departments of Medicine and Dentistry. 11 A.M.
"	23, Monday.	First Term begins : College Department and Department of Biology. 10 A.M.
"	25, Wednesday.	Competitive Examination for Medical Scholarships. 12 Noon.
"	26, Thursday.	Examinations for Admission to Advanced Standing and Re-examinations of Undergraduates: Departments of Medicine and Dentistry. 12 Noon.
"	27, Friday.	Entrance Examination : Departments of Medicine and Veterinary Medicine. 12 Noon.
Oct.	1, Tuesday.	Winter Session begins : Departments of Medicine, Dentistry, and Veterinary Medicine, and Auxiliary Department of Medicine. 12 Noon.
"	1, Tuesday.	First Term begins : Course in Music. 2 P.M.
"	7, Monday.	First Term begins : Department of Law. 4 P.M.
Nov.	28, Thursday.	Thanksgiving Day (with Friday, 29th, holiday).
Dec.	20, Friday.	Christmas Recess begins: Department of Law.
"	23, Monday.	Christmas Recess begins: College Department and Department of Biology. 5 P.M.
1890		
CHRISTMAS RECESS.		
Jan.	2, Thursday.	Christmas Recess ends: Department of Law.
"	3, Friday.	Christmas Recess ends: College Department and Department of Biology. 9 A.M.
"	31, Friday.	First Term ends : College Department (Chapel at 10 A.M.), and Departments of Biology and Law.

## University of Pennsylvania.

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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; 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 thereto, 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 M'Call, 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 Plumsted, Thomas White, William Coleman, 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 skilful 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 chari-

table 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 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 that followed, during the wars with the French, the Provost, Mr. Smith, opposed so vehemently the non-resistance policy of the Legislature of Pennsylvania, that by an arbitrary stretch of power he was thrown into prison. In faithfulness to his duties as Provost, however, he received his classes in gaol, and continued his instructions to them there while still a prisoner. Finally he was set at liberty, 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 trustees, 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 prosperity 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 professors and tutors, all carrying on the education of youth with great harmony, 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 fundamental 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 approving 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 endeavors* that the same *be not narrowed*, nor the members of the church of England, 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 subscribe this with their names, and ordain that the same be read and subscribed 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 College 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 Philadelphia, 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 follows:

*First.* That the name of the institution be "*The University of Pennsylvania,*" and that it be stationed in the city of Philadelphia.

*Second.* That each of the two boards shall elect, from among themselves, 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 politick, 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 COURSE IN SCIENCE,  
(The Towne Scientific School),
  - THE COURSE IN PHILOSOPHY FOR UNDERGRADUATES,
  - 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.

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## TRUSTEES.

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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., LL.D.,  
WILLIAM SELLERS,  
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,  
RT. REV. OZI WILLIAM WHITAKER, D.D.,  
JOHN BARNARD GEST.

REV. JESSE Y. BURK, Secretary, University.

WHARTON BARKER, Treasurer, 125 South 4th St.

CHAIRMEN OF STANDING COMMITTEES FOR THE YEAR  
1888-89.

## WAYS AND MEANS :

MR. HARRISON, . . . . . 101 South Front Street.

## BUILDINGS, ESTATES AND PROPERTY :

MR. WOOD, . . . . . 400 Chestnut Street.

## LIBRARY :

DR. FURNESS, . . . . . 222 West Washington Square.

## DEPARTMENT OF ARTS :

MR. FRALEY, . . . . . 1000 Walnut Street.

## DEPARTMENT OF MEDICINE :

DR. MITCHELL, . . . . . 1524 Walnut Street.

## DEPARTMENT OF LAW :

MR. SCOTT, . . . . . 3808 Chestnut Street.

## DEPARTMENT OF SCIENCE :

MR. MERRICK, . . . . . Roxboro'.

## DEPARTMENT OF FINANCE AND ECONOMY :

MR. BARKER, . . . . . 125 South Fourth Street.

## DEPARTMENT OF VETERINARY MEDICINE :

DR. HUNT, . . . . . 1300 Spruce Street.

## DEPARTMENT OF PHYSICAL EDUCATION :

MR. DICKSON, . . . . . 32 South 3d Street.

## DEPARTMENT OF BIOLOGY :

MR. MERRICK, . . . . . Roxboro'.

## OFFICERS.\*

	Residence.
WILLIAM PEPPER, M.D., LL.D., PROVOST OF THE UNIVERSITY.	1811 Spruce St.
E. OTIS KENDALL, LL.D., VICE-PROVOST.	3826 Locust St.
—	
JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.	1302 Filbert St.
HENRY H. SMITH, M.D., Emeritus Professor of Surgery.	1800 Spruce St.
FRANCIS A. JACKSON, A.M., Professor of the Latin Language and Literature.	Overbrook, Pa.
E. OTIS KENDALL, LL.D., THOMAS A. SCOTT Professor of Mathematics.	3826 Locust St.
J. PETER LESLEY, LL.D., Emeritus Professor of Geology and Mining.	1008 Clinton St.
RICHARD A. F. PENROSE, M.D., LL.D., Emeritus Professor of Obstetrics and of the Dis- eases of Women and Children.	1331 Spruce St.
ALFRED STILLÉ, M.D., LL.D., Emeritus Professor of the Theory and Practice of Medicine and of Clinical Medicine.	3900 Spruce St.
HARRISON ALLEN, M.D., Emeritus Professor of Physiology.	1933 Chestnut St.
HORATIO C. WOOD, M.D., LL.D., Professor of Materia Medica, Pharmacy and General Therapeutics, and Clinical Professor of Nervous Diseases.	1925 Chestnut St.
JOHN J. REESE, M.D., Professor of Medical Jurisprudence, including Toxicology.	Landsdowne, Pa.
CHARLES J. STILLÉ, LL.D., Emeritus JOHN WELSH CENTENNIAL Professor of History and English Literature.	2201 St. James's Place.

\* Arranged, except Provost and Vice-Provost, in order of accession to office.

- OSWALD SEIDENSTICKER, PH.D. (Göttingen), Litt.D.,  
Professor of the German Language and Literature. 309 S. 40th St.
- JOHN G. R. McELROY, 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.,  
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Professor of Gynæcology. 1418 Spruce St.
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Honorary Professor of Ophthalmology, and Clin-  
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Clinical Professor of Diseases of the Ear. 1500 Walnut St.
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- GEORGE A. KÖENIG, PH.D. (Heidelberg),  
Professor of Mineralogy and Metallurgy. 3207 Summer St.
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Professor of Organic and Industrial Chemistry. 204 N. 34th St.
- JAMES TYSON, M.D.,  
Professor of General Pathology and Morbid Anat-  
omy. 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.
- JOSEPH T. ROTHROCK, B.S., M.D.,  
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. 1409 Spruce St.
- JOHN ASHHURST, JR., M.D.,  
Professor of Clinical Surgery. 2000 W. De Lancey Place.
- OTIS H. KENDALL, Ph.D.,  
Assistant Professor of Mathematics. 3826 Locust St.
- CHARLES J. ESSIG, M.D., D.D.S.,  
Professor of Mechanical Dentistry and Metal-  
lurgy. 1700 Locust St.
- EDWIN T. DARBY, M.D., D.D.S.,  
Professor of Operative Dentistry and Dental His-  
tory. 1513 Walnut St.
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Professor of Comparative Philology, and Adjunct  
Professor of Greek. 224 S. 43d St.
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Professor of Dental Pathology, Therapeutics and  
Materia Medica. 3249 Chestnut St.
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NARIAN (Alfort), Professor of Veterinary Anatomy  
and Pathology. 111 S. 20th St.
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Professor of American History. Highland Ave., Chestnut Hill.
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Professor of Equity Jurisprudence. 402 Walnut St.
- ROBERT MEADE SMITH, MD.,  
Professor of Comparative Physiology. 332 S. 21st St.
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Professor of Vertebrate Morphology. 1826 Chestnut St.
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Assistant Professor of Physical Diagnosis. 1814 Rittenhouse Sq.
- LOUIS STARR, M.D.,  
Clinical Professor of Diseases of Children. 1922 Spruce St.

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Professor of Physiology. W. Springfield Ave., Chestnut Hill.
- J. WILLIAM WHITE, M.D.,  
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geon in University Hospital. 1810 Rittenhouse Square.
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A. H. P. LEUF, M.D., Director of Physical Education.	129 S. 36th St.

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- JOHN A. REIMOLD,  
Clerk to the Faculty of Dentistry.
- JOHN H. SALVADOR,  
Clerk to the Faculty of Veterinary Medicine.
- BARCELONA BASS,  
Clerk to the Faculty of Biology.

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### FACULTY.

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and *ex-officio* President of the Faculty.
- E. OTIS KENDALL, LL.D., VICE-PROVOST, *ex-officio* DEAN OF  
THE FACULTY, and THOMAS A. SCOTT Professor of Mathe-  
matics.
- JOSEPH LEIDY, M.D., LL.D., Professor of Zoölogy and Compar-  
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- FRANCIS A. JACKSON, A.M., Professor of the Latin Language and  
Literature.
- OSWALD SEIDENSTICKER, PH.D., Litt.D., Professor of the Ger-  
man Language and Literature.
- JOHN G. R. McELROY, A.M., Professor of Rhetoric and the Eng-  
lish Language.
- J. I. CLARK HARE, LL.D., Professor of Constitutional Law.
- REV. ROBERT ELLIS THOMPSON, D.D., JOHN WELSH CENTEN-  
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tecture.
- GEORGE A. KÖENIG, PH.D., Professor of Mineralogy and Metal-  
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- HUGH A. CLARKE, MUS. DOC., Professor of the Science of Music.
- JOSEPH T. ROTHROCK, M.D., B.S., Professor of Botany.
- WILLIAM D. MARKS, PH.B., C.E., WHITNEY Professor of Dyna-  
mical Engineering.\*
- OTIS H. KENDALL, PH.D., Assistant Professor of Mathematics.
- MORTON W. EASTON, PH.D., Professor of Comparative Philology  
and Instructor in French.
- EDMUND J. JAMES, PH.D., Professor of Finance and Administra-  
tion.\*
- JOHN BACH McMASTER, A.M., Professor of American History.

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\* Absent on Leave.

- HORACE JAYNE, M.D., Professor of Vertebrate Morphology.  
 REV. GEORGE S. FULLERTON, A.M., B.D., ADAM SEYBERT Professor of Intellectual and Moral Philosophy.  
 REV. JOHN P. PETERS, PH.D., Professor of Hebrew.\*  
 JOHN A. RYDER, PH.D., Professor of Comparative Embryology.  
 WILLIAM POWELL WILSON, Sc.D., Professor of the Anatomy and Physiology of Plants.  
 HENRY W. SPANGLER, Assistant Engineer U.S.N., Assistant Professor of Dynamical Engineering. †  
 CHARLES S. DOLLEY, M.D., Professor of General Biology.  
 A. H. P. LEUF, M.D., Director of Physical Education.  
 WILLIAM A. LAMBERTON, A.M., Professor of the Greek Language and Literature.  
 SIMON N. PATTEN, PH.D., Professor of Political Economy.  
 FELIX E. SCHELLING, A.M., Assistant Professor of English Literature.  
 EDGAR F. SMITH, PH.D., Professor of Analytical Chemistry.

## INSTRUCTORS.

- EDWIN S. CRAWLEY, B.S., Instructor in Mathematics.  
 EDWARD P. CHEYNEY, A.M., Instructor in History and Latin.  
 ARTHUR W. GOODSPEED, A.B., Instructor in Physics.  
 HUGO A. RENNERT, B.S., Instructor in French and German.  
 HOBART A. HARE, M.D., Instructor in Physiology.  
 BENJAMIN FRANKLIN, B.S., C.E., Instructor in Civil Engineering.  
 CHARLES HERMAN HAUPT, B.S., C.E., Instructor in Civil Engineering.  
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 EDWIN A. KELLEY, Instructor in Zoölogy.  
 MILTON J. GREENMAN, Assistant Instructor in Biology.  
 MARSHALL F. PUGH, B.S., E.M., Assistant in Metallurgy and Mining.  
 ROLAND P. FALKNER, PH.D., Instructor in Accounting and Statistics.  
 JAMES A. MONTGOMERY, A.B., Instructor in Hebrew.  
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 CHARLES A. PETERSON, A.B., B.S., Instructor in Electrical Engineering.  
 HARRY F. KELLER, PH.NAT.D., Instructor in Organic Chemistry.  
 LEE K. FRANKEL, B.S., P.C., Instructor in Analytical Chemistry.  
 FRANCIS A. JACKSON, Secretary.

\* Absent on Leave.

† In charge of the course during Prof. Marks's absence.

## GRADUATE STUDENTS.

HECTOR TYNDALE FELLOW IN PHYSICS.

George Flowers Stradling, A.B., Hathboro.

## POST-SENIORS.

The Courses are indicated as follows:—Arts, A.; Science, Sc.; Philosophy, Ph.; Finance and Economy, Wh.; Pure and Applied Chemistry, 1; Metallurgy and Mining, 2; Civil Engineering, 3; Dynamical Engineering, 4; Architecture, 5. Special and partial students, attending with the several classes, are printed in italics; partial students, with an asterisk (\*) added.

Course.	Residence.	City Address.
<i>Hubert Alexander Bonzano</i> , C.E., Sc. 1,	Phoenixville.	
Eugene Delano Cleaver, B.S.,	3, Berwyn.	
<i>Alexander Brown Cox</i> e, A.B.,	2, New York,	Cor. 19th & Walnut Sts.
<i>Emlen Trenchard Hall</i> ,	1, Philadelphia,	1623 Spruce St.
George Brodhead Harris, B.S.,	3, do.	School Lane, Gtn.
Manton Eckfeldt Hibbs, B.S.,	3, do.	527 N. 18th St.
Oliver Hough,	1, do.	325 S. 16th St.
William George Houston, B.S.,	3, do.	814 N. 21st St.
<i>George Washington Hyde, Jr.</i> ,	3, do.	Lemon Hill.
Frederick Merwin Ives, B.S.,	3, Rome, Italy,	3709 Woodland Ave.
Edwin Robert Keller, B.S.,	4, Philadelphia,	257 N. 6th St.
Edgar Kidwell, A.B.,	4, Washington, D.C.,	3926 Pine St.
<i>Thomas Canning McBride</i> ,	4, Philadelphia,	2212 Brandywine St.
<i>Robert Samuel MacLeister</i> ,	3, do.	2218 Pine St.
Charles Everett Ross, B.S.,	4, Chester, (347 Kerlin St.)	
John Richard Savage, Jr.,	3, Philadelphia,	212 W. Orthodox St.
William James Smith, B.S.,	3, do.	868 Preston St.
<i>Walter Raiguel Stroud</i> ,	1, do.	2035 Mt. Vernon St.

Post-Seniors, 18.

## UNDERGRADUATES.

## SENIORS.

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Franklin Bache,	Sc. 2,	do.	Cor. 40th & Pine Sts.
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William Alexander Bell,	A.,	New York,	717 S. 10th St.
Timothy Raymond Beyer,	Sc. 3,	Philadelphia,	4835 Green St., Gtn.
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Herbert Hart Boyd,	Wh.,	do.	2223 Spruce St.
George Brooke, Jr.,	Wh.,	Birdsboro.	
Charles Newton Clement Brown, A.,	Philadelphia,		2119 Mt. Vernon St.
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Oscar Pearl Chamberlain,	Sc. 3,	do.	3923 Aspen St.
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Francis Macomb Cresson,	Sc. 4,	Oaks.	
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Charles Harrison Frazier,	A.,	do.	250 S. 18th St.
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Tamio Hayashi,	Wh.,	Tokio, Japan.	3603 Baring St.
<i>Joseph Lazarus Hecht,</i>	Sc. 1,	Philadelphia,	1738 Warnock St.
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Robert Carmer Hill,	Wh.,	do.	129 N. 18th St.
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Edwin Isaac Hyneman,	A.,	do.	1015 Green St.
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Charles Peter Beauchamp			
Jefferys, Jr.,	Wh.,	Philadelphia,	3928 Walnut St.
Henry Martin Justi,	Sc. 1,	do.	3401 Baring St.
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Charles Barton Keen,	Sc. 5,	do.	3913 Chestnut St.
Rudolph Howard Klauder,	Sc. 4,	do.	2208 Venango St.
Edward Christman Knight,	Sc. 2,	do.	Clapier St., Gtn.
Benjamin Franklin Lacy,	A.,	do.	650 N. 13th St.
<i>Jeremiah Berrell Larzelere, Jr.,</i>	Wh.,	Willow Grove.	
Samuel McCune Lindsay,	Wh.,	Philadelphia,	3912 Chestnut St.
Joseph Reynolds McCance,	A.,	Pittsburgh,	3336 Chestnut St.
<i>George Hummel McNeely,</i>	Sc. 1,	Philadelphia,	S.W.Co.4th & ArchSts.
Howard Mellor,	Ph.,	do.	460 Marshall St.
<i>August Appleton Miller,</i>	Sc. 1,	do.	623 N. 13th St.
Geo. Whitfield Taylor Miller,	Sc. 3,	do.	200E.Chelten Av.,Gtn.
James Clayton Mitchell,	A.,	do.	1525 N. 16th St.
Edward Warloch Mumford,	Wh.,	do.	1401 N. 17th St.
Ellis Paxson Oberholtzer,	Wh.,	Norristown.	
Edward Asa Partridge,	Sc. 1,	Philadelphia,	1738 Sydenham St.
Charles Peabody,	A.,	do.	W. Walnut Lane, Gtn.
Elliston Joseph Perot,	A.,	do.	W. Walnut Lane, Gtn.
Walter Phillips,	Sc. 4,	do.	450 Marshall St.
David Bowen Salter,	Sc. 3,	do.	2016 Mt. Vernon St.
Lloyd Mifflin Scott,	A.,	do.	2000 Spruce St.
Walter Scott,	Wh.,	do.	3808 Chestnut St.
Alfred Newlin Seal,	Sc. 1,	do.	1418 Bouvier St.
Daniel Bussier Shumway,	A.,	do.	1740 Green St.
Albert Haseltine Smith,	Wh.,	Abington.	
Isaac Starr, Jr.,	Sc. 4,	Philadelphia,	2203 Trinity Place.

John Lamme Stewart,	Wh.,	Philadelphia,	1826 Dickinson St.
Robert Stulb,	A.,	do.	506 N. 4th St.
Joseph Fithian Tatem,	Wh.,	Haddonfield,	N. J.
Archibald Gramh Thomson,	Ph.,	Philadelphia,	1426 Walnut St.
<i>Washington Van Dusen,*</i>	A.,	do.	2124 N. 20th St.
Clarence Burns White,	Wh.,	do.	750 N. 40th St.
William Macpherson Wiltbank,	A.,	do.	1813 De Lancey Place.
Clinton Rogers Woodruff,	Wh.,	do.	1847 N. 21st St.
Nathan Young Worrall,	Wh.,	do.	2005 Mt. Vernon St.
<i>Archibald Wright,</i>	Sc. I,	do.	1804 Race St.

Seniors, 75.

## JUNIORS.

<i>David Guy Anderson,</i>	Sc. 3,	Philadelphia,	3213 Sansom St.
John Antrobus,	A.,	do.	2512 Hagert St.
Lewis Audenried,	Wh.,	do.	1823 Walnut St.
<i>John Joseph Borie,</i>	Sc. 5,	do.	Chestnut Hill.
Charles Shimer Boyer,	Sc. I,	Camden, N. J.,	(528 Linden St.)
<i>Robert Hart Bradbury,</i>	Sc. 2,	Philadelphia,	45 Otter St.
John Hill Brinton,	A.,	do.	1423 Spruce St.
Clarence Chew Burger,	Sc. I,	do.	3153 Mantua Ave.
William Herbert Burk,	A.,	Clarksboro, N. J.,	2110 Vine St.
Robert Belle Burke,	A.,	Philadelphia,	3604 Locust St.
Evaristo Andrew Cálves,	Sc. 3,	do.	1814 Park Ave.
<i>John Allen Capp,</i>	Sc. 4,	do.	1323 N. 12th St.
<i>William Wilson Chambers,</i>	Sc. 4,	do.	1906 Green St.
Joseph Warren Coulston, Jr.,	A.,	do.	1326 Walnut St.
<i>Henry Howard Cressman,</i>	Sc. I,	Sellersville.	
<i>Bernard Alphonsus Cullen, A.B.,</i>	Sc. 3,	Spruce Creek,	123 S. 36th St.
<i>James Francis Cullen, A.B.,</i>	Sc. 3,	do.	do.
George Herbert Dennison,	A.,	Philadelphia,	Roxboro'.
<i>Richard Griffith Develin,</i>	Sc. 3,	Camden, N. J.	
James Whalley Diggles,	A.,	Philadelphia,	2442 Oxford St.
<i>Henry Yale Dolan,*</i>	Sc.,	do.	1809 Walnut St.
<i>Chester Nye Farr, Jr.,</i>	Sc. 3,	do.	722 N. 44th St.
Maurice Mayer Feustmann,	Sc. I,	do.	1512 Girard Ave.
Edwin Stanton Field,	Sc. 4,	do.	36th & Powelton Ave.
<i>Hermann Fleck,</i>	Sc. I,	do.	108 Rittenh'se St., Gtn.
Frank Richards Ford,	Sc. 4,	do.	1823 Vine St.
Robert Isaac Gamon,	A.,	do.	1629 Christian St.
George Washington Gist, Jr.,	Sc. 3,	Westminster, Md.,	3264 Chancellor Pl.
William Goodwin,	A.,	Philadelphia,	Chestnut Hill.
Benjamin Lease Crozer Griffith,	A.,	Upland.	
William Oglesby Griffith,	Sc. 4,	Philadelphia,	2213 Locust St.
Henry Riley Gummey, Jr.,	A.,	do.	E. Walnut Lane, Gtn.
Henry Warren Kilburn Hale,	Sc. 4,	do.	636 Race St.
Frederic Valerius Hetzel,	Sc. 4,	do.	2325 Hare St.
<i>Samuel David Hopkins,</i>	Sc. I,	do.	3513 Hamilton St.
<i>Richard Lewis Humphrey,</i>	Sc. 3,	do.	1813 Ridgway Terrace.
James Clark Irwin,	Sc. 3,	Cheyney.	
<i>Jiro Itami,</i>	Wh.,	Tokio, Japan,	423 S. 40th St.
Henry Leopold Jefferys,	A.,	Philadelphia,	3928 Walnut St.

John George Klemm, Jr.,	Sc. 4,	Philadelphia,	3934 Chestnut St.
Manzo Kushida,	Wh.,	Tokio, Japan,	603 S. 42d St.
Benjamin Brentnall Lathbury,	Sc. 3,	Philadelphia,	2112 Uber St.
<i>Harrison Wainwright Latta,</i>	Sc. 3,	do.	1525 Mt. Vernon St.
<i>Francis Bazley Lee,</i>	Wh.,	Trenton, N. J.	
Henry Ashton Little,	A.,	Wallingford.	
<i>William Simpson Lorimer,</i>	Sc. 1,	Philadelphia,	201 E. Cheltenham Av., Gtn.
William Henry Loyd, Jr.,	A.,	do.	4309 Spruce St.
<i>Arthur William McCauley,</i>	Sc. 1,	do.	1310 N. 6th St.
Arthur McGeorge,	Wh.,	Merion.	
<i>Charles Jackson McIlvain, Jr.,</i>	Sc. 5,	Philadelphia,	435 N. 33d St.
Nelson Baum Mayer,	Sc. 1,	do.	945 N. 8th St.
James Hartley Merrick,	A.,	do.	Roxboro'.
Caspar Wistar Miller,	Ph.,	Media.	
<i>William Steger Miller,</i>	Sc. 1,	Philadelphia,	2032 Spring Garden St.
Joseph MacGregor Mitcheson,	A.,	do.	1608 Locust St.
<i>Leighton Nealle Davis Mixsell,</i>	Sc. 2,	do.	725 S. 15th St.
<i>Charles Phillips Nassau,</i>	Sc. 1,	do.	2154 N. 12th St.
Frederick Brooke Neilson,	A.,	do.	325 S. 12th St.
<i>Frederick Shaw Nelson,</i>	Sc. 5,	do.	3234 Chestnut St.
Delancey Verplanck Newlin,	A.,	do.	1018 Clinton St.
William Rufus Nicholson, Jr.,	Ph.,	do.	2106 Chestnut St.
Hugh Walker Ogden,	A.,	Portland, Me.	Ogontz.
<i>Harry Van Buren Osbourn,</i>	Sc. 3,	Philadelphia,	1433 Euclid Ave.
William Hahn Patterson,	A.,	do.	1633 Locust St.
Josiah Harmar Penniman,	A.,	do.	2316 St. Alban's Place.
<i>Charles Getz Peacock,</i>	Wh.,	Reading,	3340 Walnut St.
Robert McClellan Ramsey,	A.,	Philadelphia,	1717 Carpenter St.
George David Rosengarten, Jr.,	Sc. 1,	do.	325 S. 17th St.
Leo Stanton Rowe,	Wh.,	do.	958 Franklin St.
John Francis Rowland, Jr.,	Sc. 4,	do.	Cor. Centre & Ritchie Sts., Manayunk.
<i>Holden Bovee Schermerhorn,</i>	Wh.,	do.	3217 Hamilton St.
Adolph William Schramm,	Sc. 4,	Camden, N. J.,	(521 N. 2d St.)
<i>Harrison Souder,</i>	Sc. 3,	Philadelphia,	3927 Baltimore Ave.
John Franklin Stevens,	Sc. 4,	do.	3913 Walnut St.
<i>Morton Stevens,</i>	Sc. 2,	do.	414 Richmond St.
John Gilbert Stoddart,	Wh.,	do.	107 S. 21st St.
Richard Saunders Stoyler,	Wh.,	do.	2217 Vine St.
Howard Hungerford Sypher,	Sc. 4,	do.	4025 Walnut St.
William Henry Trotter, Jr.,	Wh.,	do.	1303 Spruce St.
Robert Reineck Truitt,	A.,	do.	3505 Baring St.
<i>Benjamin Schell Walters,</i>	Sc. 3,	Lansdowne.	
Horace Andrews Walton,	A.,	Philadelphia,	Roxboro'.
<i>Joseph Trank Wheeler,</i>	Sc. 1,	do.	2026 Chestnut St.
<i>Thomas Brown Whitney,</i>	Sc. 2,	do.	1815 Vine St.
Peter Silas Zimmerman,	A.,	do.	1814 Diamond St.

## SOPHOMORES.

<i>John Pilling Armstrong,*</i>	Sc.,	Stanton, Del.,	3333 Walnut St.
William Henry Ashhurst,	A.,	Philadelphia,	2210 Walnut St.
Scott Beggs,	Sc.,	Wilmington, Del.	
James Lord Bernard,	Sc.,	Philadelphia,	117 Green Lane, Myk.
Henry Ingersol Brown,	A.,	do.	Wayne Ave., Gtn.
James Manderson Castle,	Sc.,	do.	4241 Walnut St.
Daniel Bell Cummins Cather-			
wood,	Sc.,	do.	2112 Walnut St.
Edgar Moore Church,	Sc.,	do.	Knox & Penn Sts., Gtn.
Samuel Rakestraw Colladay,	A.,	do.	4051 Sansom St.
<i>Trevanion Border Dallas,*</i>	Sc.,	do.	265 S. 4th St.
Edwin Adams Damon,	Sc.,	do.	1606 Walnut St.
George Peterson Deacon,	Sc.,	do.	E. Walnut Lane, Gtn.
Henry Delaplaine,	Sc.,	do.	3706 Baring St.
Erskine Hazard Dickson,	A.,	do.	901 Clinton St.
James MacIntosh Longstreth			
Eckard,	A.,	Abington.	
John Joseph Elcock,	Sc.,	Waverly Heights.	
Abram Myer Feldman,	Sc.,	Zitomir, Russia,	627 South St.
Richard Field,	Sc.,	Philadelphia,	5600 Lansdowne Ave.
Sparta Fritz, Jr.,	Sc.,	do.	5006 Green St., Gtn.
Edward Prime Goodell,	Sc.,	do.	1418 Spruce St.
Lloyd Carpenter Griscom,	Sc.,	Haverford College.	
<i>Charles Gibson Grosholz,*</i>	A.,	Philadelphia,	1806 Spruce St.
Thomas Powers Harris,	A.,	do.	1607 Walnut St.
Francis Head,	Sc.,	do.	132 Price St., Gtn.
<i>Albert Hill,*</i>	A.,	do.	1822 Wallace St.
Herbert Rutherford Hogg,	A.,	do.	929 N. Broad St.
<i>Thomas Pawling Holloway,*</i>	A.,	do.	1223 Poplar St.
John Jay Lafayette Houston,	Sc.,	do.	3333 Walnut St.
<i>Philip Eugene Howard,*</i>	A.,	do.	3710 Walnut St.
Thomas Wallis Huidekoper,	Sc.,	do.	2020 Spruce St.
Hisaya Iwasaki,	Sc.,	Tokio, Japan,	4048 Chestnut St.
Topliff Johnson,	Sc.,	Philadelphia,	Locust Ave., Gtn.
Chester Hughes Kirk,	Sc.,	do.	1518 N. 18th St.
William Gray Knowles,	Sc.,	do.	1628 Spruce St.
Burnet Landreth, Jr.,	Sc.,	Bristol.	
Charles Ridgely Lee,	Sc.,	Philadelphia,	4216 Walnut St.
<i>Frederick Lennig,*</i>	A.,	Andalusia.	
Frederick Leser, Jr.,	Sc.,	Philadelphia,	1700 Tioga St.
George Francis Levan,	A.,	do.	733 N. 41st St.
Alfred Meyer Liveright,	A.,	Osceola Mills,	1737 N. 8th St.
William MacAdoo, Jr.,	A.,	Philadelphia,	1926 Bainbridge St.
Thomas McKean, Jr.,	A.,	do.	1925 Walnut St.
George Ingels MacLeod, Jr.,	Sc.,	do.	3905 Locust St.
<i>Clayton Fottler McMichael,*</i>	Sc.,	do.	2041 Walnut St.
John Maurer,	Sc.,	do.	102 S. 2d St.
<i>Frederick Kollner Mears,*</i>	Sc.,	Clifton Heights.	
Frederick Rogers Meigs,	Sc.,	Philadelphia,	1713 Locust St.
Alexander Wilson Norris, Jr.,	A.,	do.	2230 Spruce St.

<i>John Chatlin Ogden,*</i>	Sc.,	Philadelphia,	72d & Greenway Ave.
Harvey E. Platt,	Sc.,	do.	2026 Wallace St.
James De Wolf Perry, Jr.,	A.,	do.	Manheim St., Gtn.
Wilson Worrell Pile,	Sc.,	do.	721 Spruce St.
Wilmer Hershey Righter,	A.,	do.	4012 Spruce St.
William Beni Rosskam,	Sc.,	do.	1423 N. 15th St.
Edward Koons Rowland,	Sc.,	do.	2029 Spruce St.
Edward Adams Shumway,	Sc.,	do.	1740 Green St.
George Hughes Smith,	Sc.,	Mahanoy City,	1918 Judson Place.
<i>Sidney Wheaton Smith,*</i>	A.,	Philadelphia,	218 N. 32d St.
James Starr,	Sc.,	do.	Clivedon & Morton Sts., Gtn.
John Hermon Terry,	Sc.,	do.	2119 N. 13th St.
<i>Joseph Baylis Thomas,*</i>	A.,	do.	3446 Chestnut St.
<i>Robert Allen Trenwith,*</i>	Sc.,	do.	758 S. 9th St.
Louis de Pui Vail,	A.,	do.	114 W. Cheltenham Av., Gtn.
<i>John Reed Valentine,*</i>	A.,	do.	2027 Pine St.
<i>Marcel Alphonse Viti,</i>	Sc.,	do.	2129 Spruce St.
James Mortimer West, Jr.,	Sc.,	do.	1524 Swain St.
Cornelius Weygandt,	A.,	do.	124 Tulpehocken St., Gtn.
John Robert White, Jr.,	A.,	do.	20th St. & Ontario Ave.
<i>Francis Churchill Williams,*</i>	A.,	do.	4725 Green St., Gtn.
Biddle Wood,	Sc.,	Conshohocken,	1016 Spruce St.
Horatio Curtis Wood,	Sc.,	Philadelphia,	147 School St., Gtn.
<i>Francis Yarnall,</i>	A.,	do.	3914 Locust St.
James Charles Ziegler,	Sc.,	do.	636 N. 35th St.

Sophomores, 73.

FRESHMEN.

Walter Barclay,	A.,	Philadelphia,	1816 Pine St.
<i>Eugene Beauharnais Beau-</i>			
<i>mont, Jr.*</i>	Sc.,	do.	4409 Sansom St.
Charles Louis Borie, Jr.,	Sc.,	do.	1035 Spruce St.
Frank Bernadou Bower,	Sc.,	do.	130 S. 23d St.
John Harold Brockie,	A.,	do.	Tulpehocken St., Gtn.
Charles Nicoll Bancker Camac,	A.,	do.	Wissahickon.
Joseph Roberts Carpenter, Jr.,	A.,	do.	304 S. 10th St.
William Lund Clampffer,	Sc.,	do.	325 Walnut St.
Fletcher Cornelius Clay,	A.,	do.	210 S. 43d St.
Harry Grantham Colesberry,	Sc.,	Oak Lane.	
<i>Thomas Luther Coley,*</i>	A.,	Trenton, N. J.,	704 Franklin St.
Harry Warren Cook,	A.,	Philadelphia,	2002 N. 13th St.
Edward William Coon,	Sc.,	do.	1718 Girard Ave.
Francis Thibault Cross,	Sc.,	do.	32 S. 21st St.
<i>Robert Morris Darrach,*</i>	A.,	do.	5121 Green St., Gtn.
Charles James Dougherty,	Sc.,	Englewood, N. J.,	1501 Filbert St.
William Duane,	A.,	Philadelphia,	115 N. 34th St.
John Warner Grigg Dunn,	Sc.,	do.	Chestnut Hill.
<i>Samuel Rulon Earl,*</i>	A.,	Wynnewood.	
Charles Bower Early,	Sc.,	Philadelphia,	1520 N. 6th St.
Homer Watton Edwards,	Sc.,	do.	1328 Walnut St.

Albert Egbert,	Sc.,	Franklin,	4808 Springfield Ave.
Joseph Williams Fell,	A.,	Philadelphia,	1534 N. Broad St.
Rev. William Alexander Ferguson,	A.,	do.	2043 Bainbridge St.
Samuel Fleisher,	Sc.,	do.	2220 Green St.
Percival Vaisey French,	Sc.,	do.	4226 Chester Ave.
<i>Edwin Stauffer Gault,*</i>	A.,	do.	4204 Aspen St.
Edward Robert Green,	Sc.,	do.	240 S. 8th St.
Ryland Warriner Greene,	A.,	Merchantville,	N. J.
Frank Tracy Griswold,	Sc.,	Philadelphia,	1500 Spruce St.
<i>Frank Thomson Gucker,*</i>	Sc.,	do.	3422 Hamilton St.
Arthur Hagen, Jr.,	Sc.,	do.	1725 Girard Ave.
Frank Bacon Hancock,	Sc.,	do.	3841 Powelton Ave.
Albert Lawrence Harris,	Sc.,	do.	2010 Girard Ave.
Clinton Gardner Harris,	Sc.,	do.	144 School Lane, Gtn.
Carl Friedrich Haussmann, Jr.,	A.,	Adrian, Mich.,	907 Hutchinson St.
Wilmer Worthington Hoopes,	Sc.,	West Chester.	
William Stewart Jamison,	Sc.,	Philadelphia,	3912 Walnut St.
Harry Ellwood Keller,	Sc.,	do.	495 N. 4th St.
Albert Bartram Kelley,	A.,	do.	Cor. 41st & Parrish Sts.
George Washington Kendrick, 3d,	A.,	do.	3507 Baring St.
Augustus Otto Koenig,	Sc.,	do.	3207 Summer St.
John Henry Lafferty,	A.,	do.	1427 Euclid Ave.
Addison Farwell Lansing,	Sc.,	Burlington, N. J.	
George Edmunds Lawrence,	Sc.,	Camden, N. J.,	(1034 S. 5th St.)
Charles Trumbull Lee,	Sc.,	Philadelphia,	1532 Pine St.
Clifford Lewis, Jr.,	A.,	do.	313 S. 12th St.
Joseph Hunter Lewis,	Sc.,	do.	768 Florida St.
Jay Bucknell Lippincott,	Sc.,	do.	2012 Walnut St.
<i>Thomas Luke,*</i>	Sc.,	Rockland, Del.	
William Weaver Lukens,	A.,	Conshohocken.	
Archibald McCullagh, Jr.,	A.,	Brooklyn, N. Y.,	2012 Race St.
Clayton McElroy,	Sc.,	Philadelphia,	115 S. 20th St.
Clifton Maloney,	A.,	do.	625 N. 15th St.
Howard Ware Middleton, Jr.,	Sc.,	do.	E. Walnut Lane, Gtn.
John Kaufman Mohr,	Sc.,	do.	1611 N. 15th St.
William Stuart Morris,	A.,	do.	1514 Spruce St.
<i>Charles Francis Morrow,*</i>	Sc.,	Wilmington, Del.	
Frank Muhr,	Sc.,	Philadelphia,	823 N. 6th St.
Charles Thornton Murphy, Jr.,	A.,	do.	2121 Arch St.
Willis McCall Myers,	Sc.,	Gainesville, Fla.,	3318 Woodland Ave.
Richard Marshall Newlin,	Sc.,	Philadelphia,	1018 Clinton St.
William K. Orton,	Sc.,	do.	2038 Race St.
Samuel Davis Parry,	Sc.,	Breadyville.	
Franklin Peale Patterson,	Sc.,	Philadelphia,	1633 Locust St.
Matthew Patton,	A.,	do.	609 E. Girard Ave.
Faustino Apolonio Perez,	Sc.,	Parras, Coahuila,	1725 Arch St.
Alonzo Willoughby Platt,	Sc.,	Philadelphia,	2026 Wallace St.
Samuel Kingsley Probasco,	Sc.,	Burlington, N. J.	
Harry Vollmer Register,	A.,	Philadelphia,	120 N. 34th St.
<i>John Barclay Stevenson Rex,*</i>	Sc.,	do.	1611 Race St.
Henry Hansell Ritter,	Sc.,	do.	Logan.

Adolph George Rosengarten,	Sc.,	Philadelphia,	325 S. 17th St.
<i>Walter Rowland,*</i>	Sc.,	do.	Frankford.
Ulysses Simpson Schaul,	A.,	do.	Eastwick Place.
Francis Steenberg Schmucker,	A.,	do.	1348 Spruce St.
<i>William Reese Scott, Jr.,*</i>	A.,	do.	2159 Dauphin St.
Louis Raymond Shellenberger,	Sc.,	do.	4783 Germantown Ave.
Henry Simons Shillingford,	Sc.,	do.	1118 Wallace St.
Owen Louis Shinn,	Sc.,	do.	1714 Willington St.
William Emil Snyder,	Sc.,	Wilmington, Del.	
Harry Bismarck Sobernheimer,	A.,	Philadelphia,	4743 Washington St., Manayunk.
<i>James Alexander Stewart,*</i>	Sc.,	do.	2532 Brown St.
Harry Chapman Thayer,	Sc.,	Merion.	
Adam Clarke Thompson,	Sc.,	Westminster, Md.,	2414 Jefferson St.
Arthur Conover Thomson,	A.,	Fredericksburg, Va.,	Ogontz.
William Budd Trites, Jr.,	A.,	Philadelphia,	4500 Baker St., Myk.
Ernest Macdowel Vail,	A.,	do.	114 W. Cheltenham Av., Gtn.
Abram Sharpless Valentine,	Sc.,	do.	235 School Lane, Gtn.
Joseph Wood Wagner,	Sc.,	do.	School Lane, Gtn.
<i>Karl Albert Walraven,*</i>	Sc.,	do.	341 S. 18th St.
Olin Leslie West,	Sc.,	Wilmington, Del.	
Samuel Bowman Wheeler,	Sc.,	Bryn Mawr.	
Clarence Russell Williams,	A.,	Philadelphia,	119 Price St., Gtn.

Freshmen, 94.

SUMMARY.

	Arts.	Science.	Philosophy.	Finance.	Totals.
Fellow . . . . .	1	—	—	—	1
Post-Seniors, . . . . .	—	18	—	—	18
Seniors, . . . . .	23	29	3	20	75
Juniors, . . . . .	25	47	2	11	85
Sophomores, . . . . .	27	46	—	—	73
Freshmen, . . . . .	34	60	—	—	94
Totals, . . . . .	110	200	5	31	346

## COURSES OF STUDY.

The College Faculty conducts the following Courses of Study:

- I. The Course in Arts.
- II. The Course in Science in the Towne Scientific School.
- III. The Course in Philosophy for Undergraduates.
- IV. The Course in Finance and Economy in the Wharton School.
- V. The Course in Music.

In Freshman and Sophomore years, these courses (except that in Music) differ mainly in the languages elected by the student, whether Latin and Greek, Latin with French or German, or French and German without Latin. All four courses include Rhetoric, History, English Literature, Mathematics, Chemistry, and Mechanics. At the close of Sophomore year, the courses diverge into essentially different groups of studies, any one of which may be taken by the student; viz., (1) Further Studies in Arts (in large part *elective*), (2) The Technical Courses in Science, (3) A Group of Studies mainly Biological, (4) Special Studies in Finance and Economy. Students who wish to take a Technical Course in Science, however, must show a preparation equivalent to that given by the first two years of the Course in Science. (Detailed statements of these groups of studies may be found on pp. 41-60, below.)

## ADMISSION TO COLLEGE.

Candidates for the Freshman class are admitted to college either on certificate or by examination.

Blank certificates are issued every year to principals of recognized preparatory schools and to such private teachers as the Dean may name for the privilege. The Faculty reserves the right, however, to withdraw from any school or teacher the privilege of sending pupils into college on certificate.

Entrance 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. OTTO REUNING, Clerk to the College Faculty.) The subjects of examination are in part the same for all candidates, in part dependent upon the course that the candidate wishes to take in college.

## FOR ALL CANDIDATES.

ENGLISH.—1st. A short composition, correct in spelling, punctuation, grammar, division by paragraphs, and expression, on one of several subjects to be announced at the time of the examination, and to be taken from the last-named of the following books, all of which (or the last-named and equivalents for the first three) must have been read by each candidate, viz., Shakespeare's *As You Like It* and *Midsummer Night's Dream*, Scott's *Rob Roy*, and Thackeray's *English Humorists*. 2d. Questions on the grammar, etymology and subject-matter of a passage to be taken from the same book as the subjects of composition are taken from. 3d. The correction of specimens of English bad in grammar or expression, with a brief statement of the principles on which the correction is made.

The following books indicate the amount and kind of knowledge required to pass this examination, viz., Abbott's *How to Parse*, or Murray's *Advanced Lessons in English Composition, Analysis and Grammar*; Strang's *Exercises in English*; McElroy's *Essential Lessons in English Etymology* (Chh. I.—III. and V.); and Williams's *Composition and Rhetoric by Practice*.

In 1890, the books to be read by each candidate will be Scott's *Quentin Durward*, Thackeray's *English Humorists*, Shakespeare's *Midsummer Night's Dream*, and Goldsmith's *Deserted Village*; in 1891, Scott's *Quentin Durward*, Goldsmith's *Deserted Village*, Shakespeare's *Merchant of Venice*, and Irving's *Bracebridge Hall*.

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

MATHEMATICS.—Arithmetic (*including the Decimal System of Weights and Measures*). Algebra (*through Quadratic Equations*). Plane Geometry.

## ADDITIONAL SUBJECTS FOR THE SEVERAL COURSES.

## FOR THE COURSE IN ARTS.

GREEK.—Grammar. Prose Composition. (White's *First Lessons* covers the amount required.) Xenophon (*Four Books of the Anabasis*). Homer (*Three Books of the Iliad or the Odyssey*).

*In 1890 and thereafter, an elementary knowledge of Greek accentuation will be required. Students are expected to pronounce by the written accent.*

LATIN.—Grammar. Cæsar (*Four Books of the Gallic War*). Virgil (*Six Books of the Æneid*). Cicero (*Six Orations*). Prose Composition (as in Arnold's *Latin Prose Composition to the end of Exercise 20*).

*FOR THE COURSE IN SCIENCE AND THE UNDER-GRADUATE COURSE IN PHILOSOPHY.*

MATHEMATICS.—Solid Geometry.

LATIN.—Cæsar, *Commentaries*, 3 books; Virgil, *Æneid*, 3 books; Latin Prose Composition.

FRENCH.—Grammar (as much as is indicated by the first forty-five "Practical Exercises" appended to Harrison's *French Syntax*). *Télémaque* (the first three books or an equal amount of matter from any good modern prose author).

GERMAN.—Ahn's *Method*, Fisher's edition (*First Course*, pp. 1-100; *Second Course*, pp. 1-64). Grimm's *Märchen* (Otis's edition).

*Only two of these three languages are required of each student.*

*FOR THE COURSE IN FINANCE AND ECONOMY.*

Students entering Freshman class with a view to electing the Course in Finance and Economy in Junior year pass in the subjects required for either the Course in Arts or that in Science.

PRELIMINARY EXAMINATIONS.—Candidates who wish to do so may be examined one year in advance of their entering college in any or all of the following subjects; viz., English Grammar, History of the United States, Arithmetic, Algebra (subjects contained in the first eleven chapters of Wentworth), Greek Grammar, Greek Prose Composition, and Xenophon, Latin Grammar and Latin Prose Composition, French Grammar, and German Grammar. In addition, candidates for the Course in Arts may be examined in Virgil, and those for the Course in Science or the Undergraduate Course in Philosophy in Plane Geometry. A record will be kept of these examinations, and credit be given for such of them as are passed satisfactorily. Preliminary examinations are ordinarily held only in June.

FOR ADVANCED STANDING, candidates must pass satisfactorily in all the subjects pursued by the lower class or classes; but students coming with letters of honorable dismissal from other colleges, and showing that they have pursued successfully courses of study equivalent to those taken by the classes they wish to enter, are admitted without examination.

Duly authenticated *graduates* of other colleges are admitted without examination to any of the Courses upon giving evidence that their studies have been such as to fit them to pursue the particular course for which they apply.

## COURSE OF STUDY.

## FRESHMAN CLASS.

## FOR ALL STUDENTS.

RHETORIC.—McElroy's *Structure of English Prose*. Readings from an English prose author, with Compositions on Themes selected from these Readings. Exercises in Reading and Speaking, with special reference to Expression, Emphasis, and Voice Culture. [Prof. McElroy. 2\*]

HISTORY AND MATHEMATICS.—As specified below.

## ADDITIONAL STUDIES FOR THE SEVERAL COURSES.

## FOR THE COURSE IN ARTS.

GREEK.—Lysias. Euripides. Xenophon's *Æconomicus*. Plato (*Apology*). Greek Composition. Greek Moods and Tenses. [Prof. Lamberton. 4]

LATIN.—Selections from Livy and from Horace's Satires. [Prof. Jackson. 5]

HISTORY.—Freeman's *General Sketch of History*. [Prof. Thompson. 2]

MATHEMATICS.—Wentworth's *College Algebra*. Chauvenet's *Geometry* (Revised Edition, by Byerly). Wentworth's *Trigonometry*. [Mr. Wylie. 5]

## FOR THE COURSE IN SCIENCE AND THE UNDER-GRADUATE COURSE IN PHILOSOPHY.

MATHEMATICS.—Wentworth's *College Algebra*. Chauvenet's *Plane and Spherical Trigonometry*. Bowser's *Analytical Geometry* begun. [Prof. O. H. Kendall and Mr. Crawley. 5\*]

DRAWING.—Geometrical and Isometrical Drawing (Miuifie), and Drawing from the Flat. Free Hand Sketching. Use of the Scale and Protractor. Shading in India Ink. Graphical representations from Geometry. [Prof. Richards. 3]

HISTORY.—Myers' *Medieval and Modern History*. [Mr. Cheyney. 2]

GERMAN.—Review of Grammar. *Fünftes Lesebuch* (Van Antwerp, Bragg & Co., publishers.) Storm's *Immensee*. [Mr. Rennert. 4]

FRENCH.—Harrison's French Syntax. Modern French Prose. Bôcher's *French Plays*. [Prof. Easton and Mr. Rennert. 4]

LATIN.—Sallust (*Catiline*). Selections from Ovid. [Mr. Cheyney. 3]  
Each student elects two of these three languages.

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\* Hours per week.

FOR THE COURSE IN FINANCE AND ECONOMY.

Students who intend to enter the Wharton School in Junior year take any one of the above-named courses.

SOPHOMORE CLASS.

FOR ALL STUDENTS.

RHETORIC.—Six Compositions. Two or more Declamations. [Prof. McElroy.]

ENGLISH LITERATURE.—Lectures on Modern Prose Authors with Critical Readings. Gummere's *Poetics*. Lectures on the English Poets from 1789. [Prof. Schelling. 2]

PHYSICS.—Lodge's *Mechanics*. [Mr. Goodspeed. 2 hours, Second Term.]

CHEMISTRY, HISTORY, AND MATHEMATICS.—As specified below.

ADDITIONAL STUDIES FOR THE SEVERAL COURSES.

FOR THE COURSE IN ARTS.

GREEK.—Herodotus. Sophocles. Thucydides. Greek Composition. [Prof. Lamberton. 3]

LATIN.—Tacitus (*Agricola*, *Germania*, or *Annals*). Cicero (*De Senectute* or *De Officiis*). Horace (*Selected Odes*). [Prof. Jackson. 4]

MATHEMATICS.—Bowser's *Analytical Geometry*. Elementary Differential and Integral Calculus. [Prof. O. H. Kendall. 4]

HISTORY.—Freeman's *General Sketch*, completed. Constitution of the United States. (Lectures.) [Prof. Thompson. 2]

CHEMISTRY.—Inorganic and Organic Chemistry. (Recitations, with Experiments and Examinations.) [Prof. Smith. 2]

FOR THE COURSE IN SCIENCE AND THE UNDER-GRADUATE COURSE IN PHILOSOPHY.

MATHEMATICS.—(1) Bowser's *Analytical Geometry*. Elementary Differential Calculus. [Mr. Crawley. 4]

(2) *Descriptive Geometry*. [Mr. Haupt and Mr. Franklin. 1]

Course (2) is not required of students in *Philosophy* or of those students in *Science* who propose entering the Wharton School in Junior year.

DRAWING.—Linear Perspective. Geometric and Isometric Drawing. Projection of Shadows. Architectural Detail and Ornament. Gothic Tracery. Shading in India Ink. Free Hand Drawing. [Prof. Richards. 3]

Students in *Philosophy*, and those students in *Science* who propose entering the Wharton School in Junior year, do not take Drawing.

CHEMISTRY.—Inorganic Chemistry. (Recitations with Experiments.) [Prof. Smith. 3]

HISTORY.—(1) Political and Constitutional History of Europe since 1789. [Mr. Cheyney. 1]

(2) American History. [Mr. Cheyney. 2]

*Course (2) is required only of students in Philosophy and of those students in Science who propose entering the Wharton School in Junior year.*

GERMAN.—Selections from Virchow and Holtzendorff's *Wissenschaftliche Vorträge*. Practical Exercises. Lessing's *Minna von Barnhelm*. [Prof. Seidensticker. 4]

FRENCH.—Modern Prose (continued). Molière. [Prof. Easton. 3]

LATIN.—Tacitus (*Agricola*). Selections from Horace. [Mr. Cheyney. 3]

*Each student elects two of these three languages.*

#### FOR THE COURSE IN FINANCE AND ECONOMY.

Students who intend to enter the Wharton School in Junior year take any one of the above-named Courses.

## THE COURSE IN ARTS.

### JUNIOR CLASS.

#### REQUIRED STUDIES,—

LOGIC AND PSYCHOLOGY.—Jevons's *Lessons in Logic*. Lotze's *Outlines of Psychology*. Lectures on Psychology. [Prof. Fullerton. 2]

PHYSICS.—Sound, Heat, Light, Electricity. (Stewart's *Physics*. Lectures and Recitations.) [Prof. Barker and Mr. Goodspeed. 4]

RHETORIC.—Six Compositions. [Prof. McElroy.]

ENGLISH LITERATURE.—Lectures on the Period of French Influence. Seminary. [Prof. Schelling. 2]

#### ELECTIVE STUDIES,—

*Of group A, each Junior must take at least two studies, and of group B at least one, making his total number of hours per week, including required work, not less than fifteen nor, unless the consent of the Dean has first been had, more than eighteen.*

#### A.

GREEK.—Demosthenes. Euripides. Plato (*Protagoras*). Aristophanes. Greek Antiquities. [Prof. Lamberton. 3]

LATIN.—Selections from Juvenal. Cicero (*De Officiis*, *De Finibus* or *De Amicitia*). Horace (*Epistles*). Reading at Sight. (Prof. Jackson. 3)

HEBREW.—Harper's *Elements and Method and Manual*. Selections from *Genesis* and *Judges*. Reading at Sight. English into Hebrew. [Mr. Montgomery. 2]

SANSKRIT.—Whitney's *Sanskrit Grammar*. Lanman's *Reader*. [Prof. Easton. 2]

ANGLO-SAXON.—Sweet's *Reader*. Selections from Orosius or the Chronicle. [Prof. McElroy. 2]

- GOTHIC.—Stamm and Heyne's *Ulfilas*. [Prof. Seidensticker. 2]  
*In Hebrew, Sanskrit, Anglo-Saxon, and Gothic two classes will be formed each year, open to either Juniors or Seniors, according to proficiency.*
- GERMAN.—Eichendorff's *Aus dem Leben eines Taugenichts*. Schiller's *Maria Stuart*. Goethe's *Egmont*. Whitney's *Grammar and Exercises*. [Prof. Seidensticker. 3]
- FRENCH.—Easy Prose. Harrison's *Syntax*. [Prof. Easton. 3]
- ITALIAN.—Toscani's *Grammar*, with Exercises. Pellico (*Le mie prigioni*). Manzoni (*I promessi sposi*). [Mr. Rennert. 2]

## B.

- PURE MATHEMATICS.—Todhunter's *Theory of Equations*. Advanced Trigonometry and Analytical Geometry. Factorials and Determinants. [Prof. O. H. Kendall. 3]
- HISTORY.—Church and State in America. Economic History of America. (Lectures). [Prof. Thompson. 2]
- ENGLISH LANGUAGE.—Middle and Early Modern English. (Chaucer, Spenser, Shakespeare, Milton.) [Prof. McElroy. 2]
- DECLAMATION.—Exercises in Debating and Original Speaking. [Prof. McElroy. 1]
- MINERALOGY.—The Systematic Description of Mineral Species. Their Geometric and Physical Properties. (Dana's *Manual*. Students handle the specimens.) [Prof. Koenig. 2]
- BOTANY.—General Principles of Structural and Physiological Botany. (Gray's *Text-book of Botany*.) [Prof. Rothrock. 1]
- ANATOMY.—Demonstrations of the Anatomy of a Typical Mammal. (Mivart's *The Cat*.) [Prof. Jayne. 2]
- ZOOLOGY.—Introduction to General Zoölogy. The Structure, Classification and Distribution of the Vertebrates. (Lectures.) [Prof. Leidy. 1]

## SENIOR CLASS.

## REQUIRED STUDIES,—

- PHILOSOPHY AND ETHICS.—Berkeley's *Principles of Human Knowledge*. Studies in the History of Philosophy. Fullerton's *Conception of the Infinite*. Ethics. [Prof. Fullerton. 3]
- HISTORY.—Lectures on the Philosophy of History and on Modern History since 1789. [Prof. Thompson. 2]
- RHETORIC.—Six Compositions. [Prof. McElroy.]
- ENGLISH LITERATURE.—Lectures on the Elizabethan Period and the Age of Chaucer. Seminary. [Prof. Schelling. 2]
- NATIONAL SCIENCE.—International Law. (Lectures.) Thompson's *Elements of Political Economy*. [Prof. Thompson. 1½]

ASTRONOMY.—Newcomb's Astronomy. [Dean Kendall. 1½]

ELECTIVE STUDIES,—

*The same rule holds for the Senior electives as for those of Junior year.*

A.

- GREEK.—Homer, Pindar, Æschylus, Aristophanes. Greek Literature. [Prof. Lamberton. 2]
- LATIN.—Cicero (*Tusculanæ*) or Lucretius (*Selections*). Horace (*Ars Poetica*). Reading at Sight. [Prof. Jackson. 3]
- HEBREW.—Selections from *Pentateuch*, *Psalms*, and *Prophets*. Syntax in Mitchell's Gesenius' *Hebrew Grammar*. Reading at Sight. [Mr. Montgomery. 2]
- SANSKRIT.—Lanman's *Reader*. Selected Hymns from the Veda. [Prof. Easton. 2]
- ANGLO-SAXON.—*Béowulf*. Cook's Sievers' *Grammar of Old English*. Skeat's *Principles of English Etymology*. [Prof. McElroy. 2]
- GOthic.—Stamm and Heyne's *Ulfilas*. [Prof. Seidensticker. 2]  
*In Hebrew, Sanskrit, Anglo-Saxon, and Gothic two classes will be formed each year, open to either Juniors or Seniors according to proficiency.*
- GERMAN.—Lessing's *Nathan der Weise*. Goethe's Prose. Grillparzer's *Sappho*. [Prof. Seidensticker. 3]
- FRENCH.—Modern Drama. Molière. French Philology and the History of French Literature. [Prof. Easton. 2]
- OLD FRENCH.—Selections. (Clédât's or Constans' *Chrestomathy. La Chanson de Roland*.) [Prof. Easton. 2]
- ITALIAN.—Dante (Selections from the *Inferno*). Boccaccio (Selections). Lectures on Italian Literature. [Mr. Rennert. 2]

B.

- MATHEMATICS.—Advanced Differential and Integral Calculus. Differential Equations. Theory of Probabilities. [Prof. O. H. Kendall. 2]
- PHYSICS.—Mathematical Physics. [Prof. Barker. 2]
- ENGLISH LANGUAGE.—Middle and Early Modern English (Chaucer, Spenser, Shakespeare, Milton). [Prof. McElroy. 2]
- DECLAMATION.—Exercises in Debating and Original Speaking. [Prof. McElroy. 1]
- LINGUISTICS.—Whitney's *Language and the Study of Language*, with Lectures and Exercises in comparison, especially of Greek, Latin, and English forms. [Prof. Easton. 1]
- ANATOMY.—Demonstrations of the Anatomy of a Typical Mammal. (Mivart's *The Cat*.) [Prof. Jayne. 2]
- ZOOLOGY.—Introduction to General Zoölogy. The Structure, Classification and Distribution of the Invertebrates. (Lectures.) [Prof. Leidy. 1]

HISTOLOGY.—The Structure of Animal Tissues and Organs (Schaffer's *Essentials of Histology*. Lectures). [Prof. Ryder. 2 hours, First Term.]

GEOLOGY.—Stratigraphy, in connection with Palæontology of the Rock Systems. Laws of Dynamic Geology (Dana's or Leconte's *Manual*). Prof. Kœnig. 2]

### THE TECHNICAL COURSES IN THE TOWNE SCIENTIFIC SCHOOL.

The object of the Courses in this School (named from its largest benefactor, John Henry Towne) is to give a thorough scientific education with technical training. They cover three years, termed (respectively) Junior, Senior, and Post-Senior. Of these, the last is in the main practical. The Courses are:—

- I. PURE AND APPLIED CHEMISTRY.
- II. METALLURGY AND MINING.
- III. CIVIL ENGINEERING.
- IV. DYNAMICAL ENGINEERING.
- V. MECHANICAL DRAWING AND ARCHITECTURE.

#### JUNIOR CLASS.

##### STUDIES PURSUED BY THE WHOLE CLASS.

MATHEMATICS.—Differential and Integral Calculus. [Mr. Crawley. 4]

PHYSICS.—Sound, Heat, Light, and Electricity. (Stewart's *Physics*. Lectures and Recitations.) [Prof. Barker and Mr. Goodspeed. 4]

GERMAN.—Pinner's *Gesetze der Naturerscheinungen*. [Prof. Seidensticker. 2]

FRENCH.—*Tableaux de la Révolution française*. Molière. [Prof. Easton. 2]

*Of these two languages each Junior elects one.*

RHETORIC.—Six Compositions. [Prof. McElroy.]

DECLAMATION (*Optional*).—Exercises in Debating and Original Speaking. [Prof. McElroy. 1]

ENGLISH LITERATURE.—Lectures on the Period of French Influence and the Elizabethan Era. [Prof. Schelling. 2]

LOGIC.—Jevons's *Lessons in Logic*. Ethics. [Prof. Fullerton. 2]  
(*Not required of students in Chemistry or in Metallurgy and Mining.*)

HISTORY.—Economic and Social History of Europe since 1789. [Mr. Cheyney. 2]

(*Not required of students in Metallurgy and Mining.*)

1. *Studies pursued by the Chemical Section.*

CHEMISTRY.—Laboratory Practice and Recitations in Analytical Chemistry. [Prof. Smith and Mr. Frankel. 12] Lectures on Organic Chemistry. [Prof. Sadtler. 2]

MINERALOGY.—Crystallography. Native Elements and Sulphides. [Prof. Koenig. 2]

2. *Studies pursued by the Metallurgical and Mining Section.*

MINING.—Construction of parts of Mines, and of Mining machinery, from notes and sketches. [Prof. Koenig. 5]

MINERALOGY.—Same as First Section. [Prof. Koenig. 2]

GEOLOGY.—Lithology. Palæontology of Protozoa, Anthozoa, and Echinodermata. [Prof. Koenig. 1]

SURVEYING AND DRAWING.—Same as Third Section.

CHEMISTRY.—Qualitative Analysis. [Prof. Smith and Mr. Frankel. 6]

3. *Studies by the Civil Engineering Section.*

ENGINEERING.—Railroad Location. Spherical Projections, Shades, Shadows, and Perspective. [Mr. Haupt. 2]

STATICS.—Roof and Bridge Trusses, and Merriman's *Mechanics of Materials*. [Messrs. Haupt and Franklin. 4]

DRAWING.—Topographical Charts, in ink and colors. Details of frames, joints, etc. [Prof. and Mr. Haupt. 2]

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 Formule*, Hydrographical, Mine, and Government Surveying. [Prof. Haupt. 4]

CHEMISTRY.—Qualitative Analysis. [Prof. Smith and Mr. Frankel. 3]

4. *Studies pursued by the Dynamical Engineering Section.*

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. Mr. Earle. 2 hours, First Term.]

HYDROSTATICS.—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. [Mr. Earle. 2 hours, Second Term.]

GRAPHICAL STATICS.—General theory and application to roof and bridge trusses. [Mr. Franklin. 2]

KINEMATICS.—General mathematical theory of slide-valve and link motions and its practical application in designing mechanism of valve motions for automatic and marine engines. [Prof. Spangler. 2]

DRAWING.—Elementary mechanical drawing. Use of instruments. Copying working drawings, tracing and blue-printing. Making working sketches and drawings of pieces of machinery from the models. [Prof. Spangler. 2]

SHOP WORK.—Manual training in pattern and machine work. [Spring Garden Institute. 7½]

5. *Studies pursued by the Architectural Section.*

ARCHITECTURE.—Classical Architecture and Mediæval Ornament. Shading in India Ink. Sketching. [Prof. Richards. 9]

ENGINEERING.—Graphical Statics. [Mr. Franklin. 2]

SENIOR CLASS.

STUDIES PURSUED BY THE WHOLE CLASS.

PHYSICAL SCIENCE.—Practical Physics. (Lectures and Recitations.) [Prof. Barker. 3]

PHYSICAL LABORATORY (*Optional*).—[Prof. Barker and Mr. Goodspeed. 4]

ASTRONOMY.—Newcomb's *Astronomy*. [Dean Kendall. 1½]

METALLURGY.—Theory of Metallurgical Processes. Theory of Dressing and Mechanical Treatment of Ores. [Prof. Koenig. 1]

SOCIAL SCIENCE.—International Law. (Lectures). Thompson's *Elements of Political Economy*, and Lectures. [Prof. Thompson. 1½]

RHETORIC.—Four Compositions. [Prof. McElroy.]

DECLAMATION (*Optional*).—Exercises in Debating and Original Speaking. [Prof. McElroy. 1]

MATHEMATICS (*Optional*).—Methods of Computation. [Prof. O. H. Kendall. 1]

1. *Studies pursued by the Chemical Section.*

QUANTITATIVE ANALYSIS.—Recitations and Laboratory Practice in Gravimetric and Volumetric Analysis. [Prof. Smith and Mr. Frankel. 5]

APPLIED INORGANIC CHEMISTRY.—Lectures with reviews, combined with excursions to chemical works. [Prof. Sadtler. 2]

APPLIED ORGANIC CHEMISTRY.—Lectures with reviews, combined with excursions to works. [Prof. Sadtler. 2]

ORGANIC LABORATORY.—Making of Organic Preparations. Proximate and Ultimate Organic Analysis. [Prof. Sadtler and Dr. Keller. 6]

CHEMICAL SEMINARY.—[Profs. Sadtler and Smith, Dr. Keller, and Mr. Frankel. 1]

MINERALOGY AND ASSAYING.—Same as Second Section. [Prof. Kœnig. 4]

METALLURGY.—Theory of Metallurgical processes; theory and construction of furnaces. Dressing of Ores considered theoretically and practically. Demonstration of the principal metallurgical processes by furnace practice. [Prof. Kœnig. 2]

MECHANICAL DRAWING.—With special reference to chemical applications. [Prof. Spangler. 2]

*2. Studies pursued by the Metallurgical and Mining Section.*

MINING ENGINEERING.—Lectures on the methods used in prospecting for, and in developing ore and coal deposits. [Prof. Kœnig. 2]  
Drawing and modelling (wood and plaster) of topographical and underground surveys. [Mr. Pugh. 3]

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. [Prof. Kœnig. 2]

MINERALOGY.—Oxides, Chlorides, and Fluorides, Sulphates, etc., Phosphates, etc., Carbonates and Silicates. [Prof. Kœnig. 2]

ASSAYING and Blow-pipe Analysis.—[Prof. Kœnig and Mr. Pugh. 4]

ANALYTICAL CHEMISTRY.—Recitations and Laboratory Practice in Quantitative Analysis. [Prof. Smith and Mr. Frankel. 4]

PALÆONTOLOGY of Mollusca and Crustacea.—[Prof. Kœnig. 1]

*3. Studies pursued by the Civil Engineering Section.*

DRAWING.—Shades, Shadows, and Perspective; Platting field notes; Engineering Construction and Stereotomy. [Prof. and Mr. Haupt. 2]

ARCHITECTURE.—Ornament. History of Architecture. Decoration and Shading. [Prof. Richards. 4]

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. [Mr. Franklin. 3]

GEODESY.—Measurement of Bases, Triangulation, Determination of Meridian, Latitude, Longitude, Time, and Azimuth. [Prof. Haupt. 1]

ENGINEERING.—Mechanics of Engineering, embracing the Statics of Rigid Bodies, Determination of the Centres of Gravity, Moments of Flexure, Rupture, Resistance, Torsion, Strength and Properties of Materials, etc. Nomenclature of, and construction in Masonry, Timber, Iron and Steel, as applied to Light-houses, Bridges and Roofs, Depots and other engineering structures. Equilibrium of

Arches and Retaining Walls. Tunneling and Earthworks, with the required plant and organization. Sea-coast and Harbor improvements. Canal and River improvements. Transportation, etc. [Prof. Haupt and Assistants. 7]

MINERALOGY.—With Second Section. [Prof. Koenig. 2]

BLOW-PIPE ANALYSIS.—(*Optional.*)

4. *Studies pursued by the Dynamical Engineering Section.*

KINEMATICS.—Laws of motion. Elementary combinations of pure mechanism. Pulleys and belts. Trains of gearing and forms of the teeth of wheels. Link work. [Prof. Spangler. 2]

STEAM ENGINE.—Determination of proper proportions for cylinders, valves, pistons, rods, shafts, fly-wheels, etc., and making rough sketches and working drawings from original designs. [Prof. Spangler. 2]

STEAM BOILERS.—Value of fuels. Determinations of the proper proportion for grate and heating surface, area and height of chimneys, thickness of shell, size of braces, etc., for various forms of boilers, and making rough sketches and working drawings from original designs. [Mr. Earle. 2]

SHOP WORK.—Making patterns from working drawings and finishing castings, and making, fitting, and finishing parts of machinery. [Spring Garden Institute. 7½] Hand and machine tools and their principles. [Prof. Spangler. 2]

HYDRODYNAMICS.—Flow of water. Water meters. Turbine, overshoot, undershot, and breast wheels. [Mr. Earle. 2]

ELECTRICITY.—The measurement and discussion of electrical quantities, and their application to the construction and use of galvanometers, batteries, accumulators, etc. [Mr. Peterson. 1]

ENGINEERING APPLIANCES.—Lectures on steam engine indicators, injectors, gauges, safety valves, oil cups, pumps, speed indicators, dynamometers, testing machines, etc. [Mr. Earle. 1]

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

DRAWING AND ARCHITECTURE.—The study of Executed Works and of Buildings in Progress. History of Architecture, illustrated by views of structures of all ages. Ornaments. Shading in India Ink. Sketching. [Prof. Richards. 14]

MINERALOGY.—Same as Second Section. [Prof. Koenig. 2]

ENGINEERING.—Same as Third Section, so far as to include strength and properties of materials. [Prof. Haupt. 2]

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. [Prof. Koenig. 2]

1. *Studies pursued by the Chemical Section.*

LECTURES ON APPLIED ORGANIC CHEMISTRY.—Continued from Senior Year. With excursions to works. [Prof. Sadtler. 2]

INDUSTRIAL CHEMICAL LABORATORY.—Experimental Studies in Applied Inorganic and Organic Chemistry. [Prof. Sadtler and Dr. Keller. 10]

METALLURGICAL, ORGANIC OR ANALYTICAL LABORATORY (*Elective*). —[Prof. Koenig, Sadtler, or Smith. 8]

ADVANCED CHEMICAL THEORY.—Lectures. [Prof. Smith. 2]

SPECIAL METALLURGY.—With Second Section. [Prof. Koenig. 4]

PRINCIPLES OF MECHANISM.—Lectures, with special reference to their applications in Chemistry. [Mr. Earle. 1]

CHEMICAL SEMINARY.—[Prof. Sadtler and Smith, Dr. Keller, and Mr. Frankel. 1]

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 and to learn how to examine a mine and report on its condition.) [Prof. Koenig. 2]

METALLURGY.—Lectures on the production of pig, weld, and temper iron and of silver, copper, and lead. Experimental testing of metallurgical processes. Electricity applied to metallurgy. Visits to metallurgical works in the city and state. [Prof. Koenig. 4]

GEOLOGY.—The topographic and structural relations of the principal ore deposits in America and Mexico. [Prof. Koenig. 7]

ANALYTICAL CHEMISTRY.—Gravimetric and Volumetric Analysis, with special reference to minerals, ores, and metallurgical products. Gas Analysis. Lectures continued. [Prof. Smith. 7]

3. *Studies pursued by the Civil Engineering Section.*

PRACTICAL ENGINEERING.—Observation tours, for collection of data, and critical reports on works in process of construction. Estimates of cost, prices of labor and materials. Construction and arrangement. Preparation of contracts and specifications. Theses for graduation. Sanitary Engineering. [Prof. Haupt. 9] Laws of Business and of Contracts. [Mr. Haupt. 1]

DRAWING.—Details of Engineering Works, Composition, Plans, Sections, Elevations, Profiles and Cross-sections. Working drawings from data collected in the field. [Prof. Haupt. 6]

HYDROMECHANICS.—Recitations and Lectures. [Prof. Haupt. 1]

MODELLING.—Construction of trusses for bridges, roofs, girders, etc. Problems in stone-cutting. Tunnels. [Prof. Haupt. 2]

ARCHITECTURE.—Shading, Decoration. History of Architecture (continued). [Prof. Richards. 4]

4. *Studies pursued by the Dynamical Engineering Section.*

HYDRODYNAMICS.—Continuation of work of Senior year. Laboratory work during second term. [Mr. Earle, 2 hours. Laboratory, Second Term, 3 hours.]

THERMODYNAMICS.—Mechanical theory of heat. Application to steam, air, and gas engines, and refrigerating machines. [Prof. Spangler. 3] Laboratory work,—testing boilers, engines, gauges, and indicators, determining duty of pumps and injectors, calorimetric work. [Prof. Spangler. 6]

ELECTRODYNAMICS.—Measurement of electrical quantities and their application to the theory, construction, and use of dynamos, motors, galvanometers, batteries, etc. [Mr. Peterson. 5] Laboratory work, wiring, the operation and testing of dynamo and storage batteries, photometry, calorimetry, measurement of currents, insulation, etc. [Mr. Peterson. 6]

MARINE ENGINEERING AND NAVAL ARCHITECTURE.—Descriptive lectures on marine engines. [Prof. Spangler. 1] Special instruction when desired.

DESIGNING.—Continuation of Designing from Senior year after shop visits are discontinued. [Prof. Spangler. 2 hours. Mr. Earle. 2 hours for 18 weeks.]

VISITS TO MANUFACTURING ESTABLISHMENTS.—Students are required to visit various machine-shops, foundries, iron and steel rolling mills, shipyards, electric light plants, etc., and to make reports, illustrated, on general arrangement of plant, arrangement of power, tools, etc., in shops, descriptions of particular machines and processes. [16 weeks, 1 visit per week.]

CONTRACTS AND SPECIFICATIONS.—Methods of drawing specifications and contracts for engines, boilers, foundations, etc. Making estimates as to cost, weight, etc. [Mr. Earle. 1]

THESES.—Experimental work in preparation for Theses will be given special attention during the second term, but the laboratory will be open for this purpose throughout the year.

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

ARCHITECTURE.—Elements of design and principles of composition. Ornament of all styles. Sketching and measurement of works executed and in progress, building materials and processes. Specifications. Contracts. History of Architecture (concluded). [Prof. Richards. 12]

DRAWING.—Plans, Elevations, and Sections of original designs. Exercises with Perspective Views. Water-color. Sketching. [Prof. Richards. 9]

ENGINEERING.—Studies of Construction in Masonry, Timber, Iron, and Steel. Roof Trusses, Girders, etc. Experiments on Strength of Materials, Beams, and Trusses. [Prof. Haupt. 4]

#### METHODS OF STUDY.

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.

In CHEMISTRY, the Juniors receive instruction in organic chemistry, mineralogy and qualitative analysis. They also begin work in the laboratories by making the characteristic reactions of inorganic bases and acids, as well as easy qualitative separations. Occasional written reports on the results of their work must be made.

The Seniors receive instruction by lectures and recitations in all branches of quantitative analysis, applied chemistry, metallurgy, and organic and theoretical chemistry. Practical work, embracing all of the above-named branches, is continued. A thesis on some chemical subject is required at the end of the year.

During the first term of Post-Senior year, the work of Senior year 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 to the necessary experimental researches.

The Seniors and Post-Seniors attend courses of lectures on the applications of Inorganic and Organic Chemistry in the Industrial Arts. These courses are fully illustrated by lantern projections, and by suites of specimens from the chemical collections. The classes also make excursions to chemical works.

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, they are given the option of devoting themselves more particularly to either branch. Those

who incline 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. This 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. 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 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, platting, 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 regu-

lating 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 calculation, as well as 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.

Special instruction in that part of Electrical Engineering which requires a knowledge of Dynamics is given to those who wish it in Senior and Post-Senior years. For this course a certificate of proficiency will be awarded, in addition to the Degree of Mechanical Engineer.

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 third 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 Sophomore year the class studies the Mechanics of Physics. In Junior year the subjects treated are Sound, Heat, Light, and Electricity, the exercises consisting of lectures, illustrated by experiments, with recitations. In Senior year, instruction is given in Physical Measurement. Instruction in the Physical Laboratory is maintained throughout the year. The course is optional and is intended for such students only as are competent to take it with advantage.

#### LIBRARY.

The Evans Rogers Library is composed of standard works on drawing, mathematics, astronomy, physics, surveying and explorations, as well as of 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. It con-

tains, also, a valuable collection of Reports of American, English, and French Engineering Societies, periodicals, Coast Survey and hydrographic charts, maps, diagrams and drawings.

### THE COURSE IN PHILOSOPHY FOR UNDERGRADUATES.

In this course special attention is paid to the modern languages and natural science. A large amount of time is devoted to Biological studies, with practical laboratory work, under Prof. Joseph Leidy, Director of the Biological Department, and the other members of the Biological Faculty. The new Biological building, with its lecture-rooms, laboratories for general and special work, its cabinets, herbarium, library, and abundant supplies of material for practical work, affords ample facilities for these studies.

#### JUNIOR CLASS.

##### REQUIRED STUDIES,—

LOGIC AND PSYCHOLOGY.—Jevons's *Lessons in Logic*. Ethics. Lotze's *Outlines of Psychology*. Lectures on Psychology. [Prof. Fullerton. 2]

RHETORIC.—Six Compositions. [Prof. McElroy. 2]

ENGLISH LITERATURE.—Lectures on the Period of French Influence. [Prof. Schelling. 2]

PHYSICS.—Sound, Heat, Light, Electricity. (Stewart's *Physics*. Lectures and Recitations.) [Prof. Barker and Mr. Goodspeed. 4]

CHEMISTRY.—Inorganic Analytical Chemistry. (Lectures and Laboratory Exercises.) [Prof. Smith. 6]

ZOOLOGY.—Introduction to General Zoölogy. The Structure, Classification and Distribution of the Vertebrates. (Lectures.) [Prof. Leidy. 1]

GENERAL BIOLOGY. Careful Study in the Laboratory of a Series of Plants and Animals. (Dolley's *Syllabus*.) [Prof. Dolley. 8]

##### ELECTIVE STUDIES,—

*Of the elective studies each Junior or Senior must take enough to make his total number of hours per week not less than twenty-four, nor more than twenty-six.*

ENGLISH LANGUAGE.—Middle and Early Modern English. (Chaucer, Spenser, Shakespeare, Milton.) [Prof. McElroy. 2]

HISTORY.—Economic and Social History of Europe since 1789. [Mr. Cheyney. 2]

- MINERALOGY.—The Systematic Description of Mineral Species. Their Geometric and Physical Properties. (Dana's *Manual*.) [Prof. Koenig. 2]
- ORGANIC CHEMISTRY.—Lectures. [Prof. Sadtler. 2]
- ANATOMY.—Demonstrations of the Anatomy of a Typical Mammal. (Mivart's *The Cat*.) [Prof. Jayne. 2]
- BOTANY.—Elementary Laboratory Exercises in Structural and Systematic Botany. (Gray's *Text-Book and Manual*.) [Prof. Wilson. 4 hours, First Term. Prof. Rothrock. 4 hours, Second Term.]
- DECLAMATION (*Optional*).—Exercises in Debating and Original Speaking. [Prof. McElroy. 1]

## SENIOR CLASS.

## REQUIRED STUDIES,—

- PHILOSOPHY AND ETHICS.—Berkeley's *Principles of Human Knowledge*. Studies in the History of Philosophy. Fullerton's *Conception of the Infinite*. Ethics. [Prof. Fullerton. 3]
- SOCIAL SCIENCE.—International Law. (Lectures.) Thompson's *Elements of Political Economy*. [Prof. Thompson. 1½]
- RHETORIC.—Six Compositions. [Prof. McElroy.]
- ENGLISH LITERATURE.—Lectures on the Elizabethan Period and the Age of Chaucer. [Prof. Schelling. 2]
- ZOOLOGY.—Introduction to General Zoölogy. The Structure, Classification and Distribution of the Invertebrates. (Lectures.) [Prof. Leidy. 1]

## ELECTIVE STUDIES,—

- ENGLISH LANGUAGE.—Middle and Early Modern English. (Chaucer, Spenser, Shakespeare, Milton.) [Prof. McElroy. 2]
- ASTRONOMY.—(Newcomb's *Astronomy*.) [Dean Kendall. 1½]
- ORGANIC CHEMISTRY.—Laboratory Exercises in making Organic Preparations. [Prof. Sadtler. 6]
- GEOLOGY.—Stratigraphy in connection with Palæontology of the Rock Systems. Laws of Dynamic Geology. (Dana's or Leconte's *Manual*.) [Prof. Koenig. 2]
- ANATOMY.—Demonstrations of Anatomy of the Typical Mammal. (Mivart's *The Cat*.) [Prof. Jayne. 2]
- ANATOMY.—The Demonstrations with a Course in Dissection. [Prof. Jayne. 8]
- ZOOTOMY.—Practical Exercises in Comparative Anatomy. [Prof. Jayne. 4]
- HISTOLOGY.—The Structure of Animal Tissues and Organs. (Schaffer's *Essentials of Histology*. Lectures.) [Prof. Ryder. 2 hours, First Term.]

HISTOLOGY.—The Lectures with Laboratory Exercises. [Prof. Ryder. 8 hours, First Term.]

EMBRYOLOGY.—The [Principles of Comparative Embryology. (Lectures.) [Prof. Ryder. 2 hours, Second Term.]

EMBRYOLOGY.—The Lectures with Laboratory Work on the Development of the Chick and the Rabbit. (Foster and Balfour's *Elementary Embryology*.) [Prof. Ryder. 8 hours, Second Term.]

PHYSIOLOGY.—Lectures and Demonstrations. (Yeo's Text-book.) [Dr. Hare. 2]

BOTANY.—General Principles of Structural and Physiological Botany. (Lectures. Gray's *Text-book of Botany*.) [Prof. Rothrock. 1]

BOTANY.—Economic Botany. (The Plants used in Medicine. The Adulteration of Foods and Drugs.) Laboratory Exercises. [Prof. Rothrock. 6 hours, Second Term.]

BOTANY.—Advanced Laboratory Course in Structural Botany. [Prof. Wilson. 6 hours, First Term.]

BOTANY.—Laboratory Exercises in Plant Physiology. [Prof. Wilson. 6 hours, Second Term.]

DECLAMATION (*Optional*).—Exercises in Debating and Original Speaking. [Prof. McElroy. 1]

Instruction is given by lectures and recitations, and in the Laboratories of the College and Biological buildings. The latter are open all day, a part of the work by the higher classes being done in the afternoon.

The study of the English Language and Literature extends through the entire course, and is intended to be thorough and critical. In Chemistry, a course of analytical work in the laboratory is required in Junior year, and is followed by an elective laboratory course in Senior year.

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 of either Botany or Zoölogy. The series studied are: (1) Amoeba, Paramæcium, 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.

The work in Botany during the Junior year consists in the study of the microscopic structure of plants, followed by practical exercises in determining a selected series of forms.

In the first term of Senior year all students who elect Botany study the microscopic structure of tissues and organs. In the second term a further election is permitted between Economic Botany and Physiological Botany. The work in the first course consists of practical exercises in forestry, adulterations of foods and drugs, medicinal plants, etc.; in the second course, of the life history of plants.

The lectures on Systematic Zoölogy begin in Junior and continue through Senior year. They embrace the structure, classification and distribution of animals, one year being devoted to the study of the invertebrates, the next to the vertebrates. The laboratory course in Zoötomy consists in the dissection of additional types, of series of organs, or special parts chosen by the instructor.

Histology is taught, during the first term of 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 of 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.

THE COURSE IN FINANCE AND ECONOMY  
IN THE  
WHARTON SCHOOL.

This Course serves for the University of Pennsylvania the same purposes as are served in other institutions by their Departments or Faculties of History and Politics, or by the so-called Schools of Political Science. In addition, however, to the courses usually provided in such departments, this Institution offers also a course, at once liberal and practical, which is specially designed for those who intend to enter upon business pursuits.

The founder of the School expressed the desire that it should offer facilities for obtaining:

(1) *An adequate education in the principles underlying successful civil government.*

(2) *A training suitable for those who intend to engage in business or to undertake the management of property.*

In order to realize these objects, courses have been provided in Political Economy, Social Science, Finance, Statistics, Political Science, Administrative and Constitutional Law of the United States and of leading foreign countries, Comparative Politics, Political and Constitutional History of the United States, Theory and Practice of Accounting, and Mercantile Law and Practice.

It will be observed that nearly all the courses above enumerated are such as may fairly lay claim to be called liberal branches *par excellence*, and such as every American citizen should pursue in outline at least as a preparation for the duties of citizenship.

They are, however, also studies which form a leading constituent in the special preparation for certain callings, such as the Teaching of History and Politics, Journalism, Business, Public Service and Law.

The attention, therefore, of students who are looking forward to entering upon these or similar lines of work is specially invited to the facilities of this Institution.

## JUNIOR CLASS.

## FIRST TERM.

- POLITICAL SCIENCE.—Theory of the State. Public Functions. (Lectures and Text-book.) [Prof. James. 3]
- AMERICAN POLITICS.—Colonial History. History of the Public Domain. Distribution of Population. Government. Social History. Johnston's *History of the United States*. Preston's *Documents Illustrative of American History*. Preparation of Maps. Preparation of Boundary, Population, and Economic Maps. [Prof. McMaster. 3]
- POLITICAL ECONOMY.—Thompson's *Elements of Political Economy*. [Prof. Thompson. 2]
- CURRENCY AND BANKING.—Jevons's *Money and the Mechanism of Exchange*. [Prof. Patten. 3]
- LOGIC.—Jevons's *Lessons in Logic*. [Prof. Fullerton. 2]
- HISTORY.—Church and State in America. (Lectures.) [Prof. Thompson. 2]
- INTERNATIONAL LAW.—Lectures. [Prof. Hare. 2] (*Optional*.)
- METHODS OF ACCOUNTING.—[Mr. Falkner. 2]

## SECOND TERM.

- CIVIL GOVERNMENT.—Elements of the Constitutional and Administrative Law of the Federal and State Governments. (Lectures and Text-book.) [Prof. James. 3]
- AMERICAN POLITICS.—Washington to Jackson. Johnston's *American Politics*. Lectures, Maps, etc. [Prof. McMaster. 3]
- POLITICAL ECONOMY.—Walker's *Political Economy*. [Prof. Patten. 3]
- HISTORY.—Economic History of the United States. [Prof. Thompson. 2]
- MORAL PHILOSOPHY.—Janet's *Elements of Morals*. Lectures on Ethics. [Prof. Fullerton. 2]
- METHODS OF ACCOUNTING.—[Mr. Falkner. 2]

## SENIOR CLASS.

## FIRST TERM.

- SOCIAL SCIENCE.—Compositions and Lectures. [Prof. Thompson. 3]
- POLITICAL ECONOMY.—Mill's *Political Economy*. [Prof. Patten. 3]
- AMERICAN CONSTITUTIONAL HISTORY.—First Period, 1789-1825. Lectures. (Von Holst's *Constitutional History of the United States*. Bancroft's *History of the Constitution*.) [Prof. McMaster. 4]

- FINANCE.—Principles and Methods of Public Finance. Objects of Public Expenditure. Revenue from Public Property and Fees. (Lectures.) [Prof. James. 2]
- CIVIL GOVERNMENT.—Principles of General Constitutional and Administrative Law. Principles and Comparative Methods of Legislation. Lectures. [Prof. James. 2]
- MERCANTILE LAW.—Parsons's *Laws of Business*. [Mr. Falkner. 2]

## SECOND TERM.

- INDUSTRIAL HISTORY OF THE UNITED STATES.—Compositions and Lectures. [Prof. Thompson. 2]
- AMERICAN CONSTITUTIONAL HISTORY.—Second Period, 1825–1885. Diplomatic History. Biography of American Statesmen. (Lectures and Text-books.) [Prof. McMaster. 3]
- FINANCE.—Principles and Methods of Public Finance. Theory and Practice of Taxation. Financial Administration. Local Finance. Lectures. [Prof. James. 2]
- CIVIL GOVERNMENT.—Principles and Comparative Methods of Public Administration—general and local. Lectures. [Prof. James. 2]
- POLITICAL ECONOMY.—Ingram's *History of Political Economy*. [Prof. Patten. 3]
- MERCANTILE PRACTICE.—Lectures. [Mr. Falkner. 2]
- STATISTICS.—General Theory. Statistics of Population. (Lectures.) [Mr. Falkner. 2]
- CONSTITUTIONAL LAW.—(*Optional*.)\*
- ROMAN LAW.—(*Optional*.)\*

\*These courses are given in the Law School, but are open to Wharton School students.

## METHODS OF WORK.

The plan of instruction embraces recitations, lectures and seminaries. The endeavor is made to train the students to think independently on the topics that form the subjects of instruction. An earnest effort is made to exclude all dogmatism in political or economic teaching, to present fairly all aspects of disputed questions, and to put the students in a position to form their own opinions on intelligent grounds.

The advanced students receive special attention and assistance in the seminaries, which are organized to promote correct habits of work and to foster a spirit of original investigation.

In order to quicken interest in political and economical sub-

jects, and to encourage acquaintance with parliamentary procedure, a Congress has been formed in the school. It is divided into Senate and House, and adopts the rules of procedure of the respective houses, following the course of Congressional debate and action, but confining itself to a few leading topics.

#### FELLOWSHIPS.

Five honorary Fellowships, which confer the privilege of attending any of the economic and historical courses of the University free of charge, are assigned at the beginning of each year. Graduates of any American college, or of foreign schools of similar grade, are eligible for appointment.

#### AUXILIARY FACILITIES.

All the courses in the other departments of the College, embracing those usually found in the graduate and undergraduate courses of our best Universities, are open to students of the Wharton School without extra charge for tuition, so far as this is consistent with their roster of studies in the School.

The following courses given in the Law School are of special interest to students in this department:

1. Roman Law.
2. Constitutional Law of the United States.
3. International Law.
4. History of the Common Law.

Besides the University Library, which has an unusually valuable collection of works on economics and statistics, the public libraries of the city, and many of the private ones also, aggregating several hundred thousand volumes, are open to the students in the pursuit of their university work.

#### PUBLICATIONS.

A series of occasional publications on Political Economy and Public Law and on History will be issued by the University, representing a portion of the work done in the seminaries by the professors and students. The following numbers have already appeared:—1. Wharton School Annals of Political Science. 2. The Anti-Rent Agitation in New York. 3. Ground Rents in

Philadelphia. The following are in preparation:—4. The Constitution of the German Empire. 5. Building Associations. The numbers of the series for 1888 and 1889 will be chiefly devoted to STUDIES IN FEDERAL GOVERNMENT.

#### 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 by the bequest of the library of the late Henry C. Carey, which includes many later works and pamphlets, and is especially rich in statistical literature, European government reports, and the like. It embraces a collection of about three thousand English pamphlets, formerly Mr. McCalmont's, covering the period from the close of the seventeenth century to our own time, and bound in chronological order.

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

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#### SPECIAL AND PARTIAL COURSES.

SPECIAL STUDENTS, not candidates for a degree, may be received into any of the Courses.

In the Course in Arts, they will be under the supervision of a standing committee of the Faculty, and may take special studies in any subject taught in the Course, provided they can satisfy the professor teaching the subject that they are competent to profit by his instruction. With their special subject they must take at least two other subjects. At the close of such a Special Course, a Certificate of Proficiency in the subject elected will be granted, signed by all the professors whose instruction the student has attended.

In the Towne School, special students may take any one of the Professional Courses, provided the professor in charge of that course is satisfied of their competency to profit by his instruc-

tion. 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, 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.

In the Wharton School, special students, properly qualified, are admitted to the work in any subject or subjects taught in the School. They should apply to Prof. John Bach McMaster, A.M., Secretary of the Faculty of Finance and Economy.

PARTIAL COURSES, also, may be taken, consisting of such groups of studies (not constituting special courses) as the Faculty may sanction; but admission to a partial course is to be considered an exceptional arrangement, and may be withdrawn when deemed expedient. A Certificate, stating what studies have been pursued, will be awarded to those who complete such a course satisfactorily.

### DEGREES.

The Degree of *Bachelor of Arts (A.B.)* is given on graduation (1) to students in Arts who have completed the full Course, (2) to students in the Wharton School or the Course in Philosophy for Undergraduates who have passed their first two years in the Course in Arts.

The Degree of *Master of Arts (A.M.)* is conferred on Bachelors of Arts of the University, of not less than three years' standing, who have pursued liberal studies since their graduation, and who present a satisfactory Thesis to the Faculty. This Thesis must be sent to the Dean by the first Friday in April.

*After 1892 this degree will not be conferred by the College Faculty, but by the Faculty of Philosophy, and only on examination after at least one year of graduate study.*

The Degree of *Bachelor of Science (B.S.)* is given (1) to students in the Towne Scientific School at the end of Senior year; (2) to students in Finance and Economy or in Philosophy who have passed their first two years in the Course in Science; (3) to students who take Junior and Senior year in the Course in Arts

after having completed the first two years in the Course in Science.

The Technical Degree of *Practical Chemist (P.C.)*, *Mining Engineer (E.M.)*, *Civil Engineer (C.E.)*, *Mechanical Engineer (M.E.)*, or *Architect (Archt.)* is given to Bachelors of Science in the Towne School at the end of Post-Senior year. Alumni of the Towne School who hold a Bachelor's Degree may receive the Technical Degree corresponding to their Special Course, on completing satisfactorily at any time the studies of Post-Senior year.

The Degree of *Bachelor of Philosophy (Ph.B.)* is given on graduation (1) to students who have pursued the full Course of the Wharton School; (2) to those who have taken the full Course in Philosophy for Undergraduates.

#### FEEES.

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. In addition, a fee of five dollars is charged by the Department of Physical Culture. A deposit of twenty dollars is required in the Chemical Laboratory to cover breakage. Any balance is returned.

The Annual Tuition Fees are payable to the Treasurer of the University in two instalments, on October 1st and February 1st.

A Graduation Fee of twenty dollars is charged to each candidate for the Baccalaureate Degree, and of ten dollars to each candidate for the Master's Degree. Certificates for Special or Partial Courses, ten dollars.

#### COLLEGE GUARDIANSHIP.

Students not residing at their own homes are assigned each to some member of the Faculty for personal care and oversight. Other students are so assigned by classes or sections, the member of the Faculty in this case being known as the Class (or Section) Officer.

## 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 to the Dean of the Faculty, at or before the entrance examinations in June or September, written testimonials as to his deserts and needs. After passing his examinations satisfactorily, he will be 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 examined by the Board of Public Education, and 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 income of the BLOOMFIELD MOORE FUND is intended 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.

## EXAMINATIONS

are held at the end of each term. Students who attain a certain standing are classed as "Distinguished;" those 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.

The following prizes are offered annually to students in this Department.

*All essays in competition for prizes must be handed to the Professor in charge or to the Dean, not later than May 1st, must be signed with a fictitious name, and be accompanied by a sealed envelope, on which is written the fictitious name, and in which is enclosed the writer's real name and address. No prize will be awarded unless the work done for it reaches a high standard of excellence.*

#### I. THE FACULTY PRIZES :

1. A prize of twenty dollars for the best Essay in Intellectual and Moral Philosophy by a member of the Senior Class. Subject: *Spinoza*.
2. A prize of twenty dollars for the best examination on the *Oration of Demosthenes against Ctesiphon* by a member 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.
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 Share of Pennsylvania in the Measures that led to the War for Independence*.
6. A prize of twenty dollars for the best Essay by a member of the Junior Class. Subject: *The "Imaginary Conversations" of Walter Savage Landor*.
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. In 1889, the examination 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 1889, the examination will be on *Jones' Greek Exercises*, or its equivalent. (A knowledge of Greek accentuation will be required.)

10. A prize of twenty dollars to a member of the Scientific Classes for improvement in Drawing, and for 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. (Essays in competition for this prize are handed to the Dean for transmission to a Committee of the Board of Trustees, by whom the prize is awarded.) Subject: *The Names of Persons and Places in Thackeray's Novels*.

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 are handed to the Dean 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: *The Rise, Progress, and Decay of Slavery in the United States*.

V. THE JOSEPH WARNER YARDLEY PRIZE, founded by the class of 1887 in memory of their class-mate, 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: *Trusts and the Remedy for Them*.

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.

VII. A prize, founded by the PHI KAPPA SIGMA FRATERNITY in honor of their founder, Samuel Brown Wylie Mitchell, M.D., of the class of 1852, for the best work in English Composition, done during the year, by a member of the Sophomore Class. It entitles the winner to one year's interest on four hundred dollars.

### PUBLIC LECTURES.

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

On *Shakespeare*, by HORACE HOWARD FURNESS, PH.D., LL.D.:

1. The London of Shakespeare's Days,
2. The Study of Shakespeare,
3. The Humor of Shakespeare.

On *German Literature*, by Professor SEIDENSTICKER.

On *Middle and Early Modern English (Chaucer to Milton)*, by Professor MCELROY.

On *Physics*, by Professor BARKER.

On *Organic and Applied Chemistry*, by Professor SADTLER.

On *Inorganic Chemistry*, by Professor SMITH.

On *Greek Literature*, by Professor LAMBERTON.

The instruction in Analytical Chemistry, including practical work in the laboratory, under Professors SADTLER and SMITH, is also open to the public.

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

Application for admission to these lectures or for further information respecting them may be made to the Dean.

### SOCIETIES.

The PHILOMATHEAN (Literary) SOCIETY, founded in 1813, holds meetings weekly during the college year, at its rooms in 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, and 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 Nineteenth and Race Sts.), students of the University are admitted free of charge to its very extensive Museum on exhibition of their Matriculation Card. Permission to use the Museum for special study, or to consult the library of 30,000 volumes on Natural Science, can be obtained by application to the Curators.

For further information concerning this Department, address Prof. E. Otis Kendall, LL.D., Dean of the College Faculty; or, for special information concerning the Wharton School Course, to Prof. John Bach McMaster, A.M., Secretary of the Faculty of Finance and Economy.

#### 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 through three 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; the third to Form and Instrumentation.

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 com-

pleted the full course, passed the required examination, and presented as a thesis a satisfactory original composition. It is intended to hold 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.

#### STUDENTS.

##### THIRD YEAR.

Anna Jackson,  
Benjamin Monteith,

Wm. Forrest Paul,  
William Stobbe.

##### SECOND YEAR.

Ida E. Bowser,  
Julia A. Plantholz,

Jane L. Zebley.

Clara Schaubel,  
James C. Warhurst,

##### FIRST YEAR.

Ella Blair,  
Irene Butland,  
Gertrude B. Duffee,  
Albert Egbert,  
Mary A. Evans,  
Anna J. Ferris,  
H. H. Furness, Jr.,

Emma M. Smith.

Hermann Grebe,  
C. Albert Hartmann,  
Anna Hitzeroth,  
Harry W. Kuni,  
Alma Roach,  
Emma Schubert,  
Florence Schubert,

Total, 24.

## DEPARTMENT OF MEDICINE.

---

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

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

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.

RICHARD A. F. PENROSE, Emeritus Professor of Obstetrics and of the Diseases of Women and Children.

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### FACULTY.

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

D. HAYES AGNEW, M.D., LL.D., JOHN RHEA BARTON Professor of Surgery, and Professor of Clinical Surgery.

WILLIAM PEPPER, M.D., LL.D., Professor of Theory and Practice of Medicine and of Clinical Medicine.

WILLIAM GOODELL, M.D., Professor of Gynæcology.

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.

JOHN ASHHURST, JR., M.D., Professor of Clinical Surgery.

WILLIAM OSLER, M.D., Professor of Clinical Medicine.

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

WILLIAM F. NORRIS, M.D., Honorary Professor of Ophthalmology.

BARTON COOKE HIRST, M.D., Associate Professor of Obstetrics.

HOWARD A. KELLY, M.D., Associate Professor of Obstetrics.

### 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, M.D., Clinical Professor of Genito-Urinary  
 Diseases.

## ASSISTANT PROFESSOR.

EDWARD T. BRUEN, M.D., Assistant Professor of Physical Diag-  
 nosis.

## AUXILIARY PROFESSORS.

JOHN J. REESE, M.D., Professor of Medical Jurisprudence, includ-  
 ing Toxicology.

SAMUEL G. DIXON, 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 Phar-  
 macy and Instructor in Practical Pharmacy.

DE FOREST WILLARD, M.D., Lecturer on Orthopædic Surgery.

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 Stillé Medical Library.

HENRY R. WHARTON, M.D., Instructor in Clinical Surgery, and  
 Lecturer on Surgical Diseases of Children.

JOHN B. DEEVER, M.D., Demonstrator of Anatomy, and Lecturer  
 on Topographical Anatomy.

RICHARD H. HARTE, M.D., Demonstrator of Osteology.

THOMAS R. NEILSON, M.D., } Assistant Demonstrators

EDMUND W. HOLMES, M.D., } of Anatomy.

ALBERT L. A. TOBOLDT, M.D., Assistant Instructor in Practical  
 Pharmacy.

WILLIAM A. EDWARDS, M.D., } Instructors in Clinical Medicine.

JUDSON DALAND, M.D., }

J. P. CROZER GRIFFITH, M.D., Assistant to the Professor of  
 Theory and Practice of Medicine.

SAMUEL D. RISLEY, M.D., Instructor in Ophthalmology.

W. M. L. ZIEGLER, M.D., Instructor in Otology.

CARL SEILER, M.D., Instructor in Laryngology.

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 Orthopædic Surgery.

HENRY W. STELWAGON, M.D., Instructor in Dermatology.

- HOBART A. HARE, M.D., Demonstrator of Experimental Therapeutics, and Instructor in Physical Diagnosis.
- THOMAS R. NEILSON, M.D., Instructor in Genito-Urinary Diseases.
- WILLIAM L. TAYLOR, M.D., Instructor in Clinical Gynæcology.
- GWILLYM G. DAVIS, M.D., Assistant Demonstrator of Surgery.
- EDWARD MARTIN, M.D., Instructor in Operative Surgery, Assistant Demonstrator of Surgery, and Lecturer on Emergency Surgery.
- JOHN K. MITCHELL, M.D., Instructor in Clinical Medicine.
- W. FRANK HAEHNLEN, M.D., Lecturer on Clinical and Operative Obstetrics.
- GEORGE H. CHAMBERS, M.D., Assistant Demonstrator of Normal Histology.
- JAMES K. YOUNG, M.D., Assistant Demonstrator of Surgery.
- DAVID D. RICHARDSON, M.D., Assistant Demonstrator of Anatomy.
- JOHN H. MUSSER, M.D., Instructor in Clinical Medicine.
- JOHN B. ROBERTS, M.D., Assistant Demonstrator of Anatomy.
- HENRY W. CATTELL, M.D., Assistant Demonstrator of Chemistry.
- ALLEN J. SMITH, M.D., Assistant Demonstrator of Morbid Anatomy and Pathological Histology.
- ROBERT FORMAD, V.M.D., Assistant Demonstrator of Normal Histology.
- ARTHUR A. STEVENS, M.D.,
- T. PASSMORE BERENS, M.D., } Instructors in Physical Diagnosis.
- GUY HINSDALE, M.D., }
- ANDREW J. PLUMER, M.D., Assistant Demonstrator of Morbid Anatomy.
- EDWARD TATUM, M.D., Demonstrator of Physiology.
- BENJAMIN F. STAHL, M.D., Instructor in Physical Diagnosis.
- GILBERT B. PFOUTS, M.D., Acting Assistant Demonstrator of Morbid Anatomy.
- HARRY C. DEAVER, M.D., } Acting Assistant Demonstrators
- H. H. KYNETT, M.D., } of Anatomy.

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

- LEONARD WOOLSEY BACON, Yale College.
- JOS. C. BLOODGOOD, University of Wisconsin.
- W. E. BRUNER, Wesleyan University.
- W. B. FENN, Hamilton College.
- P. MAX FOSHAY, Geneva College.
- ROBERT G. GRISSOM, University of North Carolina.
- W. F. MCCONKEY, Missouri State University.
- R. W. MEIRS, Princeton College.
- L. M. POWELL, University of Kansas.
- HOWARD C. RUSSELL, Columbian University.
- A. H. SCOFIELD, Princeton College.

L. S. SMITH, University of Pennsylvania.  
 ROBERT L. TURNER, Mississippi Agricultural and Mechanical College.  
 G. S. WOODWARD, Yale College.

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. WHITBECK, 125 East Avenue, Rochester, N. Y.  
 Dr. W. T. BELL, City and County Hospital, San Francisco, Cal.  
 Dr. W. D. HAMAKER, Meadville, Penna.  
 Dr. EDWARD RANDALL, JR., Galveston, Texas.  
 Dr. F. E. MAINE, Auburn, N. Y.  
 Dr. B. M. WALKER, Danville, Va.

#### 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 Gynæcology.  
 JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.  
 JOHN ASHHURST, JR., M.D., Professor of Clinical Surgery.  
 WILLIAM OSLER, M.D., Professor of Clinical Medicine.  
 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, M.D., Clinical Professor of Genito-Urinary Diseases.  
 ROLAND G. CURTIN, M.D.,  
 EDWARD T. BRUEN, M.D.,  
 J. P. CROZER GRIFFITH, M.D.,  
 JOHN K. MITCHELL, M.D.,  
 J. WILLIAM WHITE, M.D.,  
 H. R. WHARTON, M.D.,  
 RICHARD H. HARTE, M.D.,

} Assistant Physicians.  
 }  
 } Assistant Surgeons.

- SAMUEL D. RISLEY, M.D., Assistant Ophthalmic Surgeon.  
 WALTER M. L. ZIEGLER, M.D., Assistant Aural Surgeon.  
 HENRY W. STELWAGON, M.D., Assistant Dermatologist.  
 FRANCIS X. DERCUM, M.D., Assistant Neurologist.  
 W. L. TAYLOR, M.D., } Assistant Gynæcologists.  
 W. CONSTANTINE GOODELL, M.D., }
- ANNIE L. LOCKE, Superintendent of the Hospital.  
 HENRY F. FORMAD, M.D., Pathologist.  
 JUDSON DALAND, M.D., Curator.  
 DAVID B. BIRNEY, M.D., Surgical Anaesthetizer.  
 JOSEPH LEDY, JR., M.D., }  
 ELLWOOD R. KIRBY, M.D., } Resident Physicians.  
 ALFRED C. WOOD, M.D., }  
 CHARLES MCK. HAY, M.D., }  
 DANIEL M. EASTER, M.D., }  
 C. B. KIRBY, 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 Orthopædic Dispensary.  
 A. SYDNEY ROBERTS, M.D., }
- 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 FUSSELL, M.D., Assistant Physician in the Medical Dispensary.  
 RICHARD H. HARTE, M.D., } Attending Surgeons in the Surgical Dispensary.  
 CHARLES W. DULLES, M.D., }  
 JOSEPH M. FOX, M.D., }  
 JOHN B. DEEVER, M.D., }  
 JAMES WALLACE, M.D., } Assistant Surgeons in the Dispensary for Diseases of the Eye.  
 G. E. DE SCHWEINTZ, M.D., }
- JAMES HENDRIE LLOYD, M.D., Assistant Physician in the Dispensary for Nervous Diseases.

- THOMAS R. NEILSON, M.D., Surgeon in the Dispensary for Genito-Urinary Diseases.
- JOHN SHEETS, M.D., Assistant Physician in the Dispensary for Diseases of the Throat.
- HOBART A. HARE, M.D., Physician in the Dispensary for Diseases of Children.
- FREDERIC H. MILLIKEN, M.D., } Assistant Surgeons in the Ortho-  
 JAMES K. YOUNG, M.D., } pædic Dispensary.
- WILLIAM R. HOCH, M.D., Assistant Surgeon in the Dispensary for Diseases of the Ear.
- J. HOWARD REEVES, M.D., Assistant Physician in the Dispensary for Diseases of the Throat.
- EDWIN C. BAILEY, M.D., } Assistant Surgeons in the Dis-  
 W. CONSTANTINE GOODELL, M.D., } pensary for Diseases of Women.  
 W. A. CAREY, M.D., }
- H. M. CHRISTIAN, M.D., Assistant Surgeon in the Dispensary for Genito-Urinary Diseases.
- B. ALEXANDER RANDALL, M.D., } Assistant Surgeons in the Dispen-  
 G. ORAM RING, M.D., } sary for Diseases of the Eye.
- WILLIAM M. POWELL, M.D., Physician in the Dispensary for Diseases of Children.
- WM. E. HUGHES, M.D., } Assistant Physicians in the Medical  
 M. HOWARD FUSSELL, M.D., } Dispensary.  
 GEORGE DOCK, M.D., }
- ALLEN J. SMITH, M.D., } Physicians in the Dispensary for Dis-  
 WALTER CHRYSTIE, M.D., } eases of Children.

All communications should be addressed to

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

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

### MATRICULATES.

#### FOURTH YEAR.

Birney, Herman H., M.D., Washington, D. C., Columbian Univ'y.  
 Thomas, John W., M.D., New Orleans, La. University of La.

Students of the Fourth Year, 2.

#### THIRD YEAR.

Adams, J. Howe,	Philadelphia,	D. Hayes Agnew.
Alrich, William M.,	Philadelphia,	Edward Martin.
Anderson, Willis S.,	Shelby, Ohio,	Bricker & Huss.

Applebach, Harry E.,	Sellersville,	N. Applebach.
Bacon, John,	Greenwich, N. J.,	H. C. Wood.
Baker, Nathan M., B.S. (Univ. Minn.),	St. Peter, Minn.,	Chas. N. Hewitt.
Banks, William H.,	Mifflintown,	L. Banks.
Bashore, Harvey B., A.B. (Yale),	West Fairview,	D. W. Bashore.
Benedict, Arthur L., A.B. (Univ. Mich.), M.D.,	Buffalo, N. Y.,	Univ'y of Buffalo.
Bermudez, Salvador,	Leon, Nicaragua,	Judson Daland.
Boger, John A., A.B. (C.H.S.),	Philadelphia,	D. Hayes Agnew.
Bolling, Robert H.,	Chestnut Hill,	Robt. Bolling.
Brooke, Benjamin,	Fortress Monroe, Va.,	Allen J. Smith.
Brown, James G.,	Peola Mills, Va.,	O. R. Quaintance.
Bryan, J. Roberts, A.B. (C.H.S.),	Philadelphia,	University.
Burd, William J.,	Belvidere, N. J.,	J. Marshall Paul.
Burger, Francis J.,	Lancaster,	A. J. Burger.
Bushong, John W., A.B. (C.H.S.),	Philadelphia,	University.
Butcher, Alexander C.,	Philadelphia,	B. F. Butcher and H. F. Formad.
Butler, Clarence A., A.B. (W. U. P.),	Allegheny,	University.
Canby, Edmund,	Wilmington, Del.,	D. W. Maul.
Carpenter, Herbert B.,	Philadelphia,	University.
Carpenter, John T., Jr.,	Pottsville,	J. T. & J. S. Carpenter.
Cashman, Nathaniel A., Ph.G.,	Philadelphia,	Louis Starr.
Christie, Robert J., Jr., M.D.,	Quincy, Ill.,	Quincy Med. Coll.
Clarke, J. Frederick, B.S. (Iowa State Univ.),	Fairfield, Iowa,	W. A. Edwards.
Clark, Robert,	Philadelphia,	Alex. Elwell.
Cleveland, Arthur H., B.S. (Lafayette),	Philadelphia,	University.
Cressman, George S.,	Lafayette Hill,	B. R. Peltz.
Cross, George D.,	Chester,	R. H. Milner.
Crothers, S. Ross, Ph.G.,	Zion, Md.,	J. H. Beck.
Curry, Edw. A., A.B. (Dickinson),	Danville,	J. D. Strawbridge.
Davis, Charles N.,	Bryn Mawr,	University.
Davis, William J.,	Pottstown,	J. Davis & B. B. Wilson.
Deekens, A. Hamilton,	Philadelphia,	University.
Dieffenderfer, Walter B., M.E.,	Auburn,	J. T. & J. S. Carpenter.
Dimm, Charles H.,	Selins Grove,	P. A. Boyer.
Dongion, Giragos,	Dearbecker, Armenia,	Judson Daland.
Downes, Randolph H.,	Templesville, Md.,	University.
Dunn, Walter, Ph.G.,	Clifton Heights,	J. S. Pearson.
East, Frederick, A.M. (Rochester),	Brockport, N. Y.,	Rich. M. Moore.
England, Joseph W., Ph.G.,	Philadelphia,	E. P. Bernardy.
Ferguson, Albert D.,	Philadelphia,	J. F. Holt.
Finlay, Charles E., M.D.,	Havana, Cuba,	H. B. Sands.
Fowler, Charles C., A.B. (Emory Coll.),	Spartanburg, S. C.,	Robert Battey.

Fox, Horace,	Philadelphia,	J. P. Crozer Griffith.
Frasse, Irvin N.,	Brooklyn, N. Y.,	Geo. G. Hopkins.
French, Edward M.,	Bethlehem,	John B. Deaver.
Galbraith, James L., A.B. (C.H.S.),	Philadelphia,	A. G. Reed.
Gallagher, George W.,	Dawson,	Hobart A. Hare.
Gallaher, Thomas J., Jr.,	Pittsburgh,	Thos. J. Gallaher.
Galloway, Albert B., A.B. (C.H.S.),	Philadelphia,	University.
Geissenger, Henry G.,	Philadelphia,	R. W. Griffith.
Gerlach, E. Rudolph,	Trenton, N. J.,	University.
Gillespie, Frank,	Principio, Md.,	R. R. Crothers.
Grebe, William, Ph.G.,	Philadelphia,	J. A. McAuley.
Greene, William C., A.B.,	Beaufort, S. C.,	F. X. Dercum.
Hall, George B.,	Renovo,	Wm. E. Hall.
Hall, William D. W., A.B. (Princeton),	Lewes, Del.,	David Hall.
Hamme, John M., B.S. (Lafayette),	York,	Jacob Hay.
Harris, Thomas J., A.B. (Dartmouth),	Claremont, N. H.,	University.
Hekiniman, Gabriel, M.D.,	Erzeroom, Turkey,	University.
Heil, Ulysses S. Grant,	Easton,	M. T. Prendergast.
Hileman, John S.,	Pittston,	G. W. Underwood.
Horning, Frank L.,	Landingville,	D. Dechert.
Howerter, Emanuel L., B.E.,	Stony Run,	University.
Hull, Waldo W.,	Williamsport,	W. R. Hull.
Humphrey, Glennis E.,	Union City,	A. C. Sherwood & O. L. Abbey.
Hunsberger, J. Newton,	Skippack,	Sam'l Wolfe.
Johnston, William G.,	Titusville,	University.
Jones, Charles J.,	Philadelphia,	J. Wm. White.
Keefer, Frank R., Ph.B. (Dickinson),	Sprague, Wash. Ter.,	Calvin DeWitt.
Keiser, Elmer E., A.B. (Bucknell Univ.),	Lewisburg,	John B. Deaver.
Ketcham, Stephen R.,	Philadelphia,	John B. Deaver.
Kneass, Samuel S., A.B. (Univ. Penna.),	Philadelphia,	University.
Kulp, John Stewart,	Wilkesbarre,	J. A. Murphy.
La Motte, Harry,	Fort Wingate, N.M.,	University.
Leaman, William G.,	Philadelphia,	University.
Lear, John, A.M. (Lafayette),	Allentown,	John Sandt.
Lederman, Moses D.,	Lancaster,	M. L. Herr.
Leonard, Charles L., A.B. (University of Penna. & Harvard),	Philadelphia,	University.
Longshore, James B.,	Philadelphia,	G. D. O'Farrell.
McClure, John T.,	Philadelphia,	University.
McConnell, James W.,	Manayunk,	C. K. Mills.
McCormick, Louis P.,	Connellsville,	University.
McFarland, Joseph,	Philadelphia,	Geo. H. Horn.
McGalliard, Benjamin W., Ph.B., (Lafayette),	Bridgeton, N. J.,	University.

McGill, Will. B.,	Marionville, Mo.,	University.
McKelway, George I., Ph.G.,	Philadelphia,	D. Hayes Agnew.
McNaugher, Samuel N., A.B.	Allegheny,	University.
(Westminster),		
Manship, Sheridan P.,	Milton, Del.,	M.F. Corkran & J. S.
		Gillespie.
Massinger, Charles Jerome,	Chalfont,	University.
Mercer, Charles P., Ph.B. (Uni-	Philadelphia,	S. T. Neuber.
versity of Penna.),		
Michel, Bernard, Ph.G.,	Dubuque, Iowa,	Jno. B. Deaver.
Miller, Charles L.,	Lebanon,	S. Weiss, Jr.
Miller, Horace W.,	Urbana, Ill.,	J. T. Miller.
Miller, Morris Booth,	Media,	Chas. J. Essig.
Milnor, William S., A.B.	Philadelphia,	University.
(C.H.S.)		
Moore, Cyrus Chester,	Moore's Salt Works, Wm. W. Jones.	
	Ohio,	
Moore, J. Demuth, Ph.G.,	Wrightsville,	University.
Motter, Murray G., A.B., B.S.	Washington, D. C.,	J. B. Scott.
(Penna. Coll.),		
Naylor, Walter W.,	New Hope,	G. L. Romine.
Neuber, George G. E., A.B.	Philadelphia,	S. T. Neuber.
(Univ. of Penna.),		
Nicholson, George M.,	Jersey City, N. J.,	A. A. Latkins.
O'Brien, Christopher, Ph.G.,	Conshohocken,	University.
Paff, Edwin H.,	Allentown,	W. S. Berlin.
Patrick, William S.,	Quinton, N. J.,	T. J. Smith.
Phillips, Horace,	Philadelphia,	University.
Pickerell, Evan,	Minerva, Ky.,	J. A. Reed.
Posey, William C., A.B. (Univ.	Philadelphia,	University.
of Penna.),		
Price, William H., A.B. (C.H.S.),	Philadelphia,	R. J. Levis.
Rawlins, Benjamin L.,	Dallas, Texas,	S. D. Thruston.
Reigel, William A., A.B. (Penna.	Catasauqua,	H. H. Reigel.
Coll.),		
Reisert, William, Ph.G.,	Bridesburg,	University.
Rhodes, Oreon S.,	E. Stroudsburg,	T. C. Walton.
Roach, Walter W., A.B. (C.H.S.),	Philadelphia,	Horace Ladd.
Rodgers, Robert Jr.,	Philadelphia,	J. Howard Evans.
Roth, Emil,	Philadelphia,	John Strobel.
Rosenau, Milton J., A.B.	Philadelphia,	University.
(C.H.S.),		
Rote, John P., A.B. (K.S.U.),	San Antonio, Texas,	University.
Rothermel, Pius,	Molltown,	University.
Schaeffer, Charles D., A.B. (F.	Kutztown,	A. L. C. Hottenstein.
& M. Coll.),		
Schneider, Louis T.,	Philadelphia,	Geo. A. Bodamer.
Schroeder, Charles B., A.M.	Lock Haven,	University.
(Lafayette),		
Scott, Charles G.,	Roarkee, India,	University.
Scott, J. Allison, A.B. (Univ.	Philadelphia,	Geo. E. Shoemaker.
of Penna.),		

Sharp, J. Riddle,	Harrington, Del.,	Jno. A. Klump.
Silva, Manuel C. da,	Rio de Janeiro, Brazil,	University.
Sinnamon, George,	Philadelphia,	D. O'Callaghan.
Smith, A. Donaldson,	Philadelphia,	William Hunt.
Small, J. Frank,	York,	I. C. Gable.
Smith, Rolla L.,	Oakville,	I. Betz.
Snyder, Elmer R.,	Hilltown,	E. T. Johnson.
Speers, Albert C.,	Belle Vernon,	University.
Stengel, Alfred,	Pittsburgh,	Walter Stengel.
Stichter, Henry Deischer, Ph.G.,	East Greenville,	H. Bobb.
Stitt, Edward R., A.B. Ph.G.,	Rock Hill, S. C.,	T. M. DuBose.
Strain, Earle,	Flesherton, Can.,	Dr. Carter.
Striegel, Charles A.,	Shenandoah,	University.
Swaving, J. Harry,	Pottsville,	J. T. Carpenter and J. C. Swaving.
Swift, Elisha P., A.B. (Lafayette),	Allegheny,	University.
Taylor, Harry B.,	Philadelphia,	Wm. T. Taylor.
Thomas, George Pierce, M.D.,	Philadelphia,	Wm. Pratt Read.
Toulmin, Harry, Ph.B. (Lehigh),	Philadelphia,	University.
Trexler, Jacob F.,	Mertztown,	P. W. Wertz.
Tyson, T. Mellor,	Philadelphia,	James Tyson.
Tunis, Joseph P., A.B. (Univ. of Penna.),	Philadelphia,	Louis Starr.
Umsted, William M.,	Coatesville,	Wm. R. Blakeslee.
Van Buskirk, Frederic W.,	Pottstown,	Henry Beates, Jr.
Vanmeter, Seymour D.,	San Antonio, Texas,	Judson Daland.
Weiss, George L.,	Lebanon,	S. Weiss, Jr.
Weiszgerber, John, Ph.B. (University of Penna.),	Philadelphia,	University.
Whaly, Benton H.,	Whaleyville, Md.,	S. P. Dennis.
Wheeler, Harry S.,	Phoenixville,	J. V. Reeder.
White, Abraham E., A.B. (Lincoln University),	Clinton, Miss.,	N. F. Mossell.
Williams, Charles B., A.B. (Univ. of Penna.),	Philadelphia,	R. J. Levis.
Wilson, E. Ellsworth, Ph.G.,	Philadelphia,	Henry Beates, Jr.
Wilson, Henry Delano,	Washington, D. C.,	J. B. Deaver.
Wilson, Richard,	Philadelphia,	University.
Wilson, Samuel M., B.A. (C.H.S.),	Philadelphia,	Jas. F. Wilson.
Wolf, Charles N.,	Hellam,	J. A. Armstrong.
Woodland, George Y.,	Norristown,	J. Wm. White & E. M. Corson.

Students of the Third Year, 1911.

## SECOND YEAR.

Anders, Howard S., B.A. (C.H.S.),	Philadelphia,	Jas. M. Anders.
Anders, Wesley A.,	North Wales,	H. F. Slifer.
Anderson, Thomas B.,	Indianapolis, Ind.,	University.
Ashhurst, William W.,	Philadelphia,	John Ashhurst.

Backenstoe, Martin J.,	Emaus,	A. J. Martin.
Bacon, Leonard W., Jr.,	Philadelphia,	University.
Barker, Frederick D., Ph.B.		
(Dennison),	McConnellsville, O.,	R. Harvy Reed.
Bennett, James C., Jr.,	Cape May City, N.J.,	University.
Bowman, Henry C.,	Schuylkill Haven,	C. Lenker.
Bowser, Alexander J.,	Schellsburg,	F. M. Marbourg.
Boyer, Samuel H.,	Titusville,	Geo. W. Barr.
Brimhall, John B.,	St. Paul, Minn.,	University.
Bromley, John L.,	Philadelphia,	A. K. Minich.
Bryant, Ernest A.,	St. Paul, Minn.,	University.
Carothers, William M., A.B.,	Turtle Creek,	H. N. Melleer.
Carter, William S.,	Easton,	Isaac Ott.
Chidsey, Russell Williams,	Easton,	J. S. Hunt.
Clark, Henry H.,	Woodbury, N. J.,	H. C. Clark.
Clegg, William H., A.B.	Philadelphia,	University.
(C.H.S.),		
Corbus, Howard L., B.A.,	Beaver Falls,	D. McKinny, Jr.
Culin, Walter, Ph.G.,	Philadelphia,	University.
Cummins, Robert H.,	Wheeling, W. Va.,	L. D. Wilson.
Dager, Howard, A.B. (C.H.S.),	Manayunk,	A. H. Melleh.
Daly, Harry C.,	Gibsonton,	University.
Dickson, Thomas G.,	Troy, N. Y.,	J. B. Harvie.
Doan, Henry H.,	Philadelphia,	University.
Doherty, Anthony F.,	Hazleton,	W. R. Longshore.
Donahay, De Witt S.,	Turkey, N. J.,	Wm. M. Hepburn.
Eagleton, S. Potts,	Philadelphia,	Jas. M. Eagleton.
Evans, Frederick H.,	Chester,	F. J. Evans.
Evans, William K.,	Chester,	Wm. G. Knowles.
Evins, Thomas E.,	Spartansburg, S. C.,	D. B. Ray, Blake & Greene.
Farish, James C.,	Liverpool, N. Scotia,	H. G. Farish.
Frishmuth, John P., A.B.	Philadelphia,	University.
(C.H.S.),		
Gazzam, Edwin Van Deusen,	Carrollton, Md.,	University.
Geist, James W., M.E.,	Bechtelsville,	A. S. Erney.
Gilliland, A. Bertram, Ph.B.	Van Wert, Ohio.	University.
(Cornell),		
Graham, Wm. T., A.B. (Prince-	Philadelphia,	University.
ton),		
Green, Edward M., Jr., A.B.,		
(Centre),	Danville, Ky.,	L. S. McMin.
Guest, Middleton Semmes,	Philadelphia,	C. J. Cleborne.
Gunning, Thomas F.,	Fall River, Mass.,	O. B. Jones.
Haines, E. Everitt,	Vincentown, N. J.,	J. C. Brown.
Haines, Rowland I.,	Norristown,	C. S. Dolly.
Hamann, Carl A.,	Davenport, Iowa,	A. W. Cantwell.
Handly, M. William, A.B.,	Hopedale, Ohio.	University.
Harland, William G. B.,	Germantown,	University.
Harris, Charles D.,	Philadelphia,	University.
Heard, James Delavau,	Pittsburgh,	S. N. Benham.
Hoch, Charles August,	Basel, Switzerland,	W. R. Hoch.

Holly, Clarke W., B.A. (Yale), Philadelphia,	W. J. Holly.
Howell, William P., Wheeling, W. Va.,	University.
Hunter, R. Wallace, Stormstown,	J. Y. Dale.
Johnston, Albert T. W., Nassau, W. I.,	T. W. Johnston.
Johnston, Frederick L., Ph.G. Cape May City, N. J.,	James Mecray.
Kamerly, E. Forrest, Jr., Town Hill,	E. F. Kamerly.
Kaufman, Frederick S., Auburn,	J. W. Loch.
Kawamoto, Junzo, Ph.B. (Oberlin), Kobe, Japan,	University.
Kennedy, Robert M., Pottsville,	J.T. & J.S. Carpenter.
Kerr, Edward, Downingtown,	Thos. E. Parke.
Langhorne, Stepney T., Farmville, Va.,	University.
Lathrop, Walter, Montrose,	University.
Leisher, Charles A., McAlisterville,	W. H. Hoops.
Leshner, George S., Richland,	J. D. Zimmerman.
Levis, Minford, Philadelphia,	R. J. Levis.
Lewars, Horace S., Philadelphia,	F. X. Dercum.
Leys, James Farquharson, Philadelphia,	University.
Lightfoot, Sidley Jevers, Limerick, Ireland,	C. B. Gaffney.
Lincoln, Walter R., B.A. (Univ. of Penna.), Philadelphia,	University.
Longaker, Daniel, Norristown,	J. Wm. White.
McConkey, Thomas G., Springfield, Ohio,	University.
McFadden, Charles J., Lewistown,	J. T. Mahon.
Maison, Robert S., A.B. (Univ. of Penna.), Philadelphia,	University.
Maloney, John B., Key West, Fla.,	Jno. B. & H. C. Deaver.
Martin, Charles S., Allentown,	E. G. Martin & John B. Deaver.
Marshall, Robert J., Camden, N. J.,	University.
Maglaughlin, W. Kieffer, A.B. (Dickinson), Carlisle,	A. R. Allen.
Maury, John M., Memphis, Tenn.,	University.
Menah, William McClellan, Philadelphia,	University.
Miller, Emmitt Palmer, Stroudsburg,	University.
Milliken, George G., D.D.S., Philadelphia,	F. H. Milliken,
Mitcheson, Robert S. J., Ph.G., Philadelphia,	H. W. Cattell.
Morris, Daniel E., Millcove, P. E. I.,	Martin & McLean.
Muttart, George, Souris, P. E. I.,	E. B. Muttart.
Myers, Frank F., Lewistown,	J. T. Mahon.
Neal, Chales B., Ph.G., Woodbury, N. J.,	University.
Niesley, Charles M., B.S. (Lafayette), Mechanicsburg,	University.
Niblock, Charles A., A.B. (C.H.S.), Philadelphia,	University.
Nicholson, Joseph L., Camden, N. J.,	University.
O'Drain, Thomas I., A.B., Philadelphia,	University.
O'Hara, Michael, Jr., Philadelphia,	J. B. Deaner & M. O'Hara.
Pennepacker, Edward M., Scranton,	H. Pennepacker.
Potter, Edwin S., Philadelphia,	C. S. Dolley.
Powell, Milton, D.D.S., Philadelphia,	University.

Price, Lucius Grant,	Auburn, N. Y.,	F. E. Maine.
Reese, David L.,	Renovo,	D. J. Reese.
Rettew, David P.,	Brandywine Manor,	N. G. Thompson.
Reynolds, Frederick P.,	Elmira, N. Y.,	Henry Flood.
Rhein, John H.,	Philadelphia,	E. M. Watson,
Rhett, Henry J., Ph.B.,	Philadelphia,	H. M. Wetherill, Jr.
Richards, Oscar M., B.S. (Lafayette),	Easton,	D. W. Richards.
Rottner, Charles P.,	Philadelphia,	Dr. Geissel.
Ruffner, Samuel A.,	Ashley,	E. L. Diefenderfer.
Russell, William W., C.E. (Penn. Mil. Acad.),	Minneapolis, Minn.,	Thomas S. Roberts.
Samaniego, José A.,	Chihuahua, Mex.,	N. Samaniego.
Saxman, Nathaniel H., A.B. (Franklin and Marshall),	Latrobe,	University.
Schaadt, Clinton J., A.B. (Muhlenberg),	Coplay,	University.
Scott, J. Ernest,	Cross Creek,	T. C. M. Stockton.
Shaw, John W., Jr.,	Lewistown,	University.
Sherman, De Witt H., A.B. (Williams),	Buffalo, N. Y.,	Roswell Parks.
Smith, Arthur L., A.B. (Rochester),	Meridian, N. Y.,	Edw. B. Angell.
Smith, Franklin A., Jr.,	Philadelphia,	University.
Snyder, Harvey L.,	Old Zionsville,	University.
Spelman, James F.,	Fulda, Minn.,	L. L. Rewalt.
Steinicken, George A., Ph.G.,	Wilmington, Del.,	University.
Steinwandel, John A.,	Lancaster,	University.
Strayer, Edgar,	Patterson,	S. A. Suloff.
Strickler, Charles Miller,	Lebanon,	Geo. P. Lineaweaver.
Summers, Arthur P., Ph.B. (Yale),	Col. Springs, Col.,	University.
Sunderland, Henry, Ph.G., A.M. (C.H.S.),	Philadelphia,	E. L. B. Godfrey.
Torrance, Harry S.,	Cairo, Ill.,	John B. Deaver.
Tyson, Thomas P.,	Jenkintown,	Wm. C. Parry.
Updegrove, Jacob D., A.M.	Easton,	Trail Green & E. M. Green.
Vanneman, Walter A. R., (Lafayette),	Philadelphia,	University.
Van Wart, George Clowes,	Fredericton, N. B.,	G. H. Coburn.
Wagner, Edward C. O., B.A. (Canisuis Coll.),	Wilkes-Barre,	Univ. of Leipzig.
Wagner, William F., Ph.G.,	Hazleton,	M. L. Mench.
Walker, William K.,	Phoenixville,	W. R. Batt.
Walmer, Ephraim L.,	Harrisburg,	E. H. James.
Webster, I. Daniel,	Wakefield,	Edw. Martin.
Weems, Marcus A.,	Columbia, Texas,	M. L. Weems.
Weida, Isidore J.,	Shamrock,	J. F. Wertz.
Welty, Cullen F.,	Canton, Ohio,	A. C. Brant.
Wethered, John L.,	Chestertown, Md.,	University.
Yeager, Norton R.,	Allentown,	W. H. Hartzell.

Students of the Second Year, 134.

## FIRST YEAR.

Amadeo, Jesus Maria,	Maimabo, Puerto Rico,	A. J. Amadeo.
Baugh, A. Wayne,	Chester Valley,	James Aiken.
Baxter, Hart B., A.B. (C.H.S.),	Philadelphia,	H. F. Baxter.
Bennett, Francis W.,	Philadelphia,	W. H. Bennett.
Beyea, Harry D.,	Scranton,	W. W. Ives.
Biemesderfer, Frank I., B.E.,	Manheim,	C. J. Snavely.
Billstirn, Aaron M.,	Philadelphia,	Louis Jurist.
Bloodgood, Joseph C., B.S. (Univ. of Wis.),	Milwaukee, Wis.,	University.
Blouse, John A.,	York,	J. S. Miller.
Boyer, Henry P.,	Lafayette Hill,	University.
Brown, Barton,	Williamsport,	T. C. Detwiler.
Bruner, William E., A.B. (Wes- leyan),	Columbia,	University.
Buck, Aug. W., A.B. (Williams),	Fall River, Mass.,	F. J. Buck.
Burk, Charles M.,	Philadelphia,	University.
Cahill, Thomas H., A.B. (Holy Cross),	Fall River, Mass.,	University.
Camier, Henry W., A.B. (Wes- leyan),	Middletown, Conn.,	University.
Carothers, Frank H.,	San Antonio, Texas,	University.
Chance, Burton K.,	Philadelphia,	University.
Chew, Elisha C.,	May's Landing, N.J.,	University.
Clark, John G.,	Economy, Ind.,	J. B. & J. M. Clark.
Clark, Robert M.,	Middletown, Conn.,	R. P. M. Ames.
Claytor, Thomas A.,	Obligation, Md.,	D. Murray Cheston.
Cresson, Hilborne T.,	Philadelphia,	University.
Cuadra, José Maria, Ph.B.,	Granada, Nicaragua,	University.
Cushing, William F., Jr.,	Philadelphia,	Wm. Pratt Read.
Devlin, T. Francis, A.B. (La Salle),	Philadelphia,	J. D. Schoales.
Dewey, Julian H., Ph.B. (Univ. of Penna.),	Philadelphia,	University.
Dodd, Harry H.,	Lewes, Del.,	University.
Doerr, John E.,	Evansville, Ind.,	Geo. M. Young.
Donges, Clarence B.,	Camden, N. J.,	J. W. Donges.
Dubbs, John H.,	Allentown,	H. H. Herbst.
Dunott, Daniel Z.,	Harrisburg,	T. J. Dunott.
Earnest, Simon F.,	Annville,	E. B. Marshall.
Ellershaw, Albert,	Philadelphia,	Wm. Ellershaw.
Ellett, Edward C.,	Memphis, Tenn.,	University.
Etzler, William C.,	Wheeling, W. Va.,	W. J. Bates, Sr.
Fetterolf, George, A.B. (Univ. of Penna.),	Philadelphia,	Roland G. Curtin.
Fenn, William B., A.B. (Hamilton),	Pittston,	University.
Finch, Albert Ames,	Hastings, Minn.,	J. E. Finch.
Foshay, P. Max, B.S. (Geneva),	Beaver Falls,	W. H. Grim.
Furness, William H., 3d, A.B. (Harvard),	Philadelphia,	University.

Gano, Sidney Johnston,	Dallas, Texas,	University.
Gardiner, Warner,	Auburn, N. Y.,	F. E. Haines.
Gillette, Edwin J., A. B.,	Waterbury, Conn.,	University.
Grissom, Robert Gilliam, B.S. (Univ. of N. C.),	Raleigh, N. C.,	E. Burke Haywood.
Guilford, Paul,	Lebanon,	W. M. Guilford.
Hand, Leslie L.,	Cape May C.H., N.J.,	University.
Harnish, Charles A.,	Alexandria,	T. Harnish.
Hertz, J. Lincoln, M.E.,	Lexington,	J. K. Hertz.
Hiller, Hiram M., Jr.,	Kahoka, Mo.,	University.
Hinkle, W. Marshall, B.S. (Univ. of Penna.),	Philadelphia,	A. G. B. Hinkle.
Hoyt, Mark D.,	St. Paul, Minn.,	Murphy & Hoyt.
Jarden, Albert B.,	Philadelphia,	University.
Johnson, Newell L.,	Milton,	J. McCauley.
Karib, Reul B.,	Oroonia, Persia,	University.
Kearney, Patrick W.,	Archbald,	University.
Kelchner, William I.,	Fleetwood,	University.
Kelly, Aloysius O. J., A. B. (La Salle),	Manayunk,	Jno. B. Deaver & Jos. V. Kelly.
Kline, William, Jr.,	Phillipsburg, N. J.,	J. M. Reese.
Laros, William A.,	Allentown,	M. H. Koch.
Lieber, Francis,	Washington, D. C.,	J. H. Musser.
Lippincott, Fred. B.,	Pemberton, N. J.,	University.
Lofland, James P.,	Milford, Del.,	G. W. Marshall.
Luhn, Henry B.,	Fort Spokane, W.T.,	University.
Lynd, Ernest,	Philadelphia,	R. Lynd.
McCleery, Edward H.,	Milton,	J. P. McCleery,
McConkey, Wilbur F. B.,	Evona, Mo.,	Univ. of Mo.
McDonald, Thomas P.,	Gold Hill, Nev.,	Cooper Med. Coll.
McGehin, Edward,	Hazleton,	Wm. C. Gayley.
McIlwaine, John A., A. B. (C. H. S.), Ph. B. (Univ. Pa.),	Philadelphia,	University.
McKinstry, James F., Jr.,	Gainesville, Fla.,	University.
Maily, Hamilton,	Bridgeton, N. J.,	Theo. G. Davis.
Malone, Charles A.,	Lancaster,	D. McCormick.
Masland, Harvey C., A. B. (C. H. S.),	Philadelphia,	University.
Marcy, Frederick W.,	Cape May City, N. J.,	V. M. D. Marcy.
Martyn, Charles S., B.S. (Dick- inson),	Hazleton,	W. R. Longshore.
Marvin, Sydney R.,	Amherst, Mass.,	University.
Matlack, Lewis H.,	Philadelphia,	University.
Meirs, R. Waln, A. B. (Princeton),	Hornerstown, N. J.,	University.
Metzler, Gottfried,	Philadelphia,	J. C. Hutzill.
Miller, Frederick M.,	Philadelphia,	University.
Moon, W. Willet,	Fallsington,	University.
Morton, Howard M., B.S. (La- fayette),	Kennett Square,	R. B. Ewing.
Nassau, Charles F.,	Philadelphia,	Jno. B. Deaver.
O'Brien, William J.,	Sugar Notch,	University.
Ogden, David W., A.M.,	Newark, N. J.,	N. F. Mossell.
O'Hara, Patrick H.,	Shenandoah,	D. J. Langton.

Pearce, Frank Savary,	Stuebenville, Ohio,	E. Pearce.
Pickle, J. Harry, M.E.,	Millersville,	University.
Poëy, Edward C.,	Habana, Cuba,	University.
Pontius, Paul J., A.B. (Bucknell),	Lewisburg,	University.
Pool, Stewart N.,	McDonough, Del.,	James Tyson.
Potts, Barton H.,	Pottstown,	J. Elmer Porter.
Powell, Lewis M., B.A. (Univ. of Kansas),	Topeka, Kansas,	D. W. Stormont & Reid Alexander.
Reigraf, John M.,	Philadelphia,	S. T. Neuber.
Reynolds, George B.,	Scranton,	M. J. Williams.
Richards, Isaac Starr,	Philadelphia,	Louis Starr.
Robinson, John M.,	Corning, N. Y.,	H. A. Argue & J. D. Hook.
Rodgers, Mark A.,	Brookville,	A. F. Balmer.
Ross, Charles C.,	Clarion,	J. Frank Ross.
Ross, George G.,	Philadelphia,	Jno. B. Deaver.
Sailer, Joseph, Ph.B. (Univ. of Pa.),	Philadelphia,	Chas. A. Oliver.
Scotfield, Alfred H., A.B. (Prince-Budd's Lake, N. J. ton),		J. H. Wikoff.
Scott, John T.,	Galveston, Texas,	University.
Seiple, J. Howard,	Centre Square,	S. C. Seiple.
Shoemaker, William T., A.B. (C.H.S.),	Philadelphia,	Jno. B. Deaver.
Shuman, J. Elmer,	Mainville,	J. J. Brown.
Simon, Charles E., A.B. (Johns Hopkins),	Baltimore, Md.,	University.
Slocum, William H., Jr.,	Oceanport, N. J.,	Thomas G. Chattle.
Smith, Lawrence S., A.B. (Univ. of Penna.),	Philadelphia,	University.
Somers, Lewis S.,	Philadelphia,	O. B. Gross.
Starr, Harold F.,	Philadelphia,	Thos. G. Morton.
Steans, Ralph, A.B. (Lafayette),	Mifflinburg,	J. C. Steans.
Stevens, Albert S.,	Shelby, Iowa,	University.
Stivers, Charles G.,	Philadelphia,	University.
Strong, Benjamin,	Aberdeen, Miss.,	University.
Tally, Leonard K.,	Philadelphia,	A. Nebeker.
Thomas, Oscar F.,	Ashley,	University.
Trau, Philip A. E.,	Philadelphia,	Adam Trau.
Turner, Robert L., B.S.,	Paulding, Miss.,	C. W. Bufkin.
Tuttle, George H., A.B. (Harvard),	Acton Centre, Mass.,	University.
Van Dyke, Charles W., A.B. (Princeton),	Cranbury, N. J.,	University.
Van Loon, Will E.,	Easton,	University.
Vastine, George H.,	Catawissa,	J. H. Vastine.
Venning, Richard E.,	Charleston, S. C.,	G. M. Guiteras.
Wales, Wesley R.,	Cape May, N. J.,	E. B. Wales.
Warrick, William H.,	Philadelphia,	J. Wm. White.
White, Calvin S.,	Coleraine,	I. C. Gable.
Whiting, Albert D.,	Pottsville,	Jno. B. Deaver.
Willis, Park W., B.S. (Whitman),	Walla Walla, W. T.,	University.
Willson, Frederick G.,	Reading,	W. F. Muhlenberg.

Witmer, Frank B.,	Annville,	S. Weiss, Jr.
Woodward, George S., A.B.	Wilkes-Barre,	University.
(Yale),		
Woodward, William M., A.B.	Coatesville,	G. R. Spratt.
(Bucknell),		
Work, Robert A.,	Kirkwood,	J. W. Zell.
Wright, Theodore, Jr.,	Philadelphia,	M. T. Prendergast.
Zell, J. Harry,	Little Britain,	B. F. Sides.
Zulick, Thomas C.,	Easton,	J. M. Reese.
Zweighaft, Bernard,	Philadelphia,	Hobart A. Hare.
		Students of the First Year, 139.

SPECIAL STUDENTS.

Atwood, Thomas W. W.,	Barrington, N. S.,	University.
Burnett, John R.,	Lafayette Hill,	University.
Cotton, Alfred H., F.R.G.S.	Bermuda, W. I.,	E. Wilkinson.
(Eng.),		
Dudley, James W., A.B. (Har-	Warsaw, N. Y.,	University.
vard),		
Farquhar, Thomas H.,	Torresdale,	University.
Mierly, William M.,	Huntingdon,	University.
Reeve, Thomas,	Philadelphia,	W. H. Warder.
Keefer, Charles D., Ph.G.,	Chambersburg,	Lane & Palmer.
Wells, Frank H.,	Philadelphia,	University.

TOTAL.

Students of the Fourth Year . . . . .	2
Students of the Third Year . . . . .	161
Students of the Second Year . . . . .	134
Students of the First Year . . . . .	139
Special Students . . . . .	9

445

The total number of new matriculates the present session, including those admitted to advanced standing, is 163.

SUMMARY.

Armenia, . . . . . 1	Louisiana . . . . . 1	Pennsylvania . . . . . 292
Brazil . . . . . 1	Maryland . . . . . 8	Persia . . . . . 1
Canada . . . . . 1	Massachusetts . . . . . 4	Prince Edward
Colorado . . . . . 1	Mexico . . . . . 1	Island . . . . . 2
Connecticut . . . . . 3	Minnesota . . . . . 7	Puerto Rico . . . . . 1
Cuba . . . . . 2	Mississippi . . . . . 3	South Carolina . . . . . 5
Delaware . . . . . 8	Missouri . . . . . 3	Switzerland . . . . . 1
District Columbia 4	Nevada . . . . . 1	Tennessee . . . . . 2
Florida . . . . . 2	New Brunswick 1	Texas . . . . . 7
Illinois . . . . . 3	New Hampshire 1	Turkey . . . . . 1
India . . . . . 1	New Jersey . . . . . 27	Virginia . . . . . 3
Indiana . . . . . 3	New Mexico . . . . . 1	Washington Terr. . . . . 3
Iowa . . . . . 4	New York . . . . . 11	West Indies . . . . . 2
Ireland . . . . . 1	Nicaragua . . . . . 2	West Virginia . . . . . 3
Japan . . . . . 1	North Carolina . . . . . 1	Wisconsin . . . . . 1
Kansas . . . . . 1	Nova Scotia . . . . . 2	
Kentucky . . . . . 2	Ohio . . . . . 8	Total . . . . . 445

## 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 in 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 regarding 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 one hundred and twenty-one.

## 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 Grammar; *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.

Examinations for admission are held Monday, May 6th, and Friday, September 27th, but arrangements may be made for examination at other times throughout the year, except July and August, upon application to the Dean.\*

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* or *fourth* 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 1889-90 will be held Thursday, September 26th, at noon.†

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\* Examinations for admission will also be held annually during the last week in June in Boston, Mass., Rochester, N. Y., Meadville, 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., Galveston, Tex., Auburn, N. Y., Danville, Va. The names of the examiners will be found on page 74.

† 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 who pass 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 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 Gynæcology, is given in the third year, as are also 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 department 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.	Total hours per week.
Anatomy—3 lectures per week, 10 hours practical anatomy (alternating with practical histology) . . . . .	13
Topographical Anatomy—2 lectures per week . . . . .	2
Histology—1 lecture per week, 2½ hours laboratory instruction.	3½
Materia Medica and Pharmacy—1 lecture per week, 2 hours laboratory . . . . .	3
General Chemistry, including Chemical Physics—2 lectures per week, 4 hours laboratory . . . . .	6
Physiology—3 lectures per week . . . . .	3
General Pathology—1 lecture per week until March 1st . . . . .	1
Hygiene—1 lecture per week . . . . .	1
General Clinics, Medical and Surgical . . . . .	4
Bandaging—1 hour lecture, 1 hour practice . . . . .	2

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

### SECOND YEAR.

Anatomy—3 lectures per week, 10 hours evening dissection . . . . .	13
Topographical Anatomy—2 lectures per week . . . . .	2
Medical Chemistry—1 lecture per week, 4 hours laboratory . . . . .	5
Physiology—3 lectures per week . . . . .	3
General Pathology and Morbid Anatomy—2 lectures per week, 1½ hours laboratory . . . . .	3½
Physical Diagnosis—1 lecture per week, 1 hour demonstration.	2
Therapeutics—2 lectures per week . . . . .	2
Theory and Practice of Medicine—3 lectures per week . . . . .	3
Surgery—3 lectures per week . . . . .	3
Obstetrics—2 lectures per week . . . . .	2
General Clinics, Medical and Surgical, including Philadelphia Hospital Clinics . . . . .	8
Special Clinics (Nervous Diseases, Diseases of Skin, Eye, Ear, Gynæcology) . . . . .	5

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

## THIRD YEAR.

General Pathology and Morbid Anatomy—2 lectures per week . . . . .	2
Demonstrations in Morbid Anatomy, including autopsies—2 hours per week . . . . .	2
Therapeutics—2 lectures per week . . . . .	2
Theory and Practice of Medicine—3 lectures per week . . . . .	3
Surgery—3 lectures per week . . . . .	3
Operative Surgery and Minor Surgery—1 lecture per week, 2 hours' practice . . . . .	3½
Obstetrics*—3 lectures per week . . . . .	3
Operative Obstetrics—1 hour practice for half the term . . . . .	½
Gynæcology†—1 lecture per week, 1 hour bedside teaching . . . . .	2
Bedside Instruction in Practical Medicine† . . . . .	1
Bedside instruction in Practical Surgery† . . . . .	1
Dermatology—1 lecture per week until January 1st . . . . .	½
Ophthalmology—1 lecture per week . . . . .	1
Otology—1 lecture per week until January 1st . . . . .	1
General Clinics, Medical and Surgical, including Philadelphia Hospital Clinics . . . . .	8
Special Clinics (Nervous Diseases, Diseases of the Skin, Eye, Ear, Paediatrics, Gynæcology 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, Gynæcology and Obstetrics. The examinations embrace one or more questions on Diseases of the Skin, the Eye and the Ear from lists furnished by the Clinical Professors of these branches.

## FOURTH YEAR.

Clinical Medicine and Physical Diagnosis, including Laryngology, 2 hours clinical lecture, ½ hour practical instruction . . . . .	4½
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
Gynæcology—1 hour didactic lecture, 1 hour clinical lecture, 1 hour practical instruction . . . . .	3

\* Students also receive individual practical instruction in pelvimetry and abdominal palpation in addition to the lectures on Obstetrics.

† For these courses the class is divided into sections, so that each student receives direct personal instruction.

Paediatrics—1 hour clinical lecture for half the session . . . . .	½
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 . . . . .	2½
Clinical and Operative Obstetrics—1 hour practical instruction for half the session . . . . .	½
Orthopædic 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, 1 hour practical instruction, each for half the term . . . . .	1
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, Clinical Medicine, Surgery, Gynæcology and Obstetrics.

## TEXT-BOOKS.

## FIRST YEAR.

## TEXT-BOOKS.

## COLLATERAL READING.

<i>Chemistry</i> : Fownes's Chemistry; Muter's Analytical Chemistry.	Wurts's Elements of Modern Chemistry; Richter's Chem- istry.
<i>Materia Medica</i> : H. C. Wood. Mann on Prescription Writing.	Wood & Bache's Dispensary.
<i>Anatomy</i> : Leidy; Schäffer's Prac- tical Histology.	Gray; Quain; Allen; Stricker's Histology.
<i>Physiology</i> : Yeo.	Foster.
<i>General Pathology</i> : Rindfleisch's Elements of Pathology, trans- lated by Mercur; Tyson's Cell Doctrine, pp. 127-152.	

## SECOND AND THIRD YEARS.

<i>Medical Chemistry</i> : Greene; Ty- son's Practical Examination of Urine; Marshall & Smith's Analysis of Urine.	Wormley's Micro-Chemistry of Poisons; 2d edition.
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- Anatomy:* Leidy. Gray; Quain; Allen; Stricker.  
*Physiology:* Foster.
- General Pathology and Morbid Anatomy:* Rindfleisch's Elements; Coats's Manual of Pathology. Payne, Pathology and Morbid Anatomy; Orth's Diagnosis in Pathological Anatomy.
- Therapeutics:* H. C. Wood. Wood and Bache's Dispensatory.  
*Practice of Medicine:* Flint or Roberts; Bruen's Physical Diagnosis. Pepper's System of Practical Medicine; Stille's & Maisch's Dispensatory; Duhring on Diseases of the Skin; Tyson on Bright's Disease and Diabetes; Seiler, Diseases of Throat and Nose.
- Surgery:* Agnew; Ashhurst. Ashhurst's International Encyclopedia of Surgery; Erichsen; Billroth's Surgical Pathology.
- Obstetrics:* Lusk's Midwifery. Hirst's System of Obstetrics; Barnes's Obstetrics; Meigs and Pepper on Children; Starr on Children.
- Gynæcology:* Goodell's Lessons in Gynæcology. Thomas on Diseases of Women; Emmett's Gynæcology.  
*Medical Jurisprudence and Toxicology:* Reese. Reese's Manual of Toxicology; Taylor's Medical Jurisprudence, by Reese.

The cost of the necessary text-books is within \$50, distributed over the three years.

ORDER OF LECTURES DAILY.—FIRST YEAR.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A.M.	General Chemistry.	General Chemistry.	Chemical Laboratory, two hours.		Dissection.	Dissection or Phila. or Penna. Hospital, Medical and Surgical Clinics, 10 to 12.
10 A.M.	Hygiene.	Chemical Laboratory, two hours.		Topographical Anatomy.		
11 A.M.	Topographical Anatomy.				Materia Medica.	
12 M.	Practical Normal Histology, one section two hours. Others Osteology or Dissection.	Practical Normal Histology, one section two hours. Others Osteology or Dissection.	Practical Normal Histology, one section two hours. Others Dissect or attend Med. and Surg. Clinics, U. H.	Practical Normal Histology, one section two hours. Others Osteology or Dissection.	Practical Normal Histology, one section two hours. Others Osteology or Dissection.	Dissection or Medical and Surgical Clinics. U. H.
1 P.M.						
3½ P.M.		Anatomy.	General Path. until March 1st.	Anatomy.	Anatomy.	
4½ P.M.	Physiology.	Histology.	Physiology.	Bandaging, Lecture.	Physiology.	
7½ P.M.	Pharmacy, Laboratory. Half the class.	Bandaging. One-third the class.	Pharmacy, Laboratory. Half the class.	Bandaging. One-third the class.	Bandaging. One-third the class.	

U. H. University Hospital.

For the study of Histology, Osteology and Syndesmology, the class is divided into sections, one of which is occupied at a time. Students not thus engaged dissect, or if not otherwise occupied may attend general Clinics.— See SPECIAL ROSTER.

ORDER OF LECTURES, DAILY.—SECOND YEAR.

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<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
8½ A.M.						Medical Chemis- try, Laboratory two hours.
9 A.M.			Phila. Hospital, Gynæcol. Clinic.	Medical Chemistry.	Medical Chemis- try Laboratory, two hours.	
10 A.M.	Physical Diag- nosis, Practice by Sections.	Physical Diag- nosis, Lecture.	Phila. or Penna. Hospital, Medi- cal and Surgical Clinics.	Topographical Anatomy.		Phila. or Penna. Hospital, Medi- cal and Surgical Clinics.
11 A.M.	Topographical Anatomy.	Physical Diag- nosis, Practice by Sections.		Medical Clinic.	Obstetrics.	
12 M.	Practice.	Surgery.	Practical Pathol. Histology, one section two hours. Others attend Gynæco- logical and Gen- eral Surgical Clinic, U. H.	Surgery.	Surgery.	Practical Pathol. Histology, one section two hours. Others attend General Medical and Surgical Clinic, U. H.
1 P.M.	Clinic, Diseases of the Ear, U. H.	Practical Pathol. Histology, one section one hour. Others attend Clinic, Skin Diseases, U. H.		Practical Pathol. Histology, one section one hour. Others attend Clinic, Diseases of Eye, U. H.	Practical Pathol. Histology, one section one hour. Others attend Clinic, Nervous Dis- eases, U. H.	
3½ P.M.	Morbid Anatomy.	Anatomy.	Obstetrics.	Anatomy.	Anatomy.	Morbid Anatomy.
4½ P.M.	Physiology.		Physiology.	Therapeutics.	Physiology.	Therapeutics.
5½ P.M.		Practice.		Practice.		
7½ to 10 P.M.	Dissection.	Dissection.	Dissection.	Dissection.	Dissection.	

DEPARTMENT OF MEDICINE.

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.

ORDER OF LECTURES, DAILY.—THIRD YEAR.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
10 A.M.	Clinic, Diseases of Children, U. H., until Jan. 1st.	Demonstrations in Morbid Anatomy, two sections.	Phila. or Penna. Hospital, Medical and Surgical Clinics.	Autopsies, 9 o'clock.	Medical Jurisprudence.	Phila. or Penna. Hospital, Medical and Surgical Clinics.
11 A.M.	Obstetrics.	Demonstrations in Morbid Anatomy, two sections.		Medical Clinic.	Obstetrics.	
12 M.	Practice.	Surgery.	Gynæcological Clinic, U. H.	Surgery.	Surgery.	Medical Clinic, U. H.
1 P.M.	Clinic, Diseases of the Ear, U. H. Ward Classes, U. H.	Clinic, Diseases of the Skin, U. H. Ward Classes, U. H.	Surgical Clinic, U. H.	Clinic, Diseases of the Eye, U. H. Ward Classes, U. H.	Clinic, Nervous Diseases, U. H. Ward Classes, U. H.	Surgical Clinic, U. H.
3½ P.M.	Morbid Anatomy.		Obstetrics.	Didactic Gynæcology, U. H.	Didactic Dermatology, until Jan. 1st. Clinic, Gen. Ur. Diseases, U. H. after Jan. 1st.	Morbid Anatomy.
4½ P.M.	Operative Surgery and Fracture Dressing, Lecture.	Didactic Ophthalmology, U. H.	Didactic Otology until Jan. 1st U. H. Orthopædic Surgery, after Jan. 1st.	Therapeutics.	Practical Surgery, two sections, two hours.	Therapeutics.
5½ P.M.	Practical Surgery, two sections. Operat. Obstetrics, sections, after Jan. 1st.	Practice.		Practice.	Operat. Obstetrics, sections, after Jan. 1st.	

U. H. University Hospital.  
 For WARD CLASS instruction the Third Year class is divided into sections. See SPECIAL ROSTER. Students of the Third Year are practically instructed in sections in BACTERIOLOGY, Fridays, at 9 o'clock, by DR. FORMAD.

ORDER OF LECTURES, DAILY.—FOURTH YEAR.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
10 A.M.	Clinic, Diseases of Children, U. H., until Jan. 1st.		Phila. or Penna. Hospital, Medical, Surgical and Gynæcological Clinics.	Autopsies. 9 o'clock.	Medical Jurisprudence.	Phila. or Penna. Hospital, Medical, Surgical and Gynæcological Clinics.
11 A.M.				Medical Clinic.		
12 M.		Practical Gynæcology.	Gynæcological Clinic, U. H.	Practical Instruction, Orthopædies, until Jan. 1st, U. H. Practical Laryngology, after Jan. 1st, U. H.	Clinical Surgery, U. H.	Medical Clinic, U. H.
1 P.M.	Clinic, Diseases of the Ear, U. H.	Clinic, Diseases of the Skin, U. H.	Surgical Clinic, U. H.	Clinic, Diseases of the Eye, U. H.	Clinic on Nervous Diseases, U. H.	Surgical Clinic, U. H.
2 P.M.			Practical Ophthalmology, U. H.	Practical Dermatology, U. H.		
3½ P.M.	Mental Diseases.	Practical Instruction, Nervous Diseases, U. H.	Electro-Therapeutics, until Jan. 1st, U. H. Practical Instruction, Otolology, after Jan. 1st, U. H.	Didactic Gynæcology, U. H.	Didactic Dermatology, until Jan. 1st. Clinic, Gen. Ur. Diseases, U. H., after Jan. 1st.	
4½ P.M.	Operat. Obstetrics, until Jan. 1st.	Didactic Ophthalmology, U. H.	Didactic Otolology, until Jan. 1st, U. H. Orthopædic Surgery, after Jan. 1st.		Gen.-Ur. Diseases, until Jan. 1st. Operat. Surgery, after Jan. 1st.	
				Clinical Medicine. Ward Class.		Clinical Medicine. Ward Class.

U. H. University Hospital.

ROSTER OF BEDSIDE INSTRUCTION AND SPECIAL CLINICS FOR STUDENTS OF THE THIRD YEAR.  
SESSION 1888-1889.

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. 2d, to Friday, Nov. 16th, inclusive.*

	Monday.	Tuesday.	Thursday.	Friday.
Prof. Goodell . . . . .	D	—	A	B
“ Ashhurst . . . . .	A	B	C	—
“ Osler . . . . .	B	D	—	A
Special Clinics . . . . .	C	A & C	B & D	C & D

*Second Period, from Monday, Nov. 19th, to Friday, Jan. 11th, inclusive.*

	Monday.	Tuesday.	Thursday.	Friday.
Prof. Goodell . . . . .	A	—	B	C
“ Ashhurst . . . . .	B	C	D	—
“ Osler . . . . .	C	B	—	D
Special Clinics . . . . .	D	A & D	A & C	A & B

*Third Period, from Monday, Jan. 14th, to Friday, March 1st, inclusive.*

	Monday.	Tuesday.	Thursday.	Friday.
Prof. Goodell . . . . .	B	—	C	D
“ Ashhurst . . . . .	C	D	A	—
“ Osler . . . . .	D	A	—	C
Special Clinics . . . . .	A	B & C	B & D	A & B

*Fourth Period, from Monday, March 4th, to Friday, April 12th, incl.*

	Monday.	Tuesday.	Thursday.	Friday.
Prof. Goodell . . . . .	C	—	D	A
“ Ashhurst . . . . .	D	A	B	—
“ Osler . . . . .	A	C	—	B
Special Clinics . . . . .	B	B & D	A & C	C & D

The instruction is given at the University Hospital at 10 o'clock. Professor Osler will meet 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.**

Monday.	Tuesday.	Thursday.	Friday.
Prof. STRAWBRIDGE.	DR. STELWAGON.	Prof. NORRIS.	Prof. WOOD.
Otology.	Dermatology.	Ophthalmology.	Nerv. Dis.

The entire Third Year Class will attend the General Medical, Surgical, and Gynæcological 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 Tuesday.

SPECIAL ROSTER OF LABORATORY INSTRUCTION IN  
HISTOLOGY, OSTEOLOGY AND SYNDESMOLOGY,  
FOR STUDENTS OF THE FIRST YEAR.  
SESSION 1888-1889.

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

**1st Period.** *From Tuesday, Oct. 2d, to Friday, Nov. 16th, inclusive.*

12 O'CLOCK.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
Histology,	A	A	A	A	A	—
Osteology,	B	—	WHOLE CLASS.	—	C & D	—

**2d Period.** *From Monday, Nov. 19th, to Friday, Jan. 11th, inclusive.*

12 O'CLOCK.

	B	B	B	B	B	—
Histology,	B	B	B	B	B	—
Osteology,	A	—	WHOLE CLASS.	—	C & D	—

**3d Period.** *From Monday, March 14th, to Friday, March 1st, inc.*

12 O'CLOCK.

	C	C	C	C	C	—
Histology,	C	C	C	C	C	—
Osteology,	D	—	WHOLE CLASS.	—	A & B	—

**4th Period.** *From Monday, March 4th, to Friday, April 12th, inc.*

12 O'CLOCK.

	D	D	D	D	D	—
Histology,	D	D	D	D	D	—
Osteology,	C	—	WHOLE CLASS.	—	A & B	—

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 21 years of age and of good moral character.

II. He must have passed a satisfactory examination in all the branches of the curriculum, must have attended the practical instruction in all departments, 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: 1st, the WINTER SESSION, on which alone attendance is required, and which is preceded by an INTRODUCTORY COURSE of two weeks, and 2d, the SPRING SESSION.

The SPRING SESSION, 1889, begins Monday, May 6th, and continues until Commencement Day, in June.

The INTRODUCTORY COURSE for the Session of 1889-90 begins Wednesday, September 18th.

The WINTER SESSION, 1889-90, begins on Tuesday, October 1st, and ends at Commencement, on Thursday, May 1st, 1890.

*Note.* Students are earnestly requested to be in attendance at the beginning of the Session, as later entrance is attended with great disadvantage.

## 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
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

*Note.* The Tuition fee of \$150 each year is on condition that it is 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 Gynæcology of the third year . . . . .	25 00
For any one of the remaining Practical Courses . . . . .	15 00

Graduates of the School are admitted to the LECTURES free of charge; but they are required to 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. At least twenty-five dollars must be paid on account of tuition before the student can be admitted to the chemical laboratory.

*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 four free scholarships is held annually. (In 1889, on Wednesday, September 25th, at 12 o'clock, noon.) Each candidate will be required—

First. To furnish satisfactory evidence that he is 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 his qualifications in orthography and grammar.

Third. To pass a written examination in Latin prose translation on the first three books of Cæsar, 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. To pay an examination fee of \$5, which is not returned, but is transferred to the matriculation fee in case the candidate is successful.

Candidates who propose to present themselves for examination will send their names, accompanied by the necessary certificate required by the first condition, to the Dean 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.

THE STILLÉ MEDICAL LIBRARY, at its foundation in 1879, the judicious selection and generous gift of PROF. ALFRED STILLÉ, has received numerous additions, and now contains over six thousand volumes and as many pamphlets. It will be appropriately placed in the NEW LIBRARY BUILDING now being erected.

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. Especial 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. To this end separate bones are loaned the student, which he is permitted to take home for study.

THE PHYSIOLOGICAL LABORATORY is under the personal direction of the Professor of Physiology, who devotes his entire time to the subject, aided by the Demonstrator. It is furnished with every form of apparatus likely to be used by the practical physiologist. Every facility is afforded advanced students and graduates pursuing special studies and who desire to pursue in Physiology. 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, 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, Bacteriology and Experimental Pathology. It is furnished with microscopes and all appliances requisite for practical study and for original research. This Laboratory is 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 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 formulæ, 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 and splints are supplied without expense to the student.

#### THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

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 1887, there were treated 8832 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 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 23d, 1889, 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.

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.

#### THE STILLÉ, H. C. WOOD, WILLIAM PEPPER AND D. HAYES AGNEW MEDICAL SOCIETIES.

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 discussing of papers referring to the theory and practice of medicine and surgery.

#### PRIZES.


THE MEDICAL NEWS PRIZE of One Hundred Dollars is awarded to the member of the Graduating Class for the best Essay.

THE ALUMNI MEDAL is awarded by the SOCIETY OF THE ALUMNI of the Medical Department of the University to the member of the Graduating Class who attains the highest general average in examinations.

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.

FOUR PRIZES are awarded by the Demonstrator of Surgery for proficiency in Operating and Bandaging;—a first and a second prize of Agnew's and Ashhurst's Surgery (respectively) to students of the first year; a first prize of a copy of Agnew's Surgery, and a second of a pocket-case of instruments, to members of the graduating class.

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

 *The address of the Dean 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 annual meeting of the Society, and is notified of the Anniversary Reunion, which take place at Commencement time.

It is urgently required 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 1888.

*President*—ALFRED STILLÉ, M.D., LL.D.

*Vice-Presidents*—MEREDITH CLYMER, M.D.

W. S. W. RUSCHENBERGER, M.D.

TRAILL GREEN, M.D.

*Secretary and Treasurer*—THOMAS R. NEILSON, M.D., 223 South 17th St., Philadelphia.

*Chairman of Executive Committee*—S. D. RISLEY, M.D., 1722 Walnut St., Philadelphia.

The Alumni Society has just completed the catalogue of the graduates of the Medical Department by the publication of an appendix, covering the years 1878-87 inclusive. Catalogues may be obtained by addressing, or applying to Mr. Wm. H. Salvador, Clerk of the Medical Department, University.

Price: Catalogue, *complete*, . . . . . \$1.25

Appendix alone, . . . . . .25

*Alumni are requested to send to the Secretary of the Society of the Alumni notice of change of residence or other information likely to be of service in perfecting subsequent editions.*

## AUXILIARY DEPARTMENT OF MEDICINE.

### FACULTY.

- WILLIAM PEPPER, M.D., LL.D., PROVOST, and *ex-officio* President.  
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 LEIDY, M.D., LL.D., Professor of Comparative Anatomy  
and Zoology.  
SAMUEL G. DIXON, M.D., Professor of Hygiene.  
SAMUEL G. DIXON, *Dean*.

### MATRICULATES.

Casselberry, W. E., M.D.,	Chicago, Ills.
Doan, Henry H.,	Philadelphia.
Davis, J. Aubrey, M.D.,	do.
Egbert, Seneca, M.D.,	do.
Galloway, Albert B., A.B. (C.H.S.),	do.
Jameson, William B., M.D.,	do.
Massinger, Charles Jerome,	Chalfont.
Morton, Samuel W., M.D.,	Philadelphia.
Phillips, Horace,	do.
Rothermel, Pius,	Molltown.
Scheider, Louis Theo.,	Philadelphia.
Stitt, E. R., A.B., Ph.G.,	Rock Hill, S. C.
Wilson, Samuel M., A.B. (C.H.S.),	Philadelphia.
	Total, 13.

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 1889-90 will begin on Tuesday, 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 a matriculation fee of five dollars and a tuition fee of fifteen dollars for each professor's course, or thirty-five dollars for all the courses. The graduation fee is ten dollars.

#### DEGREES.

Graduates in Medicine of this University, or of other Medical Schools on its *ad eundem* list, who have attended two full courses of instruction in this Department, have presented an *original thesis* on one of the subjects taught, and have 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.

(3) Candidates must be present at Commencement, unless excused by the Faculty.

#### SPECIAL STUDENTS.

The lectures and laboratories of this Department are open to other persons than those 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. Such special students receive no degrees, but the Faculty may give certificates of attendance.

#### PRIZE.

A fifty-dollar microscope will be given to the student who passes the best examination in Hygiene, provided that the examination is satisfactory to the Professor of this branch.

## 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 and Hygiene; 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 dead*); 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.

GEOLOGY.—Second Year: Lectures and practical work. This includes lithological classification, stratification or bedding, 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. Chemistry of Cooking. 6. Principles of hospital construction; military, naval, school, industrial and personal hygiene.

**COMPARATIVE ANATOMY AND ZOÖLOGY.**—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:—

Taylor's *Medical Jurisprudence* (American edition by Reese).  
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*.  
Nicholson's *Manual of Zoology*.  
Gegenbaur's *Elements of Comparative Anatomy*.  
Balfour's *Comparative Embryology*.  
Williams on *Chemistry of Cooking*.

# HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

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HORACE Y. EVANS, M.D., RICHARD A. CLEEMANN, M.D.,  
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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 pages 74-76.

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 for out-door patients. In connection with the Orthopædic Dispensary is a workshop, in which braces and other appliances are made.

The hall-ways 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.

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 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.

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

Communications concerning the business of the Hospital and the admission of patients should be addressed to the Superintendent, Miss Locke, and not to the Dean or Secretary of the Medical Faculty.

## 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.

### CLINICAL INSTRUCTORS.

DR. C. S. BECK,

DR. E. H. NEALL,

DR. GEO. W. KLUMP,

DR. H. C. REGISTER,

DR. W. G. A. BONWILL,

DR. I. F. WARDWELL,

DR. W. R. MILLARD,

DR. J. A. WOODWARD,

DR. R. R. UNDERWOOD,

DR. H. C. LONGNECKER.

### DEMONSTRATORS.

WM. DIEHL, D.D.S., Demonstrator of Operative Dentistry.

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

GEORGE G. MILLIKEN, D.D.S., Assistant Demonstrator of Operative Dentistry.

JAMES E. LODER, D.D.S., Assistant Demonstrator of Operative Dentistry.

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

JOSEPH W. WHITE, D.D.S., Assistant Demonstrator of Operative Dentistry.

AMBLER TEES, JR., D.D.S., Assistant Demonstrator of Mechanical Dentistry.

MILTON POWEL, D.D.S., Assistant Demonstrator of Operative Dentistry.

- R. HAMILL D. SWING, D.D.S., Assistant Demonstrator of Mechanical Dentistry.  
 FREDERICK W. AMEND, JR., D.D.S., Assistant Demonstrator of Mechanical Dentistry.  
 MILTON N. KEIM, JR., D.D.S., Assistant Demonstrator of Mechanical Dentistry.  
 HORACE McCANNA, D.D.S., Assistant Demonstrator of Mechanical Dentistry.  
 J. EDWARD DUNWOODY, D.D.S., Assistant Demonstrator of Operative Dentistry.  
 JOHN MARSHALL, M.D., NAT.Sc.D., Demonstrator of Practical Chemistry.  
 JOHN B. DEEVER, M.D., Demonstrator of Anatomy.

## MATRICULATES.

## SECOND YEAR.

- |   |   |  |
|---|---|--|
| Adams, Philip W.,<br>Albury, Robert W.,<br>Ayala, Victor M.,<br>Barnett, George E.,<br>Bruce, James A.,<br>Calves, Antonio D.,<br>Cheney, Lucius W.,<br>Cooney, Edward J. M.,<br>Cooper, Arthur W., | Worcester, Mass.,<br>Nassau, Bahamas,<br>Matanzas, Cuba,<br>WallaWalla, W. T.,<br>Melbourne, Australia,<br>Havana, Cuba,<br>Lee, Mass.,<br>Providence, R. I.,<br>Omaha, Nebraska, | J. F. Adams.<br>University.<br>University.<br>A. W. Calder.<br>Heath & Kernot.<br>University.<br>S. K. Saunders.<br>G. Carrow Chance.<br>R. G. & A. J. Richter<br>& T. Judd. |
| Culpeper, Wm. A., M.D.,<br>Darby, George D. B.,<br>DeLacy, William P.,<br>DeWalt, J. Edward,  | Barbados, W. I.,<br>Lansdowne,<br>Scranton,<br>Freeport, Ills.,   | R. L. Culpeper.<br>Edwin T. Darby.<br>W. B. Henwood.<br>Kingsley, Allen &<br>Sunderland.   |
| Diehl, Walter R.,<br>Dunbar, Henry T.,<br>Eaton, Horace E.,<br>Essig, Norman S.,<br>Evans, Milton H.,<br>Faust, William F., B.S.,<br>Focht, Frank D.,<br>Fordham, J. Merritt,<br>Fuller John G.,    | Pittsburgh,<br>N. Hartland, Vt.,<br>Parrsboro, N. S.,<br>Philadelphia,<br>Tower City,<br>Womelsdorf,<br>Philadelphia,<br>Scranton,<br>Philadelphia,                               | Chas. E. Diehl.<br>G. W. Hoffman.<br>University.<br>Charles J. Essig.<br>A. S. Koser.<br>P. K. Filbert.<br>University.<br>J. L. Fordham.<br>W. L. Cave & G. G.<br>Milliken.  |
| Gerhards, Georg,<br>Goldsmith, Adin A.,<br>Goldsmith, Sam'l L., A.B.,<br>Gray, George R.,<br>Grotefend, George A.,<br>Guiteras, Albert F.,<br>Hart, Frank T.,                                       | Düsseldorf, Germany,<br>Chester, N. H.,<br>Philadelphia,<br>Worcester, Mass.,<br>Shasta, California,<br>Matanzas, Cuba,<br>Pennington, N. J.,                                     | University of Berlin.<br>Boston Dental Coll.<br>W. Lewis Cave.<br>Harris & Toombs.<br>University.<br>University.<br>University.  |

Horgan, Cornelius F.,	Philadelphia,	University.
Keyes, Charles,	Rio de Janeiro, Brazil,	Dental Dept., Med. Fac., Rio de Janeiro.
Lamson, Frank E.,	Worcester, Mass.,	University.
Lamson, William F.,	New York, N. Y.,	University.
Leake, Walter J.,	Lockport, N. Y.,	Chas. Watts.
Littig, Henry A.,	Davenport, Iowa,	University.
Lowry, Samuel S.,	Brookville,	M. B. Lowry.
Luxemburger, George,	Scranton,	University.
Mayer, George H.,	Mauch Chunk,	J. A. Mayer.
Miro, José Luis,	Havana, Cuba,	University.
Mogel, Peter S.,	Bernville,	Eli Slegel.
Nunez, Emilio,	Sagua, Cuba,	University.
O'Bourke, John M.,	Trinidad, Cuba,	University.
Oser, William,	Basel, Switzerland,	Univ. of Geneva.
Parry, Ira W.,	Utica, N. Y.,	A. Retter.
Peeso, Frederic A.,	Syracuse, N. Y.,	University.
Rees, Frank W.,	Walla Walla, W. T.,	L. M. Davis.
ReQua, Leroy,	Rochester, N. Y.,	J. ReQua.
Rhone, Charles E.,	Bellefonte,	J. W. Rhone.
Ribas, Domingos P.,	Pelotas, Brazil,	Dental Dept., Med. Fac., Rio de Janeiro.
Robinson, John Best,	Philadelphia,	University.
Root, George S.,	Lockport, N. Y.,	F. Balcom.
Roy, Frank E.,	Bridgeport, Conn.,	L. E. Sage.
Sauers, Frederick,	Philadelphia,	University.
Seebold, Frank P.,	Millersburg,	E. H. Leffler.
Stiles, William E., M. D.,	Pittston,	University.
Stine, Frederick M.,	Walla Walla, W. T.,	University.
Sweetnam, Robert W.,	Manistee, Mich.,	J. L. Sweetnam.
Trogdon, Rosecrans,	Paris, Ills.,	H. J. Ball.
Velazquez, Miguel A.,	St. Jose, Costa Rica,	University of Mich.
White, Leonard,	Sumter, S. C.,	University.
Wix, William H.,	Wilmington, Del.,	University.
Woodward, Wilber S.,	Cincinnati, Ohio,	W. H. Woodward.
Woolsey, Charles G.,	Girard,	W. L. Battles.

Students of the Second Year, 63.

FIRST YEAR.

Barnard, William E.,	Still Pond, Md.,	R. H. John.
Bowman, Ira C.,	Lebanon,	J. P. Bowman.
Burket, Frank S.,	Williamsport,	C. C. Walker.
Clement, Frederick G.,	Oxford,	J. M. Clement.
Cohn, Alfred J.,	Milwaukee, Wis.,	B. G. Maercklein.
Compton, James D.,	Churchtown,	S. A. Zell.
Crothers, J. Ernest,	Greenfield, Ohio,	Edwin J. Waddel.
Davenport, Kirk A.,	Union, N. Y.,	I. B. Davenport.
Davenport, William S.,	Union, N. Y.,	I. B. Davenport.
DeHaven, William W.,	Churchtown,	S. A. Zell.
DeVore, Wesley,	Freeport, Ills.,	University.
Dunn, William C.,	Meadville,	D. C. Dunn.
Eagan, Owen J.,	Fall River, Mass.,	University.

Emerson, Charles A.,	Bellefontaine, Ohio,	University.
Fair, Delbert D.,	Freeport, Ills.,	W. W. Krape.
Flotzinger, Aloysius,	Pittsburgh,	University.
Foster, A. Lee,	Philadelphia,	University.
Freeman, Stewart,	Milton, Nova Scotia,	University.
French, Arthur T.,	Ocala, Fla.,	J. C. Perine.
Geilfuss, Edwin A.,	Milwaukee, Wis.,	W. C. Wendel.
Gibbon, John H.,	Charlotte, N. C.,	Robt. Gibbon.
Giles, William J.,	Montreal, Canada,	University.
Graves, Edwin D.,	Philadelphia,	C. E. Graves.
Haupt, J. A. Jacob,	Pittsburgh,	H. L. Reinecke.
Holly, Sabourin,	Port au Prince, Hayti,	University.
Hubbel, George C.,	Pittsfield, Mass.,	S. S. Stowell.
Hyatt, L. Stanford,	Connellsville,	University.
Hyndman, G. Edward,	Sherbrooke, Canada,	L. W. Dowlin.
Jackson, Harvey N.,	Ft. Atkinson, Wis.,	Geo. C. Kollock.
Keener, George I.,	Morgantown, W. Va.,	Geo. B. Morris.
Küsel, George C.,	Philadelphia,	G. J. R. Miller.
Lane, James G.,	Cora,	T. M. Rhodes.
Leard, Norman W.,	Tryon, P. E. I.,	University.
Leech, William W.,	Philadelphia,	H. K. Leech.
Lombard, Rafael M.,	Cienfuegos, Cuba,	University.
Ludwick, John G.,	Honey Brook,	J. H. Sahler.
McCall, Frederic W.,	Binghamton, N. Y.,	Chas. W. McCall.
McCartney, Frank M.,	Randolph,	University.
Matten, Harry D.,	Port Clinton,	University.
* Meixell, Edwin W.,	Wilkes-Barre,	University.
Norton, David A.,	Madison, Wis.,	W. D. Stillman & E. C. Weston.
O'Hara, Patrick J.,	Parsons,	University.
O'Sullivan, Rich. B., B.A.,	St. Andrews, Canada,	University.
Paynter, George J.,	Philadelphia,	John C. Paynter.
Proctor, George S.,	Pittsburgh,	S. S. Macfarlane.
Pugh, Abe L.,	Pittston,	John McDougall.
Requa, Herbert D.,	Rochester, N. Y.,	Davis & Link.
Romig, E. Lincoln,	Philadelphia,	G. J. R. Miller.
Root, Clarence M.,	Lockport, N. Y.,	T. Balcom.
Russell, Howard C.,	Washington, D. C.,	University.
Sacaza, Santiago,	Granada, Nicaragua,	University.
Sayres, B. Franklin,	Philadelphia,	University.
Simpson, Robert,	St. Andrews, Canada,	G. W. Beers.
Snyder, Charles L.,	Freeport, Ills.,	Allen & Sunderland.
Spencer, Walter A.,	Pleasant Mount,	University.
* Starr, George E.,	Germantown,	University.
Stevens, Frederick W.,	Dartmouth, N. S.,	A. C. Cogswell.
Trout, Will H.,	Landisville,	Martin B. Musser.
Valiente, Francis P.,	Santiago, Cuba,	University.
* Vaughan, Herbert E.,	Springville, N. Y.,	A. L. Vaughan.
Whitmarsh, Herbert D.,	Cortland, N. Y.,	Chas. W. McCall.
Wood, Linneaus B.,	New Bedford, Mass.,	Joseph Head.
* Yerger, George M.,	Philadelphia,	University.

Students of the First Year, 63.

\* Not in attendance.

## SPECIAL STUDENT.

Despecher, Felix J., D.D.S., Orsay, France,	University.	
Students of the Second Year,		63
Students of the First Year,		63
Special Student,		1
Total,		127

The total number of new matriculates the present session, including those admitted to advanced standing, is 74.

## SUMMARY.

Australia	1	Michigan	1
Bahamas, W. I.	1	Nebraska	1
Barbados, W. I.	1	New Hampshire	1
Brazil	2	New Jersey	1
California	1	New York	13
Canada	4	Nicaragua, C. A.	1
Connecticut	1	North Carolina	1
Costa Rica	1	Nova Scotia	3
Cuba	8	Ohio	3
Delaware	1	Pennsylvania	49
District of Columbia	1	Prince Edwards Island	1
Florida	1	Rhode Island	1
France	1	South Carolina	1
Germany	1	Switzerland	1
Hayti	1	Vermont	1
Illinois	5	Washington Territory	3
Iowa	1	West Virginia	1
Massachusetts	7	Wisconsin	4
Maryland	1		
		Total	127

## 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.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A.M.	General Chemistry.	General Chemistry.				
10 A.M.	Mechanical Clinic.			Mechanical Clinic.	Mechanical Clinic.	
11 A.M.		Chemical Laboratory.	Chemical Laboratory.			
12 M.						Dental Materia Medica.
1 P.M.		Operative Clinic.		Operative Clinic.	Operative Clinic.	
2½ P.M.	Operative Clinic.		Operative Clinic.			
3½ P.M.		Anatomy.		Anatomy.	Anatomy.	
4½ P.M.	Physiology.	Operative Dentistry.	Physiology.	Operative Dentistry.	Physiology.	
5½ P.M.	Mechanical Dentistry.		Metallurgy.		Dental Pathology and Therapeutics.	

The curriculum of the first year is identical for Medical and Dental students as far as Anatomy, Chemistry, and Physiology are concerned.

## SECOND YEAR.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A.M.	Laboratory of Mechanical Dentistry, or Operative Clinic.	Laboratory of Mechanical Dentistry, or Operative Clinic.	Laboratory of Mechanical Dentistry, or Operative Clinic.	Laboratory of Mechanical Dentistry, or Operative Clinic.	Laboratory of Mechanical Dentistry, or Operative Clinic.	Laboratory of Mechanical Dentistry, or Operative Clinic.
10 A.M.						
11 A.M.						
12 M.			Univ. Hosp. Clinics.			
1 P.M.		Operative Clinic.	Operative Clinic.	Operative Clinic.	Operative Clinic.	
2½ P.M.	Operative Clinic.					
3½ P.M.		Anatomy.		Anatomy.	Anatomy.	
4½ P.M.	Physiology.	Operative Dentistry.	Physiology.	Operative Dentistry.	Physiology.	
5½ P.M.	Mechanical Dentistry.		Metallurgy.		Dental Pathology and Therapeutics.	

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 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 receive 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.

General and special Histology will be taught in the laboratory, and lectures will also be given by the Demonstrator of this Department.

#### 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 six thousand bound volumes and as many unbound volumes and pamphlets. 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*, 1889, begins on Thursday, May 2d, and ends the last of June. The work of this session is entirely practical; no lectures are delivered.

The *Introductory Session* begins on Monday, September 16th, and is free to those who enter for the Winter Session.

The *Winter Session*, 1889-90 begins on Tuesday, October 1st, 1889, and ends on May 1st, 1890.

## EXAMINATIONS.

At the close of the first year, examinations are held in Chemistry and Materia Medica. 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 winters' 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 are a good English education. Students who have certificates properly attested from colleges, or schools of reputable character, will be accepted without examination.

#### 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, must have performed thoroughly and to the satisfaction of the Professor of Operative Dentistry all the usual dental operations, must have undertaken at least one artificial case, and brought it completed, with the patient, to the Professor of Mechanical Dentistry, thirty days before the close of the term, and must have prepared 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 have been 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*; Kingsley's *Oral Deformities*; Essig's *Dental Metallurgy*.

*On Anatomy:* Leidy's *Elementary Treatise on Human Anatomy*; Gray's *Anatomy*; Stricker's *Manual of Histology*.

- 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; Mitchell's Dental 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.*

## EXPENSES.

## WINTER TERM.

Matriculation Fee, . . . . .	\$5 00
<i>First Year.</i>	
Tuition Fee, . . . . .	\$100 00
<i>Second Year.</i>	
Tuition Fee, . . . . .	\$100 00
Fee for Dissection, . . . . .	10 00
Graduation Fee, . . . . .	30 00
—	
For each additional year, . . . . .	\$100 00

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.

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.

Board can be obtained in Philadelphia for \$4 per week and upwards. Further information may be obtained from

JAMES TRUMAN, Secretary,  
3249 Chestnut Street, Philadelphia, Pa.

The subjoined reports give some conception of the character and of the mass of work performed in the Operative and Mechanical Departments; but the amount of costly material and of careful attention necessary for the insertion of 4392 gold fillings can be appreciated only by the experienced operator.

The number of patients (5012) exhibits not only a gratifying confidence in the management of these departments, but also the value of the service to a large class of persons of limited means.

## OPERATIVE DEPARTMENT.

Session of 1887-8.

Number of Patients . . . . . 5012.

Gold Fillings . . . . .	4392
Tin Fillings . . . . .	1047
Cement Fillings . . . . .	1166
Amalgam " . . . . .	309
Gutta Percha Fillings . . . . .	733
Canal " . . . . .	261
Pulps capped . . . . .	173
" devitalized . . . . .	197
" extracted . . . . .	233
Artificial Crowns . . . . .	95
Pulpitis . . . . .	364
Treatment Pulp Canals . . . . .	610
Pericementitis . . . . .	121
Alveolar Abscess . . . . .	150
Inflammation of Gums . . . . .	190
Pyorrhœa Alveolaris . . . . .	79
Irregularities Corrected . . . . .	80
Salivary Calculi . . . . .	441
Teeth and Roots extracted . . . . .	4075
Total, . . . . .	14,616

Amount of gold used for fillings, and exclusive of that used for plate and crown work in Laboratory, 52 ounces (4 lbs. 4 oz.).

## MECHANICAL DEPARTMENT.

Session of 1887-8.

Number of patients . . . . . 634.

Full cases . . . . .	313
Partial cases . . . . .	168
Pivot teeth . . . . .	39
Repairing cases . . . . .	30
Regulating " . . . . .	137
Total, . . . . .	687

## DEPARTMENT OF VETERINARY MEDICINE.

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### FACULTY.

- WILLIAM PEPPER, M.D., LL.D., PROVOST, and *ex-officio* President.  
RUSH SHIPPEN 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, B.S., M.D., Professor of Botany.  
ROBERT MEADE SMITH, M.D., Professor of Comparative Physi-  
ology.  
WILLIAM L. ZUILL, M.D., D.V.S., Professor of Surgical Pathology  
and Obstetrics.  
WILLIAM POWELL WILSON, Sc.D., Professor of Anatomy and  
Physiology of Plants.

### DEMONSTRATORS.

- ALEXANDER GLASS, V.S., Demonstrator of Therapeutics, Materia  
Medica, and Pharmacy.  
HENRY F. FORMAD, M.D., Demonstrator of Pathology and Morbid  
Anatomy.  
SIMON J. J. HARGER, V.M.D., Demonstrator of Veterinary Anatomy.  
CHARLES WILLIAMS, V.M.D., Demonstrator of Surgical Pathology.  
JOHN MARSHALL, M.D., NAT.Sc.D., Demonstrator of Practical  
Chemistry.  
LOUIS OLRV LUSSON, V.M.D., Demonstrator of Internal Pathology.

GULDIN R. HARTMAN, V.M.D., Assistant Demonstrator of Anatomy.

GARRETT EDWARDS, Farrier, Demonstrator of Forging and Horse-shoeing.

R. S. HUIDEKOPER, Dean,  
36th and Pine Streets, Philadelphia, Pa.

MATRICULATES, 1888-89.

THIRD YEAR.

Baer, Benjamin S. J.,	Mount Joy.
Boon, George M.,	Philadelphia.
Brimhall, Simon D.,	Minneapolis, Minn.
Gatchel, Enoch M.,	West Chester.
Harker, George Frank,	Wrightstown, N. J.
Mackie, Frank H.,	Fair Hill, Md.
Magill, Chalkley H.,	Philadelphia.
Mattson, William H.,	Ward.
McNeill, James C.,	Pittsburgh.
Smith, Frank L.,	Philadelphia.
Willard, Samuel B.,	Yardley.

SECOND YEAR.

Bannister, Harry,	Philadelphia.
Batten, Eugene C.,	Philadelphia.
Cohen, Nathan A.,	Philadelphia.
Dohan, Charles A.,	Philadelphia.
Eshleman, John M.,	Fagg's Manor.
Harrigan, John W.,	Philadelphia.
Jolly, Charles Rudolph,	Philadelphia.
Jones, William H.,	Millerstown.
Kean, Thomas J.,	Lock Haven.
Landes, Edgar H.,	Philadelphia.
Larzelere, Samuel D.,	Willow Grove.
Le Fevbre, Christian E.,	Lampeter.
Maher, John J.,	Philadelphia.
Meisner, Harry A.,	Baltimore, Md.
Michener, Mayhew,	Colmar.
Millar, Harry C.,	Hatboro'.
Muir, Edwin S.,	Philadelphia.
Oat, Charles F.,	West Chester.
Pearson, Leonard,	Ithaca, N. Y.
Raynor, Thomas,	Philadelphia.
Seitter, Joseph B.,	Philadelphia.
Turner, John P.,	West Chester.
Worrall, Frederick H.,	Media.
Zuill, Jeremiah P.,	Bermuda, W. I.

FIRST YEAR.

Agnew, Thomas,	Kennett Square.
Bartholomew, J. Cleaver,	Philadelphia.
Bickel, Samuel D.,	Philadelphia.

Bunting, Elwood B.,	Burlington, N. J.
Conard, Milton E.,	West Grove.
Conrow, Abraham E.,	Moorestown, N. J.
Edwards, Warren,	Philadelphia.
Embery, Frank,	Philadelphia.
Entriikin, Harry D.,	Kennett Square.
Faughnan, John C.	
Geary, Alfred W.,	Philadelphia.
Herbert, Charles O.,	Frankford.
Jefferis, Joseph R.,	Wilmington, Del.
Massinger, Eber M.,	Chalfont.
Moran, Francis A.,	Penllyn.
Pearson, John A.,	Rush Centre, Kansas.
Records, John H.,	Lewes, Del.
Schollenberger, Christian,	Philadelphia.
Senseman, B. Frank,	Mechanicsburg.
Sullivan, Denis O.,	Devon.
Thudichum, Carl Louis,	Philadelphia.
Wheeler, Arthur S.,	New Orleans, La.

SPECIAL STUDENT.

Hart, John R.,	Philadelphia.
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STUDENTS.

Students of the Third Year, . . . . .	11
Students of the Second Year, . . . . .	24
Students of the First Year, . . . . .	22
Special Student, . . . . .	1
	58

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 his 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. They have a street frontage of over 600 feet, and 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, or other animals.

#### ADMISSION.

Candidates who have received a college degree, or have 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.

Other 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*).

Graduates of recognized Medical Schools, or of recognized Veterinary Schools which require three years attendance, may enter the second year without examination. Students who have attended one or more sessions in a recognized Veterinary or Medical School will be allowed credit for time, but must pass an examination upon entering.

#### INSTRUCTION.

The Course of Instruction extends over three years, with one session from the first of October until 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, Zoology, Surgical Pathology, and Internal Pathology and the Contagious Diseases.*

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 attends Clinics, and serves as aid in the Hospital; in the Third Year he is placed in charge of sick animals, and is required to prepare Clinical Reports and make Autopsies. He also makes 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. Second and Third Year students are required to do resident duty in the Hospital.

#### 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 formulæ, 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 Veteri-

nary Assistant of the Professor of Therapeutics. This course includes the study of all the drugs and preparations in the U. S. Pharmacopœia 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 details of two students each 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 constitutions 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, the 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 requires five hours a week during the whole of the first year.

Two objects are kept in view. The first is to give such a general idea of the anatomy and physiology of plants, of the principles of classification, and of the doctrines of evolution as are essential to every one claiming to have a scientific education. This should be gained by the course of forty lectures in which these subjects are carefully elucidated.

The second object is to train observers, as well as to teach the practical relations of Forage plants, "loco plants" and noxious weeds to the veterinary art. It cannot be too fully impressed upon the student in this department that, owing to the intimate relations between agriculture and veterinary medicine, his future prosperity and usefulness may be largely determined by his ability to recognize promptly plants which are known or supposed to be injurious to our domestic animals. The so-called "loco plants" are the cause each year of an immense loss to stock raisers of the United States. Then, too, there is much to be learned and taught as to the relative nutritive values of the forage plants of every region of the country. This the future Veterinarian must be prepared to do. Some grasses sold as forage can be shown to be absolutely injurious. These should be recognized. To meet this second object the student has, during the first term, four hours drill each week in observation and description of plants. During the second term he also has four hours each week devoted to analytical botany. The work then is done entirely in the laboratory, and to accomplish it, each student is provided with a dissecting microscope, for which he receives receipts, and for which he is responsible.

## 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, with 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, Urinogenital 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 during the day by windows on both sides, 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 tissue 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 a craft which he is constantly called upon to direct.

At eight forges the students are instructed twice a week, in sections of sixteen.

The student is required to forge the Horseshoe from the mould, and to prepare the horse's hoof, to remove the shoe, and to put it on. The shoeing is first learned on the dead hoof, then on the living hoof. 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 of 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, while to the students of the Third Year are given weekly demonstrations in Microscopic Morbid Anatomy. For the latter purpose there are at hand 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 the 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 Disposition, 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 lectures. The other year, given to the study of Major Surgery, comprises about ninety 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 is one of the special features of our school. In no other school in America is this mode of instruction as thoroughly carried out as in this school.

The Senior class is required to devote one entire day of each week to Practical Operative Surgery, when the *modus operandi* of every operation likely to occur in Veterinary practice is taught.

Instruction in Bandaging and Dressing, and the proper manner of application 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, 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.

CORNS, Fissures, Keraphyllocele, Keratocele, Pricking, Burnt Sole.

QUITTOR.—Cutaneous, Cartilaginous, Tendinous.

STREET NAIL, Acute Founder, Navicular Disease, Thrush, Gangrene, Necrosis, Caries, Purulent Infection.

HERNIA.—Acute, Chronic, Inguinal, Ventral, Evantration, Diaphragmatic, Umbilical.

TUMORS.—Lipoma, Encondroma, Osteoma, Odontoma, Lymphadenoma, Osteosarcoma, Carcinomas, Inflammation of the Sinus.

CASTRATION.—Normal, Cryptorchia, Female, Other Animals.

PATHOLOGICAL SHOETING.

### 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 manikin, 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, Dystokia, Maternal Foetal, Diseases of the Foetus, Monstrosities, Dystokia from Malpresentation, Obstetrical Operations, Accidents 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 Impression, the effect of Climate, Aliment, Work, and the means to be employed in the Selection and Handling of Animals so as to derive from them the most economical benefit, whether as motors, as 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 through the

liberality of the Pennsylvania Veterinarians. Valuable and rare specimens are constantly added to it from the animals which die 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 the Elephant, Giraffe, Camel, Zebus, Tapir, Pecary, Antelope, 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 and to administer the medicines, and are allowed, under the supervision of the Clinical Professors, to perform whatever operations regard for the safety of the animal permits. Details 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, or when other students are absent, and perform the duties usually assigned to a "resident."

A detail from the Second Year class compounds all medicines used in the Hospital.

A large number of animals from the private practice of the Professors, as also from the Dispensary practice of the department, are treated at the clinic daily, from 8 to 10 A. M., giving abundant material for clinical lectures and practical instruction.

#### FARRIERY.

The student removes the shoes of the animals under 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, affording 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. These 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 *Veterinaria Medicinæ Doctor (V.M.D.)*.

#### FEES.

Matriculation Fee (paid once only) five dollars. Tuition Fee, annually, one hundred dollars in advance; or, if division of payments is desired, sixty dollars before November 1st and fifty dollars before February 1st.

For further information, address,

RUSH SHIPPEN HUIDEKOPER, M.D.,  
*Dean of Veterinary Department,*  
 University of Pennsylvania.

#### HOSPITAL:

Thirty-sixth and Pine Streets, Philadelphia.

The Hospital of the VETERINARY DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA is supplied with every possible facility for the best handling and care of sick animals of all kinds.

Animals are received into the Hospital at any time, DAY OR NIGHT.

OUT-PATIENTS and OPERATIONS from 8 to 10 A.M.

The following Rates of Board, including Medicine and Surgical Shoeing, are charged:—

Horses and Mules, . . . . .	per day, \$1.00
Donkeys and Dogs, . . . . .	" .50
Cattle, Sheep, Cats, Birds, and small pet animals, . . . . .	" .25

PROFESSIONAL CHARGES, according to the nature of the case.

Animals belonging to indigent and deserving persons are treated without charge, and, when taken into the Hospital, pay board only. The owners of these animals must be known to the Veterinary Surgeons, or to other responsible citizens of Philadelphia.

The animals are under the professional care of Dr. HUIDEKOPER and Dr. ZUILL, Veterinarians.

A competent Farrier is attached to the Hospital, who is prepared to do a LIMITED AMOUNT OF ORDINARY SHOEING in addition to SHOEING FOR LAMENESS; the LATTER ONLY under the direction of the Medical Staff.

## CHARGES.

## ORDINARY SHOING.

Full Set of Shoes, . . . . .	\$3.50
Pair of Front Shoes, . . . . .	2.50
Removal of Set of Shoes, . . . . .	1.00

## PATHOLOGICAL SHOING.

Bar or Defy's Shoe (each), . . . . .	\$2.00
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Other Shoes according to nature of work required.

The VETERINARY DEPARTMENT and HOSPITAL is open for inspection by visitors on Tuesday and Saturday afternoons, from two until five o'clock.

## TEXT AND REFERENCE BOOKS.

## FIRST YEAR.

- Chemistry*.—Fownes; Mutter's Analytical.  
*Materia Medica and Therapeutics*.—H. C. Wood; Finlay Dun's Veterinary Medicine.  
*Anatomy*.—Chauveau's Comparative.  
*Histology*.—Klein.  
*Physiology*.—Smith's Physiology of the Domesticated Animals.  
*Botany*.—Bessey; Gray's Manual.  
*Zoology*.—Nicholson's Manual.  
*Horse-shoeing*.—Fleming.

## SECOND YEAR.

- General and Internal Pathology*.—Robertson's Practice of Equine Medicine; William's Principles and Practice of Veterinary Medicine; Steele's Diseases of the Ox; Fleming, Manual of Veterinary Sanitary Science and Police; Steel, Canine Diseases.  
*Surgical Pathology*.—Fleming's Operative Veterinary Surgery; Williams' Principles and Practice of Veterinary Surgery; Zundel on the Horse's Foot; Liautard, Lameness of Horses.  
*Medical Chemistry*.—Greene; Tyson's Practical Examination of the Urine; Marshall and Smith's Chemical Examination of the Urine.

## THIRD YEAR.

- Obstetrics*.—Fleming.  
 The Journal of Comparative Medicine and Surgery.  
 The American Veterinary Review.

ROSTER, 1888-89.—FIRST YEAR.

<i>Hour.</i>	<i>Sunday.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
8 A.M.					Roll Call.	Roll Call.	Roll Call.
9 A.M.		Chemistry.	Chemistry.	Practical Chemistry. 2 hours.	Farriery and Dissections.	Farriery and Dissections.	Farriery and Dissections.
10 A.M.		Roll Call.	Practical Chemistry. 2 hours.				
11 A.M.		Farriery and Dissections.		Dissections.			Physiology.
12 M.			Physiology.		Physiology.		
1½ P.M.				Zoology.			
2 P.M.		Roll Call.			Botany.	Roll Call.	
3 P.M.		Dissections.	Practical Botany.			Dissections.	
3½ P.M.		Materia Medica.		Practical Pharmacy.	Practical Botany.		
4 P.M.							
4½ P.M.		Anatomy.		Anatomy.		Anatomy.	
5 P.M.							
7 to 9½		Roll Call. Repetition. Anatomy Dissections.	Roll Call. Dissections.	Roll Call. Dissections.	Roll Call. Dissections.	Roll Call. Repetition. Anatomy Dissections.	

**ROSTER, 1888-89.—SECOND YEAR.**

<i>Hour.</i>	<i>Sunday.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
8 A.M.		Clinic.	Clinic.	Clinic.	Clinic.	Clinic.	Clinic.
9 A.M.					Medical Chemistry.	Chemical Laboratory. 2 hours.	Chemical Laboratory 2 hours.
10 A.M.	Hospital Visit.	Surgical Pathology.	General Pathology.	Surgical Pathology.	Surgical Pathology.		
11 A.M.		Internal Pathology.	Repetition. Int. Pathology.	Internal Pathology.	Internal Pathology.	Roll Call.	Physiology.
12 M.		Thesis.	Physiology.		Physiology.		
1½ P.M.				Zoology.		Dissections.	
2 P.M.		Roll Call.	Roll Call.	Roll Call.	Roll Call.	Roll Call.	
3 P.M.		Dissections.					
3½ P.M.		Morbid Anatomy.	Dissections.	Dissections.	Dissections.	Dissections.	Morbid Anatomy.
4½ P.M.		Anatomy.	Repetition. Therapeutics.	Anatomy.	Therapeutics.	Anatomy.	Therapeutics.
5 P.M.		Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.
7 to 9½		Roll Call. Repetition. Anatomy Dissection.	Roll Call. Dissections.	Roll Call. Dissections.	Roll Call. Dissections.	Roll Call. Repetition. Anatomy Dissections.	

ROSTER, 1888-89.—THIRD YEAR.

<i>Hour.</i>	<i>Sunday.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
8 A.M.		Clinic.	Clinic.	Clinic.	Clinic.	Clinic.	
9 A.M.	Hospital Visit.					Bacteriology.	
10 A.M.		Surgical Pathology.	Morbid Anatomy.	Surgical Pathology.	Surgical Pathology.	Zootechnics.	Obstetrics.
11 A.M.		Internal Pathology.	Repetition. Internal Pathology.	Internal Pathology.	Internal Pathology.	Repetition. Internal Pathology.	
12 M.		Thesis.					
2 P.M.		Roll Call. Pathological Farriery.	Roll Call.	Roll Call.	Roll Call.	Roll Call.	
3½ P.M.		Morbid Anatomy.	Foot Operations.	Foot Operations.	Surgical Anatomy.	Surgical Anatomy.	Morbid Anatomy.
4 P.M.							
4½ P.M.			Repetition. Therapeutics.	Repetition. Surgical Pathology.	Therapeutics.	Repetition. Surgical Pathology.	Therapeutics.
5 P.M.		Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.	

## DEPARTMENT OF BIOLOGY.

### FACULTY.

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

JOSEPH LEIDY, M.D., LL.D., Professor of Zoölogy and Comparative Anatomy, DIRECTOR.

JOSEPH T. ROTHROCK, B.S., M.D., Professor of Botany.

HORACE JAYNE, M.D., Professor of Vertebrate Morphology, SECRETARY.

JOHN A. RYDER, PH.D., Professor of Comparative Embryology.

WILLIAM P. WILSON, Sc.D., Professor of Anatomy and Physiology of Plants.

CHARLES S. DOLLEY, M.D., Professor of General Biology.

HOBART A. HARE, M.D., Instructor in Physiology.

EDWIN A. KELLEY, Instructor in Zoölogy.

EMILY L. GREGORY, PH.D., Fellow in Biology.

MILTON J. GREENMAN, Assistant Instructor in General Biology.

CHARLES M. BURK, Assistant Instructor in Zoölogy.

EDWARD BANCROFT, Assistant to the Professor of Comparative Embryology.

GEORGE FETTEROLF, A.B.,  
JESSE M. GREENMAN,  
ROBERT S. MAISON, A.B., } Assistants in Botany.

### MATRICULATES, 1888-1889.

#### SECOND YEAR.

Rodman Barker,  
Samuel H. Barker,  
Jessie L. Colson,  
Alexander H. Davisson,  
John H. Girvin,  
James E. Ives,  
Henry S. Kiersted,  
Thomas M. Lightfoot,  
William T. Marshall,

Wyncote.  
Wyncote.  
Daretown, N. J.  
Philadelphia.  
Philadelphia.  
Philadelphia.  
Philadelphia.  
Germantown.  
Milwaukee, Wis.

George W. McCaffery,	Philadelphia.
Howard Mellor,	Philadelphia.
George D. Morton,	Philadelphia.
Frank R. Packard,	Philadelphia.
Addison M. Rothrock,	West Chester.
William T. Stewart,	Philadelphia.
Archibald G. Thomson,	Philadelphia.

## FIRST YEAR.

David J. Bullock,	Philadelphia.
Josiah T. Bunting,	Glen Mills.
Martha Bunting,	Philadelphia.
Philip P. Calvert,	Philadelphia.
Kathleen Carter,	Philadelphia.
Jacob R. Esterly,	Reading.
Joseph C. Ferguson, Jr.,	Philadelphia.
John M. Fogg,	Philadelphia.
Clarence P. Franklin,	Philadelphia.
Clarence J. Garitee,	Philadelphia.
William T. Gillespie,	Principio, Md.
Ida Goepf,	Philadelphia.
Jesse M. Greenman,	Cleveland, Ohio.
John Harshberger,	Philadelphia.
John H. Jopson,	Philadelphia.
Thomas S. Kelly,	Weldon.
Caspar W. Miller,	Media.
J. Percy Moore,	Philadelphia.
William R. Nicholson,	Philadelphia.
Frank H. Widman,	Philadelphia.
George W. Wood,	Philadelphia.

Total, 37.

The aim of this Department is:

1. 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.
2. To conduct the Biological studies of students in the College Department.
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, four large laboratories for undergraduate Biological work, rooms for the Zoölogical and

Botanical collections and libraries, laboratories for advanced and special work in Botany, Zoölogy, 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 and greenhouse.

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.

#### I. 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.—I. Lectures on the General Principles of Biology. Systematic Zoölogy. [Dr. Leidy. 1\*]

2. Laboratory Course. [Dr. Dolley and Mr. Greenman. 8]

MAMMALIAN ANATOMY.—I. Lectures on Descriptive Anatomy. [Dr. Jayne. 2]

2. Laboratory Course (dissection). Mivart's *The Cat*. [Dr. Jayne and Mr. Burk. 8]

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\*The numerals indicate number of hours of instruction each week.

- BOTANY.—I. Structural and Systematic Botany. (Lectures.) [Dr. Rothrock. 1]
2. Structural Botany. Laboratory Course. Gray's *Text-book*. First term only. [Dr. Wilson. 4]
  3. Analytical Botany. Laboratory Course. Gray's *Manual*. Second term only. [Dr. Rothrock. 4]

## SECOND YEAR.

- SYSTEMATIC ZOÖLOGY.—The structure, classification and distribution of animals. (Lectures.) [Dr. Leidy. 1]
- ANIMAL MORPHOLOGY.—Advanced laboratory course. [Dr. Jayne. 4]
- HISTOLOGY.—Lectures and Laboratory exercises on Microscopic Anatomy. Schäfer's *Essentials of Histology*. First term only. [Dr. Ryder. 8]
- EMBRYOLOGY.—Lectures and Laboratory exercises on the development of the chick and rabbit. Foster and Balfour's *Elementary Embryology*. Second term only. [Dr. Ryder. 8]
- PHYSIOLOGY.—The elements of Mammalian Physiology. (Lectures and demonstrations.) [Dr. Hare. 2]
- BOTANY.—I. Advanced Structural Botany. (Lectures and Practical exercises.) First term only. [Dr. Wilson. 6]
2. (a) Economic Botany. (Practical exercises.) First term only. [Dr. Rothrock. 6]; or, (b) Physiological Botany. (Practical exercises.) Second term only. [Dr. Wilson. 6]

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 manifested in the different forms of living matter, before beginning the special study of either Botany or Zoölogy. The series studied are: (1) Amoeba, Paramæcium, 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, and Squid, 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 prepara-

tions, models, diagrams, etc. The laboratory course embraces the careful dissection of the Cat.

The work in Botany, during the *First Year*, consists in the study of the macroscopic structure of Plants, followed by practical exercises in determining a selected series of forms.

In the first term of the second year the entire class studies the microscopic structure of tissues and organs. In the second term an election is allowed between Economic Botany and Physiological Botany. The work in the first course consists of practical exercises in Forestry, adulteration of foods and drugs, medicinal plants, etc.; in the second course the life processes of plants are carefully followed.

The lectures on Systematic Zoölogy begin in the first year and continue through the second. They embrace the structure, classification and distribution of Animals, one year being devoted to the study of the Invertebrates, the next to the Vertebrates.

The laboratory course in Animal Morphology consists in the dissection of additional types, of series of organs, or 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 Principles of Embryology, with laboratory exercises in the preparation and study of the principal stages of development of the Chick and Rabbit.

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.

## 2. COURSE FOR STUDENTS IN THE COLLEGE DEPARTMENT.

Instruction in Biology forms a part of several courses in the

College Department. For details of these courses, conditions of admission, examinations and degrees, see pp. 26-70.

### 3. INSTRUCTION FOR GRADUATE STUDENTS.

Students in the Department of Philosophy, who have selected Botany or Zoölogy 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 Zoölogy, 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 weekly 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 either year for the best dissected preparations illustrating the anatomy of any type studied.

### FEEES.

All students pay, on entering, a matriculation fee of five dollars, and deposit each year ten dollars to cover breakage in the laboratories. Any balance remaining is returned.

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 and Embryology, 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.

#### ADMISSION, EXAMINATIONS AND DEGREES.

The next session will begin September 23d, 1889, at 10 A.M.

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, and enables him to pursue a Medical Course somewhat different from that laid down in the Catalogue, since he may pass his examinations in Anatomy and Physiology at the end of his first year, and if he has united the study of Chemistry with his Biological Course and passed satisfactory examinations, he may omit the General Chemistry of the first year and take up Medical Chemistry and pass at the end of the year. He may also omit the Biological and Histological work of the first year.

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.

## DEPARTMENT OF LAW.

### FACULTY.

- WILLIAM PEPPER, M.D., LL.D., PROVOST, and *ex-officio* President.  
C. STUART PATTERSON, A.M., DEAN OF THE FACULTY, and Professor of the *Law of Real Estate and Conveyancing*.  
HON. J. I. CLARK HARE, LL.D., Professor of the *Institutes of Law*, including, inter alia, *International, Constitutional, and Commercial Law*.  
JAMES PARSONS, A.M., Professor of the Law of *Personal Relations and Personal Property*.  
GEORGE TUCKER BISPHAM, A.M., Professor of *Equity Jurisprudence*.  
A. SYDNEY BIDDLE, A.M., Professor of *Practice, Pleading, and Evidence at Law, and Criminal Law*.

### MATRICULATES.

#### SENIOR CLASS.

Francis Cope Adler, A.B. (C.H.S.),	Philadelphia,	J. Henry Williams.
William Harrison Allen,	Warren,	Page, Allinson & Penrose.
David Werner Amram, A.B. (Univ. Penn.),	Philadelphia,	C. Stuart Patterson.
Forrest Murrell Anderson, Ph.B. (Univ. Penn.),	do.	J. Sergeant Price.
Arthur Straus Arnold,	do.	Mayer Sulzberger.
George Wellington Beale,	Scranton,	John Scollay.
Stacey Barcroft Beebe,	Coshocton, Ohio,	Biddle & Ward.
George Hinson Berkheiser,	Philadelphia,	Wm. S. Lane.
Irving Webster Bierer,	do.	W. S. Stenger.
Meylert Bruner,	Muncy,	University.
Walter Eveland Buckley,	Philadelphia,	University.
William Michael Byrne, A.B. (Georgetown College),	Wilmington, Del.,	Bradford & Vandegrift.
Malcolm Graeme Campbell,	Philadelphia,	Edw. S. Campbell.
Horace Lincoln Cheyney,	Cheyney,	University.
Edward Joseph Coll, A.B. (C.H.S.),	Philadelphia,	Jas. H. Heverin.
William Elliot Dudley,	Frankford,	H. E. Garsed.
Horace Durbin,	Lykens,	J. C. Durbin.
William Embery,	Philadelphia,	H. E. Garsed.
Charles Black Evans, A.B. (Delaware College),	Newark, Del.,	Geo. Gray.

Joseph Rosenbaum Fahy,	Philadelphia,	Thos. A. Fahy.
Jay Gates,	Germantown,	Morgan & Lewis.
Nathan Clarence Horton,	Hunts Mills, N. J.,	A. W. Horton.
Thomas Paull Howell,	Philadelphia,	N. DuBois Miller.
Solomon Stanger Iszard, A.B. (Princeton),	Glassborough, N.J.	C. Stuart Patterson.
Francis Fisher Kane, A.B. (Princeton),	Philadelphia,	MacVeagh & Bispham.
Samuel Carman Kintzing,	Huntingdon Val.,	University.
Frederick Jacob Knaus, Ph.G. (Phila. Coll. Pharmacy),	Philadelphia,	University.
Irvin Poley Knipe, A.B. (Univ. Penn.),	Norristown,	Irving P. Wanger.
Alexander Durbin Lauer,	Philadelphia,	Jas. S. Williams.
David Lavis,	do.	Wm. F. Harrity.
Francis Scoffin Laws,	do.	Francis S. Cantrell.
Joseph Siegmund Levin, A.B. (Univ. Penn.),	do.	Sam'l B. Huey.
James Henry Lloyd,	do.	MacVeagh & Bispham.
Edward Fell Lukens,	do.	John C. Grady.
Hew Brydon MacLean, Ph.B. (Univ. Penn.),	do.	Jones, Carson & Phillips.
Frank Kellar McCance, A.B. (Princeton),	Pittsburg,	C. Stuart Patterson.
Henry Aloysius McCarthy,	Philadelphia,	Lister, Keene & Barlow.
Christopher Magee, Jr., A.B. (Univ. Penn.),	Pittsburg,	Crawford & Dallas.
William Morgan Montgomery,	Philadelphia,	E. Clinton Rhoads.
Joseph Edward Murray,	do.	Biddle & Ward.
Harvey Klapp Newitt, Jr.,	do.	Frank I. Lyle.
George Wharton Pepper, A.B. (Univ. Penn.),	do.	Biddle & Ward.
Joseph Snowdon Rhoads,	Marple,	Wm. Knight Shryock.
Frank Brown Rhodes,	Media,	Howard & Smedley.
Alexander Harvey Scott, A.B. (Haverford),	Philadelphia,	MacVeagh & Bispham.
Edwin Jaquett Sellers, A.B. (Univ. Penn.),	do.	David W. Sellers.
Jacob Martin Shindel,	Washington, D.C.,	Benj. Harris Brewster.
Frederick Joseph Shoyer,	Camden, N. J.	Jno. S. McKinlay.
John Wesley Simmons, C.E. (P.M.A.),	Philadelphia,	Pattison & Stenger.
John William Speckman,	do.	Martin H. Stutzbach.
David James Thompson,	do.	University.
Henry Wiener, Jr., A.B. (C.H.S.),	do.	Biddle & Ward.
William Wood Wooters,	do.	Furth & Singer.
Samuel Megargee Wright, A.B. (Univ. Penn.),	do.	David W. Sellers.
Irving Elmer Ziegler,	do.	F. Carroll Brewster.

## JUNIOR CLASS.

Lucien Hugh Alexander,	Philadelphia,	Wm. Henry Rawle.
Frazer Ashhurst,	do.	R. L. Ashhurst.
Charles Edward Aull,	do.	C. Stuart Patterson.
Boyd Cummings Barrington,	do.	Aubrey H. Smith.
Harry Woodward Bass, A.B.	do.	University.
(Lincoln Univ.),	do.	Daniel Dougherty and D.
Henry Birck, A.B. (C. H. S.),	do.	Webster Dougherty.
		University.
Cortlandt Kimball Bolles,	New York,	
Richard Henry Bayard		
Bowie, A.B. (Univ. Penn.),	Philadelphia,	Richard L. Ashhurst.
Lin Light Bowman,	Palmyra, N. J.,	University.
Sumner Sallade Bowman,	Millersburg,	Simon S. Bowman.
Joseph Hill Brinton, Jr.,	Oakburne,	A. Lewis Smith.
Charles Lincoln Brown,	Philadelphia,	University.
William Alexander Brown,	do.	C. Stuart Patterson.
Harry Putnam Bush,	Bellefonte,	Edward D. Wadsworth.
Robert Jonathan Byron,	Philadelphia,	Henry C. Terry.
William Goldson Calver,	do.	Frank M. Cody.
Walter Sellers Cash,	do.	University.
Francis Chapman,	do.	S. Spencer Chapman.
Edwin Rouse Cochran, Jr.,	Middletown, Del.,	Bradford & Vandegrift.
Porter Farquharson Cope,	Philadelphia,	University.
Samuel Singer Craig,	Shippensburg,	J. A. C. McCune.
William Henry Dillingham,		
A.B. (Univ. Penn.),	West Chester,	Francis T. Chambers.
Russell Duane, A.B.		
(Harvard),	Philadelphia,	Biddle & Ward.
Joseph William Fitzpatrick,	do.	Thos. F. McMahan.
Parker Freeman,		
John Oscar Genter,	do.	John H. Sloan.
Thomas Reynolds Graham,	Kenton, Del.,	J. Alexander Simpson, Jr.
Charles Shiel Greene,	Philadelphia,	C. Stuart Patterson.
Jay Rich Grier,	do.	Biddle & Ward and J. R.
		Grier.
James Alden Guest,	do.	University.
Casper Wister Hacker,	Germantown,	University.
William Bartine Haffelfinger,	Philadelphia,	A. U. Bannard.
Alfred Roland Haig,	do.	A. A. Outerbridge.
Richard Wister Harvey,	do.	C. Stuart Patterson.
Robert Priestley Hayes,	do.	Edw. A. Anderson.
Robert Anderson Heberling,		
Ph.B. (Dickinson),	Mauch Chunk,	C. W. McKeehan.
Crawford Dawes Hening,		
A.B. (Univ. Penn.),	Philadelphia,	Charles Biddle.
Max. Herzberg,	do.	Biddle & Ward.
William Allison Hewlett,	Petersburg, Va.,	University.
Harry Cyril Holcomb,	Portville, N. Y.,	University.
Tatlow Jackson, Jr.,	Germantown,	W. Heyward Drayton.
Leonard Llewellyn Jewell,	Omaha, Neb.,	University.

Isaac Edward Johnson,	Media,	Johnson & Baker.
William George Keir,	Atlantic City, N. J.,	Theodore Matthews.
Thaddeus Stevens Krause,		
B.S. (Ursinus Coll.),	Plumsteadville, N.J.,	J. Q. Hunsicker.
Joseph Granville Leach,	Philadelphia,	J. Granville Leach,
Oscar Leser, A.B. (C.H.S.),	do.	MacVeagh & Bispham.
Charles Murheid List,	do.	Francis S. Cantrell.
William Wilson Longstreth,		
A.B. (Univ. Penn.),	do.	John G. Johnson.
Harry MacMillan, Jr.,	do.	P. F. Rothermel, Jr.
Percy McGeorge, B. S., E.M.		
(Univ. Penn.),	Merion,	Wm. McGeorge, Jr.
James Magee,	Philadelphia,	Edw. Schlegelmilch.
William Sands Messemer,	do.	Jno. S. McKinlay.
Sidney Roby Miner, A.B.		
(Harvard),	Wilkes-Barre,	Henry M. Hoyt.
Michael Joseph Morley,		
A.B. (Mt. St. Mary's),	Philadelphia,	University.
Philip Daniel Neukumet,	do.	Thos. A. Fahy.
James Hall Oliver,	do.	Henry K. Fox.
George Stuart Patterson,	Chestnut Hill,	C. Stuart Patterson.
James Lee Patton, A.B.		
(C.H.S.),	Philadelphia,	S. B. Huey.
Frederick Morgan Pile,	do.	Jos. M. Pile.
William Cozens Price, A.B.		
(Princeton),	Cape May City, N.J.,	Thos. D. Finletter.
Granville Penn Quin,	Philadelphia,	Biddle & Ward.
John Tiers Reardon,	do.	Jno. R. Read.
Charles Edward Rennyson,	Norristown,	Dwight M. Lowrey.
Everett Anderson Schofield,	Roxborough,	Albert R. Schofield.
Louis Frank Schuck,	Philadelphia,	Jules E. Pereyra.
David Emanuel Simon, A.B.		
(C.H.S.), Ph. B. (Univ.		
Penn.),	do.	Leon H. Folz.
Henry Naglee Smaltz, A.B.		
(Univ. Penn.),	do.	MacVeagh & Bispham.
Howard Wayne Smith,	do.	E. Cooper Shapley.
John Michael Snyder,	do.	John F. Lewis.
Edgar Ward Stark,	Pittston,	Sam'l B. Price.
Edward Stern,	Philadelphia,	University.
George Washington Holstein		
Thomas,	Bridgeport,	Henry M. Dechert.
Charles Cooper Townsend,		
A.B. (Univ. Penn.),	Overbrook,	Jos. B. Townsend.
William Jay Turner,	Germantown,	University.
William Hooker VanHorn,		
A.B. (C.H.S.),	Philadelphia,	Chas. F. VanHorn,
Elwood Wagonhurst, A.B.		
(Princeton),	do.	University.
Henry Nathan Wessel,	Nebraska City, Neb.	C. Stuart Patterson.
Elias Henley White, A.B.		
(Haverford),	Philadelphia,	Biddle & Ward.

Charles Percy Willcox, Ph.B. (Yale),	Philadelphia,	Jones, Carson & Phillips.
Wayne Weachter Wilson,	Lebanon,	MacVeagh & Bispham.
Arthur Dix Windsor,	Titusville,	University.
Charles Sturgis Wood, A.B. (C.H.S.), Ph.B. (Univ. Penn.),	Philadelphia,	Alfred Frank Custis.
Norton Buel Young, Ph.B. (Univ. Penn.),	Chestnut Hill,	Geo. Junkin.

## SPECIAL STUDENTS.

John Allen,	Philadelphia,	
P. P. Calvert,	do.	Graham Calvert.
Edward Riou Coleman,	Lebanon,	Henry A. Smith.
Thomas Rotherham Murrow,	Philadelphia,	
James Brooks Sawyer	Pittsburgh,	Biddle & Ward.

## RECAPITULATION.

Seniors . . . . .	55
Juniors . . . . .	84
Special Students . . . . .	5
Total . . . . .	144

With the session of 1889-90 the Law Department begins a new departure. The University has leased the sixth floor of the building of the Girard Life Insurance, Annuity and Trust Company, at Broad and Chestnut Streets, Philadelphia; and in that building, on and after 1st October, 1889, will be located the lecture rooms and library of the Law Department, and the offices of the Dean. The students of the Department will also have the use of a complete working library of more than five thousand volumes, including every regular English and American report, which has been presented to the University by the family of George Biddle, Esq., as a memorial of that distinguished lawyer. The scope of instruction in the Department has also been enlarged by the extension of the course to three years.

## ADMISSION.

The statutes of the University require that students, as a prerequisite to continuance in the first year's class of the Law Department, shall produce to the Faculty of that Department on or before the 1st of January in each year:

- (1.) A satisfactory college diploma as Bachelor of Arts, *or*
- (2.) A certificate of preliminary examination as required by the Rules of the Courts of Common Pleas of Philadelphia, *or*
- (3.) A certificate from a committee of the Law Faculty that the student has passed a satisfactory examination upon the subjects of grammar, arithmetic, English history, American history, spelling, etymology and geography.

## ADVANCED STANDING.

Admission to the second year's class will be allowed upon passing a satisfactory examination on the subjects of instruction in the first year.

## SPECIAL STUDENTS.

Those persons who are not candidates for a degree may enter the Department as special students at any time. Each professor will issue tickets for his own lectures to such students, and he will fix the fee in his discretion.

## COURSE OF INSTRUCTION.

## FIRST YEAR.

PROFESSOR HARE . . . . .	Contracts.
“ PARSONS . . . . .	Domestic Relations, Decedents' Estates.
“ BISPHAM . . . . .	Elementary Equity.
“ PATTERSON . . . . .	Real Estate.
“ BIDDLE . . . . .	Pleading, Criminal Law.

## SECOND YEAR.

PROFESSOR HARE . . . . .	Insurance, Suretyship, and Guaranty.
“ PARSONS . . . . .	Agency and Partnership.
“ BISPHAM . . . . .	Equity Jurisprudence.
“ PATTERSON . . . . .	Real Estate.
“ BIDDLE . . . . .	Evidence.

## THIRD YEAR.

PROFESSOR HARE . . . . .	Conflict of Laws, Constitutional Law.
“ PARSONS . . . . .	Bailment, Corporations.
“ BISPHAM . . . . .	Pleading and Practice in Equity.
“ PATTERSON . . . . .	Real Estate and Conveyancing.
“ BIDDLE . . . . .	Practice.

The instruction is given by lectures and by frequent examinations, and the students are required to read leading cases illustrating the subjects of instruction.

Moot courts are held, at which questions prepared by the professors are argued. These courts meet once a week during the 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, an institution of long standing, to which not only students, but many practicing lawyers belong, also 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.

The students of this Department are also permitted to attend free of charge the lectures given in other Departments of the University. Many of these lectures, especially those upon English History, and Literature, Political Economy, Rhetoric, Intellectual and Moral Philosophy, and Social Science, are of value to the lawyer, and an opportunity is thus afforded to those whose scholastic training has been limited. The students of this Department have also the free use of the General Library of the University.

#### DEGREES.

Under the statutes of the University, the Degree of Bachelor of Laws is granted to candidates who, having attended upon the full course of instruction in the Law Department, and having prepared and submitted to the Faculty an essay composed by the candidate on some legal subject, sufficient in merit to satisfy the Faculty of his fitness to receive the Degree, shall have passed satisfactory examinations upon the subjects of instruction.

The degree of Bachelor of Laws *cum honore* will be granted to such candidates of the Law Department as shall be certified by the Faculty to have passed the final examination with distinction.

The degree of Master of Laws is granted in the post-graduate course in Law.

## ESSAYS.

The essay required of each candidate must be handed to the Secretary of the Faculty on or before the 31st of December, in the senior year. It must be printed or type-written on sheets not larger than octavo size, with a clear margin of at least one inch.

Essays must not disclose the name of the author, and must be accompanied by a sealed envelope indorsed with a distinguishing motto and containing the name of the author.

## EXAMINATIONS.

The examinations required by the statute are both written and oral, and are held during the last weeks in May.

The questions of the written examination of 1888 are hereto appended :

## PROFESSOR HARE.

1. What were the essentials to the validity of a stipulation ?
2. Contrast the mandate of the Roman law with agency, and state how far the contracts of the mandatory were binding on the mandant.
3. State the use and operation of written instrument under the Roman law of contracts, and how far they were conclusive.
4. Give some account of the growth of the action of *assumpsit*.
5. What is requisite to the consideration of a promise, and from whom must it move ?
6. Can a promise in consideration of a mutual promise, or of performance, be retracted before the act is done or promise made, notwithstanding a stipulation to the contrary ?
7. What is essential to the passage of the title by a contract of sale under the Roman, the English and the French law ?
8. Does the rejection of goods answering to the terms of an executory contract of sale render the purchaser answerable for the price, or only for damages ?
9. Does the breach of a warranty entitle the purchaser to return the goods, and what is the measure of damages ?
10. State the nature and effect of a sale by sample.

## PROFESSOR PARSONS.

(State in reply to each question the reason for your answer.)

1. What provisions of the United States Constitution prevent State Legislatures from revoking the grant of charter privileges?
2. How did the stock of a corporation become subject to levy for the satisfaction of the stockholder's debt to a third person?
3. What is the answer to the argument for the recognition of a *de facto* corporation, based on the analogy of *ultra vires* acts which charge the members of a legal corporation?
4. What was the effect of the discouragement given to the formation of special partnership?
5. What is the measure of the *cestui que trust's* recovery from his trustee for profits derived from the use of the trust fund?
6. Why should a plaintiff be on his guard against accepting the issue of no partnership set up by a defendant?
7. What gives partners the power to represent each other?
8. If one of two purchasers of land gave a joint note for himself and co-purchaser for the purchase-money, is the co-purchaser liable on the note?
9. Explain the historical changes of profit-sharing as an indication of partnership.
10. How are common carriers distinguished from private carriers?

## PROFESSOR BISPHAM.

*Principles in Equity.*

1. Explain what is meant by "*Substantive Law*," and "*Remedial Law*," and give illustrations at Common law, and under Statute law, both in England and in the United States.
2. What is meant by the maxim, "*Equity acts in personam*"? Give examples.
3. Under what three general divisions have the Principles of Equity been studied; and what are the subdivisions under the first two?
4. What is a trust? Explain the difference between a trust and a *fidei commissum*.
5. When was the Statute of Uses passed? What was the effect?

6. State the rules as to the way in which a voluntary settlement may be made. What is the leading case?

7. Under what head was the doctrine of following trust funds considered? What is the doctrine; and what explanation of it was given in Hallett's Estate?

8. Mention some points of difference between the English rules in regard to trusts for the sole and separate use of married women, and the Pennsylvania rules.

9. What are the characteristics of a representation which will operate as an estoppel? Explain them.

10. Will equity interfere to restrain the breach of a negative covenant; and will it ever import a negative quality into an affirmative covenant?

PROFESSOR BISPHAM.

*Practice and Pleading in Equity.*

1. Define Practice and Pleading in Equity.
2. What are some of the general characteristics of equitable relief? Explain those which you mention.
3. Mention any four heads of Equitable Jurisdiction of the Courts of Common Pleas in Pennsylvania.
4. What courses may be pursued by the plaintiff when a defendant files a plea; and what may be the several results?
5. Suppose a bill in equity were filed, setting forth a loan of money from plaintiff to defendant, and praying for a decree for its repayment, would any rule of equity pleading be violated by such a bill? If so, state the rule and explain it.

PROFESSOR PATTERSON.

1. What are the distinctions between real and personal property?
2. What are the historical steps in the development of the right of private property in land?
3. What has been the influence of the feudal system upon the law of real property?
4. Define an estate tail, and give the history of that estate in England and in Pennsylvania.

5. What are the distinctions between joint tenancy, tenancy in common, and coparceny?

6. A. B. is a widower with one child, C. D. An uncle devises "Whiteacre to A. B. for the term of his natural life, with remainder to his heirs in fee." Another uncle devises Blackacre "to A. B. for the term of his natural life, with remainder to his child C. D. in fee." What estates do A. B. and C. D. take under each devise, and why?

7. What was the theory, and what were the effects of seisin at Common Law?

8. Deed to A. and his heirs to the use of B. and his heirs, in trust for the sole and separate use of C., the wife of D., with remainder to D. and his heirs. What estates do A., B., C. and D. take, and why?

9. Under what circumstances is a widow entitled to Common Law dower in Pennsylvania?

10. What is eminent domain, and what are the limitations upon its operation?

PROFESSOR BIDDLE.

*Evidence.*

(In all cases give reasons, fully, for the answer; and state the rule governing the answer.)

1. State the rules on the presumptions as to alterations of a document. To what branch of Evidence does this subject properly belong?

2. In a suit on a promissory note the defendant offers the record of a former suit and judgment between the same parties on two notes of the same amount and same date as the one now in suit, showing verdict and judgment for the plaintiff on one of those notes only; but the record does not indicate on which of the two notes verdict and judgment was given. The defendant further offers to prove by a juror in the first suit that the note on which the verdict was given was the same as the one now in suit. Can either piece of testimony be given? Against whom is the judgment evidence? Give an instance where a judgment is not evidence in a subsequent proceeding between the same

parties, although the issue relates to the same subject-matter as in the first case.

3. What witnesses, who are still incompetent under one of the provisions of the Act of 1887, may be made competent by another provision of the same Act? In what manner do they become competent? Give the reasons for the provisions of the Act applicable to these questions from the point of view of common sense.

4. Secondary evidence of a notice in writing (to produce which writing no notice has been given), and which is under the control, but not in the possession of the adverse party is offered; is it admissible? When may secondary evidence of a document be given?

5. Photographic copies of an admittedly genuine signature of A. are offered in a suit where the issue is whether a particular signature is that of A. Can an expert testify from inspection and comparison of the photographic copies with the signature in issue whether the latter is written by A.? Can he testify that the signature in issue is, in his opinion, feigned and simulated, and not genuine? Are the photographic copies admissible for the inspection of the jury, in the absence of expert evidence? Could a bank cashier who had never seen A. write, but under whose constant notice in the usual course of business checks had frequently passed, purporting to be those of A., give his opinion who wrote the disputed signature? Is this expert evidence?

6. A having two legitimate grandsons, and one illegitimate, leaves his property by will to his "grandchildren." To whom does it go? Would the result be the same if he had only two grandsons, of whom one was illegitimate?

7. A Pennsylvania marriage being in issue an oral statement by a deceased clergyman made six months after the event referred to that he had performed the marriage is offered, coupled with evidence that no license, as required by the Act of Assembly, has been obtained, in consequence of which he became liable to a fine; is it admissible?

8. To show that a verbal contract of service was for less than a year, evidence is offered that the employer, who is dead, had

in the course of his business been in the habit of hiring servants, and that his practice was to enter the time and terms of such hiring in a book kept by him for that purpose. The book is offered showing an entry, dated at the time of the making of the contract, and stating its substance, showing that it was for half a year; is the evidence admissible?

9. A letter is offered on a trial for high treason, written by a co-conspirator with the prisoner to a delegate of a secret society, to which all three belonged, describing criminal acts which were part of the plot, which had occurred at the place from which the letter was written. It then went on to distinctly encourage and exhort the delegate to proceed with the criminal business, in which the writer and the prisoner were engaged, and to repeat the acts described. Was it evidence against the prisoner?

10. A. being charged with embezzlement, B., his counsel, observes an entry in A.'s account book, charging A. with the sum said to have been embezzled, which was not in the book when B. was first employed; and A. being taxed by B. with having fraudulently inserted the entry, admits to him that he had done so. In a subsequent action by A. for malicious prosecution, can B. testify as to what he himself observed in regard to the entry, and as to A.'s admission, either or both?

#### PRIZES.

The Alumni of this Department have established two prizes—one of seventy-five dollars, called the Sharswood Prize, and one of fifty dollars, called the Meredith Prize—to be competed for by the graduating class, for the best and second best graduation essay. They are awarded annually by the Faculty.

A Faculty prize of fifty dollars is given annually to the student in any of the classes who passes the best written examination with all the professors, the answers to the questions to be completed within a limited time.

The names of such students in each class as shall hereafter pass the annual examination with distinction will be printed in the annual catalogue.

## ADMISSION TO THE BAR.

Graduates of this department are admitted to practice in the Courts of Common Pleas and Orphans' Court in Philadelphia, upon compliance with the rules of court as to registration.

## FEES.

Each student pays a matriculation fee of five dollars, and in addition thereto a term fee of fifty dollars, payable in advance. No other charge is made. The total cost to a student of taking a three years' course of instruction and receiving a degree of Bachelor of Laws is, therefore, \$305. The term fee of fifty dollars must be paid within the first week of each term.

Application for admission to the classes should be made to Prof. C. Stuart Patterson, Dean of the Faculty of Law, at his office, which is now No. 38 South Third street, Philadelphia, but which will be on and after 1st September, 1889, in the Building of the Girard Trust Company, N. E. corner of Broad and Chestnut Streets, Philadelphia.

## POST-GRADUATE COURSE IN LAW.

## MATRICULATES.

## SENIORS.

Harrison H. Brace,	St. Paul, Minn.	
Louis P. Brennan,	Philadelphia,	116 S. Fourth St.
Walter W. Calmore,	Philadelphia,	501 Chestnut St.
Alex. Renshaw DeWitt,	Philadelphia,	39 S. Third St.
Henry W. Smith,	Philadelphia,	432 Walnut St.

## JUNIORS.

J. Claude Bedford,	Lost Creek,	
Louis A. Biddle,	Philadelphia,	712 Walnut St.
Franklin S. Dickson,		
W. Roger Fronefield,	Media.	
John Lentz Garrett,	Chester.	
Philip H. Goepf,	Philadelphia,	1430 S. Penn Square.
Harry F. Stitzell,	Philadelphia,	1430 S. Penn Square.

Total, 12.

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 that 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 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 that 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 that everyone can understand. It is this professional craving which accounts for the multitude of textbooks 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 that 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 that 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 that 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 course 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*, Mackeldey'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 the 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 a text-book in connection with Gundermann'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.

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. 181-183.

- 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

PROF. JAMES PARSONS,  
1534 Locust Street,  
Philadelphia.

## DEPARTMENT OF PHILOSOPHY.

### MATRICULATES.

Frank S. Ballentine, A.M. (Univ. of Pa.),	Philadelphia.
Louis A. Biddle, A.B. (Harvard), LL.B. (Univ. of Pa.),	do.
R. S. DeBow, A.B. (Phil. H. S.), B.D. (Drew Seminary),	do.
A. W. Goodspeed, A.B. (Harvard),	do.
William Draper Lewis, B.S. (Haverford),	do.
J. A. Montgomery, A.B. (Univ. of Pa.),	West Chester.
W. R. Newbold, A.B. (Univ. of Pa.),	Shoemakertown.
Horace Clark Richards, A.B. (Univ. of Pa.),	Philadelphia.
Joseph Evans Sagebeer, A.M. (Bucknell),	do.
Prof. Samuel Christian Schmucker, A.B., B.S. (Muhlenberg),	Reading.
W. C. Scott, A.B. (Princeton),	Philadelphia.
G. F. Stradling, A.B., (Univ. of Pa.),	Hatboro'.
Prof. Henry Trimble, (Certif. Univ. of Pa.),	Philadelphia.
Hill Sloane Warwick, M.D. (Coll. Phys. & Surg., N. Y.),	New York.

### SPECIAL STUDENTS.

Douglass Irwin Hobbs,	Philadelphia.
John H. James, A.M. (Michigan),	do.
Marcus Jastrow, Ph.D. (Halle),	do.
John Arthur Johnson,	do.
Edwin Francis Keefer, A.B. (Muhlenberg),	do.
Earnest Theodore Kretschman, A.B. (Muhlenberg),	do.
Theodore William Kretschman, A.B. (Univ. of Pa.),	do.
William Wilson Longstreth, A.B. (Univ. of Pa.),	do.
Alfred Arthur Mainwaring,	do.
John R. Moses, A.M. (Univ. of Pa.),	do.
Jules Louis Prevost,	do.
Robert U. Rogers, A.M. (Johns Hopkins),	Haverford College.
William Henry Robertson,	Philadelphia.
Lewis Lawrence Smith, A.M. (Univ. of Pa.),	do.
John Duncan Earnest Spaeth, A.B. (Univ. of Pa.),	do.
James D. Steele, A.M. (Univ. of Pa.),	do.
Samuel Brown Wylie, A.M. (Univ. of Pa.)	do.
	Total, 31.

The object of this department is 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

is of an advanced character. In those which are usually not represented at all, or only very inadequately, both advanced and elementary courses are offered.

The students are either *Matriculates* (candidates for the degree of Doctor of Philosophy, Ph.D.) or *Special Students*. All instruction in each branch of study is open to special students (whether college graduates or not) who in the judgment of the professor in charge of that branch are qualified to profit by the instruction given.

For the year 1888-89 instruction is offered by the following professors in the subjects named:

	Hours per week.
GEORGE F. BARKER, Ph.B., M.D., Professor of Physics. Instruction in the Physical Laboratory, . . . . .	4
DANIEL G. BRINTON, M.D., Professor of American Archæology and Linguistics.	
1. General Philology of American Languages, . . . . .	2
2. Special Readings on the Grammatical Structure of the follow- ing groups of American tongues :	
The Algonquin, . . . . .	1
The Nahuatl, . . . . .	1
The Maya, . . . . .	1
The Kechua, . . . . .	1
3. Archæology—Methods of Study in Archæology, General out- lines of American Archæology, . . . . .	1
JAMES MCKEEN CATTELL, Ph.D., Lecturer on Psycho-Physics. (Courses in Experimental Psychology will be announced in January.)	
CHARLES S. DOLLEY, M.D., Professor of General Biology.	
1. Advanced Work in General Biology; Laboratory Work, . . .	8
2. Invertebrate Morphology, Laboratory Work, with Instruction (with Supervision only, daily), . . . . .	4
MORTON W. EASTON, Ph.D., Professor of Comparative Philology.	
1. Sanskrit Grammar and Readings, . . . . .	2
2. Çakuntala and the Veda, . . . . .	2
3. Linguistic and Comparative Philology of the Indo-European Languages, with special reference to Phonetics. Hours un- determined.	

4. Lectures on Phonetics and the Principles of Comparative Grammar, with special reference to the forms of Greek and Latin. Hours undetermined.	
GEORGE S. FULLERTON, A.M., B.D., Professor of Intellectual and Moral Philosophy.	
History of Modern Philosophy, . . . . .	2
Seminar, . . . . .	1
EDMUND J. JAMES, Ph.D., Professor of Political and Social Science.	
Political Science—History and Theories of the State, . . . . .	2
Seminar, . . . . .	1
*MORRIS JASTROW, JR., Ph.D., Professor of Arabic and Rabbinical Literature.	
<i>Hebrew.</i>	
The Elements of Hebrew Grammar, with practical exercises and selected readings, . . . . .	2
Critical Study of the Book of Jeremiah, Chapters 1-39, . . . . .	1
<i>Biblical Aramaic.</i>	
Elements of the Grammar, with selected readings, . . . . .	1
<i>Arabic.</i>	
Elements of the Grammar, with exercises and readings, . . . . .	2
Selected Suras from the Koran, with constant reference to the Arabic commentators, . . . . .	2
<i>Assyrian.</i>	
Elements of Assyrian Grammar, with reading and translation exercises, . . . . .	2
The Annals of Asûrnasirbal Columns, II and III (I Rawlinson 20-26), . . . . .	2
<i>Post-Biblical and Rabbinical Literature.</i>	
The Pirkê Aboth; or, The So-Called "Sayings of the Fathers," . . . . .	1
<i>Syriac.</i>	
Elements of Syriac Grammar, with selected readings, . . . . .	2
HORACE JAYNE, M.D., Professor of Vertebrate Morphology.	
<i>1. Vertebrate Morphology.</i>	
Laboratory Work, with Instruction, 4 hours; with Supervision only, daily.	

\*NOTE.—In the absence of Profs. Peters and Hilprecht on the University of Pennsylvania Expedition to Mesopotamia, Prof. Jastrow has charge of the entire Semitic Department and announces courses accordingly. For detailed announcements indicating text-books and references, see the special circular which can be obtained upon application to Prof. Jastrow at the University.

2. <i>The Osteology of the Mammalia.</i>	
Laboratory work, . . . . .	4
OTIS H. KENDALL, Ph.D., Assistant Professor of Mathematics.	
1. General Geometry, . . . . .	2
2. Advanced Calculus, . . . . .	2
3. Quaternions, . . . . .	2
4. Determinants, . . . . .	2
GEORGE A. KOENIG, Ph.D., Professor of Mineralogy and Metallurgy.	
1. Physiography of Minerals, . . . . .	1
2. Theoretical Crystallography, . . . . .	1
WILLIAM A. LAMBERTON, A.M., Professor of the Greek Language and Literature.	
1. Critical Study of the Greek Historians, . . . . .	2
2. Critical Study of the Greek Orators, . . . . .	2
JOHN G. R. MCELROY, A.M., Professor of Rhetoric and the English Language.	
1. Anglo-Saxon, . . . . .	2
2. Early English, . . . . .	2
3. Middle English, . . . . .	2
JOHN BACH MCMASTER, A.M., Professor of American History.	
Constitutional History of the United States from 1789 to 1888, .	2
Seminar, . . . . .	1
JAMES PARSONS, A.M., Professor of Law.	
History and Development of the Common Law.	
SIMON N. PATTEN, Ph.D., Professor of Political Economy.	
Investigation of Economic Methods, . . . . .	2
Seminar, . . . . .	1
JOSEPH T. ROTHROCK, B.S., M.D., Professor of Botany.	
<i>The Classification of Plants.</i>	
Laboratory Work, with Instruction, 4 hours; with Supervision only, daily.	
JOHN A. RYDER, Ph.D., Professor of Comparative Embryology.	
1. <i>Comparative Histology.</i>	
Lectures, 2 hours, and Laboratory Instruction, 6 hours, during first term. Laboratory Work with Supervision, daily.	
2. <i>Comparative Embryology.</i>	
Lectures, 2 hours, and Laboratory Instruction, 6 hours, during second term. Laboratory Work with Supervision, daily.	

FELIX E. SCHELLING, A.M., Assistant Professor of English Literature.	
The Minor Elizabethan Dramatists, . . . . .	2
The Romantic School of Poetry, . . . . .	2
Seminar, . . . . .	1
SAMUEL P. SADTLER, Ph.D., Professor of Organic and Industrial Chemistry.	
1. Methods of Proximate Analysis of Organic Compounds, . . .	1
2. Lectures on Synthetic Methods of Organic Chemistry . . .	1
3. Lectures on the Industrial Applications of Organic Chemistry, Laboratory Work, with Supervision.	4
4. Lectures on the Industrial Application of Inorganic Chemistry, Seminar, . . . . .	2
OSWALD SEIDENSTICKER, Ph.D., Litt.D., Professor of German Language and Literature.	
<i>Gothic</i> .—Phonology, Grammar and Readings in Ulfilas.	
EDGAR F. SMITH, Ph.D., Professor of Inorganic Chemistry.	
Chemical Theory, . . . . .	2
Thermo-Chemistry, . . . . .	1
Lectures on Special Topics in Pure Inorganic and Analytical Chemistry, . . . . .	2
Laboratory Work with Supervision.	
Seminar, . . . . .	2
ROBERT ELLIS THOMPSON, D.D., Professor of History.	
Philosophy of History, . . . . .	2
FRANCIS N. THORPE, Ph.D., Lecturer on American History.	
Development of Constitutional Government in the United States.	
I. State. II. National. . . . .	2
WILLIAM POWELL WILSON, Sc.D., Professor of the Anatomy and Physiology of Plants.	
1. <i>Plant Histology</i> .	
Laboratory Work, with Instruction, 6 hours,—First Term; with Supervision only, daily.	
2. <i>Plant Physiology</i> .	
Laboratory Work, with Instruction, 6 hours,—Second Term; with Supervision only, daily.	

## DEGREES.

The Degree of Doctor of Philosophy is conferred upon the following conditions:

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

2. He must pursue graduate studies for at least two years after taking his Bachelor's degree.

3. He must spend at least one year of this time in residence at this University. The remainder may be spent in residence at other universities.

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

1. American Archæology and Languages.
2. American History—Political and Constitutional.
3. Botany.
4. Chemistry—Inorganic.
5. Chemistry—Organic.
6. Comparative Philology and Sanskrit.
7. English Language and Literature.
8. Experimental Psychology.
9. Germanic Philology and Literature.
10. General History.
11. Greek Language and Literature.
12. History and Development of Legal Institutions.
13. Mathematics.
14. Mineralogy and Geology.
15. Political Economy.
16. Political Science.
17. Philosophy.
18. Physics.
19. Romance Philology and Literature.
20. Semitic Languages and Literature.
21. Zoölogy.

For the present, subjects 6 and 19 can not be taken together.

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

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

#### SEMITIC LANGUAGES.

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

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

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

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

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

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

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

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

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

Each candidate must register at the office of the Dean, at the beginning of each academic year, on or before the first Friday in October. A student who omits to register at the prescribed time without a satisfactory excuse is liable to be dropped from the list.

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

#### FEES.

For those who are in regular course for the Ph.D. degree the fee is \$150.00 a year. The charge for those who enter as special students, and take one or more courses, varies with the subject chosen and the amount of instruction given. The matriculation fee (paid by all students) is \$5, and the graduation fee \$35.

For further information respecting this department, address the Dean of the Faculty.

## DEPARTMENT OF PHYSICAL EDUCATION.

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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 base-ball, foot-ball, tennis, 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  
of the Class of

Development . . . . .	Average Development . . . . .
Strength . . . . .	Average Strength . . . . .
Condition, viz.: Relation of Strength to development . . . . .	
Chest Capacity . . . . .	Average Capacity . . . . .
Muscles especially requiring development . . . . .	
Exercise recommended . . . . .	
General Advice . . . . .	

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 twice 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.

In our competitive sports the greatest care is exercised in recommending training for athletic contests. Only such students are advised to train for special events as have shown themselves naturally adapted to work of that kind. Students are at all times freely advised, both in the gymnasium and in the field, concerning their work, diet, clothing and hours of sleep.

The earnest co-operation of parents or guardians is very necessary in the attainment of the best results in this Department. Parents need have no fears that the health of those entrusted to the care of the Department will suffer from overwork, for the greatest care is constantly exercised to prevent overwork. It has, without exception, also been the experience that those students who conscientiously follow the instructions received from the Department increase in mental vigor *pari passu* with the improvement in bodily strength.

Plotting charts based upon all the measurements and strength tests previously made at the University of Pennsylvania are used to indicate at a glance the relative standing of any particular student compared with all previous examinations. The advantage of these charts is that they show the changes noted at different examinations, in addition to the individual's standing as compared with that of all preceding students.

For further information apply to

A. H. P. LEUF, M.D.,

Director of Physical Education,

129 S. 36th St.

## LIBRARY.

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The Library is one of the original departments of the University, possessing among its treasures works presented to the Academy of Philadelphia in 1749 (the year of its institution), others purchased by a Committee, of which Benjamin Franklin was chairman, in 1750, and still others given by the Rev. William Smith, D.D., first Provost of the College of Philadelphia, and by Louis XVI and other early friends and patrons. It now contains over 50,000 bound volumes, and considerably more than that number of unbound volumes and pamphlets.

It comprises a fine collection of public documents, dating from the institution of the Federal Government, and has been for some time an official depository of the Government for later publications.

Valuable additions have been made to the departments of history and literature from the income of the TOBIAS WAGNER LIBRARY FUND, given to the University in memory of a deceased Trustee.

THE COLWELL LIBRARY, the munificent gift of the late Stephen Colwell, consists of over 7,000 volumes, and is one of the most complete collections of works on Finance and Political Economy in the world. It contains nearly everything of importance on these subjects in the English, French and Italian languages published before 1860. It is supplemented by THE CAREY LIBRARY, the bequest of the late Henry C. Carey, which embraces many books of more recent date, is especially rich in statistics, European government reports, and the like, and includes about 3,000 English pamphlets, bound in chronological order, and covering the period from the close of the seventeenth century to our time. The pamphlets were presented to Mr. Carey by Mr. McCalmont, of London.

THE EVANS ROGERS LIBRARY is composed of standard works

on drawing, mathematics, astronomy, physics, surveying and explorations, as well as of 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. It contains, also, a valuable collection of reports of American, English and French Engineering Societies, periodicals, Coast Survey and hydrographic charts, maps, diagrams, and drawings.

THE WETHERILL LIBRARY consists of works on Chemistry.

THE ALLEN LIBRARY includes about 5,000 volumes relating to Bibliography, Greek and Latin Literature, Military Science, and Shakespeare, selected with great care by their former owner, the late Professor George Allen, LL.D., of the University.

THE HENRY SEYBERT LIBRARY OF MODERN SPIRITUALISM embraces a large collection of works on that and cognate subjects.

THE MCCARTEE LIBRARY comprises nearly 1,000 volumes in Chinese and Japanese, and over 200 in European languages concerning the history and literature of China and Japan.

THE KRAUTH LIBRARY, founded by the Society of the Alumni of the College Department in honor of the late Vice-Provost of the University, the Rev. Charles P. Krauth, D.D., comprehends the subjects of Intellectual and Moral Philosophy.

THE CRAWFORD LIBRARY, the gift of Major-General Samuel Wylie Crawford, M.D., LL.D., consists of over 1,000 volumes on a great variety of subjects, literary, scientific and historical.

THE HAYDEN LIBRARY comprises works on geology, palæontology, zoölogy and botany, presented to the University by the widow of the late Professor F. V. Hayden, M.D.

THE STILLÉ MEDICAL LIBRARY, founded by Professor Alfred Stillé, M.D., embraces 6,000 bound volumes and as many unbound volumes and pamphlets.

Besides the books on Natural History contained in the general Library, there is a special collection of about 4,000 volumes relating to that subject in the Biological Laboratory.

Among the works on Law are many on Roman jurisprudence and the civil code, from the library of the late Judge Bouvier, and presented to the University by his son-in-law, R. E. Peterson, M.D. There is, also, the noted collection of Ameri-

can, English, Scotch and Irish Reports, numbering 4,200 volumes, formerly the property of the Hon. Benjamin H. Brewster, and the gift of George W. Biddle, Esq., and family, in memory of the late George Biddle, Esq.

THE POTT LIBRARY, recently purchased by private subscription, embraces the philological library of the late Professor F. A. Pott, of the University of Halle, as well as many valuable additions to Professor Pott's collection. It contains between 4,000 and 5,000 volumes, and represents almost every language and dialect of any prominence. It is especially rich in the departments of Sanskrit and the Romance and Teutonic languages, particularly the German dialects, as well as in the Greek and Latin tongues. It includes a good collection of books on the alphabet and its history, and a remarkably fine collection on gypsy dialects and proper names.

The Library is open every day during the session, except Saturday and Sunday, from 9 A.M. to 5 P.M., and both professors and students are permitted to take books out. The use of the Library for consultation is accorded graduates and other persons properly introduced.

## CENTRAL COMMITTEE OF THE ALUMNI.

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This organization, the result of a growing desire amongst the Alumni at large for a definite influence in the affairs of the University, was established by the Board of Trustees, March 7th, 1882. Under the Revised Statutes, sec. 34, the Central Committee is authorized, for every third vacancy which may occur in the Board of Trustees, to nominate four candidates, one of whom may be chosen a member of the Board: if none of these be elected, others are to be nominated until the vacancy is filled. The Central Committee arranges itself in certain sub-committees, one for each Department, whose duty it is, from time to time, to attend the examinations, recitations and other exercises of the Department for which it has been appointed, and to confer with the Professors and Faculty thereof on all matters tending to improvement. It appoints, too, a Committee on Property and Endowment, to which the Treasurer of the University sends annually a copy of his report to the Board of Trustees of the income and assets of the University.

The officers of the Central Committee are a President, a Secretary and a Treasurer, elected annually. The members are thirty in number, six elected annually for a term of five years, by the duly qualified electors, as defined below, voting by ballot, in person, on Commencement Day, in Philadelphia. Of the six so elected, two must be graduates of the College Department of at least three years' standing, two of the Medical Departments, and two of the Law Department. All persons are qualified electors who have received a degree, honorary or in course, from the University, except members of the Board of Trustees and other officers of government or instruction, none of whom are eligible as members of the Central Committee. Preliminary to the annual election a list of eighteen eligible names is mailed to the Alumni, who select six of the number as their regular nominees. At the election, however, any other duly qualified persons may be voted for.

All Alumni are cordially urged to bring to the attention of the

Committee any matters or suggestions affecting the welfare of the University. Alumni who have not heretofore received postal-card ballots for the preliminary nominating election, but desire them, should send name and address, with degree and year of graduation, to the Secretary.

## MEMBERS OF THE CENTRAL COMMITTEE.

1889\*

Claudius H. Mastin, M.D., LL.D.,	Mobile, Alabama.
Chas. E. Cadwalader, A.M., M.D.,	240 S. Fourth St., Philada.
R. Dale Benson, A.M.,	510 Walnut St., do.
Effingham B. Morris, A.M., LL.B.,	404 Locust St., do.
Alfred Lee, A.M., LL.B.,	520 Walnut St., do.
John Douglass Brown, Jr., A.M., LL.B.,	Drexel Building, do.

1890.

George C. Harlan, M.D.,	1515 Walnut St., Philada.
Theodore H. Seyfert, M.D.,	1709 Mt. Vernon St., Philada.
John Leighton McKim, A.M.,	Milford, Del.
Persifer Frazer, A.M., D.ÈS SC.NAT.,	Drexel Building, Philada.
William R. Philler, A.M., LL.B.,	1340 Chestnut St., do.
Hampton L. Carson, A.M., LL.B.,	Drexel Building, do.

1891.

Henry Budd, A.M.,	719 Walnut St., Philadelphia.
William H. Klapp, A.M., M.D.,	2132 Pine St., do.
Herbert M. Howe, M.D.,	1606 Locust St., do.
Robert H. Neilson, A.M.,	215 S. Fifth St., do.
J. Sergeant Price, LL.B.,	709 Walnut St., do.
Walter George Smith, A.M., LL.B.,	402 Walnut St., do.

1892.

James W. Robins, D.D.,	1821 De Lancey Place, Phila.
H. Laussat Geyelin, A.M., LL.B.,	134 S. Ninth St., do.
J. Levering Jones, LL.B.,	Drexel Building, do.
Alfred Whelen, M.D.,	123 S. Twentieth St., do.
B. Alexander Randall, M.D.,	1806 Chestnut St., do.
John Marshall Gest, A.M., LL.B.,	129 S. Fifth St., do.

1893.

John H. Packard, A.M., M.D.,	1926 Spruce St., Philada.
George F. Martin, A.M.,	3903 Locust St., do.
Joseph G. Rosengarten, A.M.,	532 Walnut St., do.
Charles Claxton, A.M., M.D.,	2114 Pine St., do.
James T. Mitchell, LL.B.,	1722 Walnut St., do.
William M. Stewart, Jr., A.M., LL.B.,	Drexel Building, do.

<i>President.</i>	J. Sergeant Price,	709 Walnut St., Philada.
<i>Secretary.</i>	John Marshall Gest,	129 S. Fifth St., do.
<i>Treasurer.</i>	William H. Klapp, M.D.,	2132 Pine St., do.

\*The term expires, in each case, on Commencement Day of the year indicated.

DEGREES, HONORS AND PRIZES,  
1887-1888.

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HONORARY DEGREES.

JUNE 6, 1888.

*Master of Arts*—HENRY R. TOWNE.

*Doctor of Divinity*—THE REV. GEORGE S. CHAMBERS, A.M., THE  
REV. JOHN K. MURPHY.

*Doctor of Laws*—E. OTIS KENDALL, LL.D., D. HAYES AGNEW, M.D.,  
LL.D.

DEGREES IN COURSE.

JUNE 6, 1888.

*Bachelor of Arts.*—

William Lyttleton Barclay,  
Richard Henry Bayard Bowie,  
Joseph Spencer Brock,  
John Ruckman Fell,  
John Sims Forbes,  
Walter Budd Keen,  
Theodore Wm. Kretschmann,  
Stuart Douglas Lansing,  
James Barton Longacre,  
William Wilson Longstreth,  
Ernest de Fremery Miel,

S. G. Morton Montgomery,  
William Salter Porter,  
James Martin Raker,  
Horace Clark Richards,  
John David Samuel,  
John Duncan Ernest Spaeth,  
Lawrence Savery Smith,  
Carrow Thibault,  
Lightner Witmer,  
Carleton Bicknel Zeilin.

*Bachelor of Philosophy.*—

George Clay Bowker,  
Franklin Derstine Hartzell,  
Thomas Atkinson Jenkins,  
Samuel Kahn Louchheim,  
Adam Keith Luke,  
Edward Alden Miller,

David Emanuel Simon,  
Charles Sturgis Wood,  
Julian Hiland Dewey,  
John Alexander McIlwain,  
Norton Buel Young.

*Bachelor of Science.*—

Frederick Colton Clarke,  
Eugene Delano Cleaver,  
Thomas Darling Drown,  
George Brodhead Harris,  
Manton Eckfeldt Hibbs,  
William George Houston,  
Frederick Merwin Ives,

Herbert Moses Kaufmann,  
Edwin Robert Keller,  
Charles Everett Ross,  
William James Smith,  
William Caner Wiedersheim,  
Maurice Davidson Wilt.

*Bachelor of Laws.—*

J. Claude Bedford,	Clinton O. Mayer,
J. Uhle Bethell,	Edward DeV. Morrell,
Anderson Bourgeois,	Aaron A. Mossell,
George A. Bourgeois, Jr.,	George DeB. Myers,
O. Percy Bright,	Isaac Norris, 3d,
T. Fernley Brooks,	Henry L. Patterson,
W. Wilson Carlile,	W. Grant Pierce,
John R. Cassel,	Henry B. Robb,
Franklin A. Coles,	J. Martin Rommel,
David Howard Conrade,	Horace M. Rumsey,
A. Morton Cooper,	Conrad Shamel Sheive, Jr.,
Franklin Strawn Dickson,	Alfred P. Smith,
Joseph McG. Dohan,	George Lambert Smith,
Franklin H. Evans,	Henry Anstie Smith,
C. C. Felton,	H. Forrest Smith, Jr.,
Davenport Galbraith,	W. Wharton Smith,
Francis G. Gallagher,	J. Burton Stackhouse,
Philip Henry Goepp,	Guy LeR. Stevick,
Christian Gosh,	Harry F. Stitzell,
Harry Green,	Frank Blockson Stockley,
Charles Francis Gumme, Jr.,	Augustus B. Stoughton,
George Quintard Horwitz,	Theodore A. Tack,
George W. Jacobs, Jr.,	George Herbert Taylor,
William G. Littleton,	William G. Thomson,
Henry Stanislaus McCaffrey,	George Vaux, Jr.,
David S. McCann,	Edward D. Wadsworth,
Henry C. McDevitt,	Harry S. Waldron,
John Bruce McPherson,	George White Worman.

*Bachelor of Sciences Auxiliary to Medicine.—*

John Leffingwell Hatch, M.D.,	Hill S. Warwick, M.D.
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*Master of Arts.—*

Herman T. Lukens, A.B.,	Landreth W. Thompson, A.B.,
J. Vaughan Merrick, Jr., A.B.,	Lewis L. Smith, A.B.,
Edward De Veaux Morrell, A.B.	

*Practical Chemist.—*

Lee Käufer Frankel, B.S.,	John Philip Kreckler, B.S.,
John Dawson Hawkins, B.S.,	Levis Passmore Newlin, B.S.,
John Julius Hovey, B.S.,	Robert Neales Riddle, B.S.

*Mining Engineer.—*

Thomas Darling Drown, B.S.,	Frank James Keeley, B.S.,
Joseph Sketchley Elverson, B.S.,	Milton Valentine Snyder, B.S.,
Daniel Morrell Stackhouse, B.S.	

*Civil Engineer.*—

Enoch Jones Acker, B.S.,	Albert Lee Magilton, B.S.,
Charles Louis Eugene Amet, B.S.,	George Ledlie Martin, B.S.,
John Stephens Durham, B.S.,	Andrew Perry Redifer, B.S.,
Silas Godfrey Griffith, B.S.,	Theodore Nelson Spencer, B.S.,
Edward Fulbister Kenney, B.S.,	Horace A. Stever, Jr., B.S.,
Theophilus Kuelling, B.S.,	Joseph Christian Wagner, B.S.,
William McLean, B.S.,	John Wallace Weaver, B.S.

*Mechanical Engineer.*—

Henry Clay Adams, B.S.,	Willis E. Hall, B.S.,
Henry Price Ball, B.S.,	William Byrd Page, B.S.,
Chas. Thos. Parry Brunner, B.S.,	David Pepper, Jr., B.S.,
Albert Rowland Cline, B.S.,	Henry Hunter Seyfert, B.S.,
Edgar Pardee Earle, B.S.,	Alfred Henry Smith, B.S.,
William Hahman, B.S.,	Wm. Poultney Smith, Jr., B.S.

*Master of Laws.*—

Thomas F. McCourt, LL.B.,	William C. Scott, LL.B.
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*Doctor of Veterinary Medicine.*—

B. Frank Bächman,	Louis Olry Lusson,
Helmuth C. Baltzer,	Antoni Maurise,
Leo Breisacher, Jr.,	Leon N. Reefer,
Howard B. Felton,	William Hodgson Ridge,
Robert Formad,	Albert F. Schreiber,
Caspar Garrett,	John Z. Tintzman,
Guldin R. Hartman,	William B. Werntz.

## CERTIFICATES.

## IN THE COLLEGE DEPARTMENT.

*Course in Science.*—

Daniel Byrne,	Alfred Varley Sims,
William Warner Hill.	

*Course in Finance and Economy.*—

Benjamin Wilfrid Fleisher.

*Course in Music.*—

Ella Ellis,	Hedwig M. Schmitz,
Edward S. Field,	Katharine Thunder,
Anne F. Pond,	Elizabeth Wolfe.

## IN THE DEPARTMENT OF BIOLOGY.

Edward Bancroft,	George G. Ross,
John A. Blouse,	Elmer G. Whinna,
Charles Meredith Burk,	Albert D. Whiting,
Charles F. Nassau,	Bernard Zweighaft,

## DEGREES IN COURSE.

MAY 1, 1888.

*Doctor of Medicine.*—

Addison, Thomas G.,	Washington,	Dist. of Columbia.
Adler, Lewis H., Jr.,	Philadelphia,	Pennsylvania.
Agnew, Hulbert, A.M. (Princeton),	Philadelphia,	Pennsylvania.
Alleman, Horace M., A.B. (Lafayette),	Hanover,	Pennsylvania.
Andrews, Warren W., B.S. (Dickinson Seminary),	Lock Haven,	Pennsylvania.
Atwater, Edward P.,	Sydney,	Australia.
Baker, James H., A.B. (Hamilton),	Clinton,	New York.
Barberena, Narciso, B.S.,	Granada,	Nicaragua.
Blake, Lewis J., A.B. (Wofford),	Spartanburg,	South Carolina.
Bolton, Samuel, Jr., A.B. (Bucknell),	Philadelphia,	Pennsylvania.
Bonnaffon, Samuel Ashton, M.D.,	Philadelphia,	Pennsylvania.
Bowman, John H., B.S. (Dickinson Seminary),	Hazleton,	Pennsylvania.
Bulette, Wilbur W.,	Constitution,	Pennsylvania.
Canfield, William C.,	Bristol,	Rhode Island.
Cates, Benjamin B.,	Marysville,	Tennessee.
Coldren, William A.,	Van Wert,	Pennsylvania.
Colter, Frederick G.,	Woodstock,	New Brunswick.
Cooke, Edwin S., A.B. (C.H.S.),	Philadelphia,	Pennsylvania.
Downs, Norton,	Germantown,	Pennsylvania.
Easter, Daniel M.,	Baltimore,	Maryland.
Eckman, Philip N.,	Scranton,	Pennsylvania.
Egbert, Seneca, A.M. (Princeton),	Franklin,	Pennsylvania.
Faries, Randolph, A.B. (Univ. of Penna.),	Philadelphia,	Pennsylvania.
Ferrer, Adolfo Leon, A.B. (Ocampo, Mex.),	Tabasco,	Mexico.
Frame, Joseph K.,	Millsboro',	Delaware.
Frey, Lewis,	Scranton,	Pennsylvania.
Friend, Samuel H.,	Milwaukee,	Wisconsin.
Gentry, Alan F., A.B. (C.H.S.),	Philadelphia,	Pennsylvania.
Gill, Walter Myers,	Allegheny,	Pennsylvania.
Goodwin, Eugene B.,	Kenton,	Delaware.
Greenewalt, Frank L.,	Chambersburg,	Pennsylvania.
Greene, Walton S.,	Aberdeen,	Mississippi.
Green, John Trail, A.B. (Lafayette),	Easton,	Pennsylvania.
Griesemer, Howard,	Reading,	Pennsylvania.
Gummey, Frank Bird,	Germantown,	Pennsylvania.
Hall, Harry N., Ph.G.,	Aguascalientes,	Mexico.
Hamill, Samuel M.,	Lemont,	Pennsylvania.
Hand, William Nelson,	Woodstock,	New Brunswick.
Harding, Frank H.,	Mansfield,	Ohio.
Hatch, John Leffingwell,	Rochester,	New York.
Hay, Charles McKenzie,	Woodstock,	New Brunswick.
Hayes, Joseph,	Spring Hill Mines,	Nova Scotia.

Hepler, Harry A.,	Reading,	Pennsylvania.
Heyl, Ashton Bryant,	Philadelphia,	Pennsylvania.
Hotchkiss, Walter William,	Meadville,	Pennsylvania.
Huber, William S.,	Lebanon,	Pennsylvania.
Hunter, James, Jr., Ph.G.,	Philadelphia,	Pennsylvania.
Johnson, Elmer E., A.B. (Muhlen- berg),	Norristown,	Pennsylvania.
Kahn, Joseph,	Milwaukee,	Wisconsin.
Keller, Harry M.,	Stroudsburg,	Pennsylvania.
Kelly, John J.,	Parsons,	Pennsylvania.
Kerns, Alvin J., B.S. (Ursinus),	Slatington,	Pennsylvania.
Klapp, Wilbur P.,	Philadelphia,	Pennsylvania.
Knoll, John G. W.,	Buffalo,	New York.
Lake, Wilson A.,	Green Creek,	Green Jersey.
Landis, Eli Barr,	Lancaster,	Pennsylvania.
Le Conte, Robert G., A.B. (Univ. of Penna.),	Philadelphia,	Pennsylvania.
Lenagan, Frank P.,	Wilkes-Barre,	Pennsylvania.
Lincoln, Wm. R.,	Philadelphia,	Pennsylvania.
Long, Frederick F.,	Pittsfield,	Illinois.
Mackey, David,	Lewisville,	Pennsylvania.
Mallet-Prevost, Washington,	Zacatecas,	Mexico.
Matthews, Geo. S., A.B. (Brown),	Temple,	Pennsylvania.
Miller, Edwin H.,	Camden,	New Jersey.
Miller, Milo G., A.M. (Western Univ.),	Pittsburgh,	Pennsylvania.
Mitchell, Andrew J., A.B. (Alle- gheny),	Fredonia,	Pennsylvania.
Moyer, Irwin J., M.D.,	Pittsburgh,	Pennsylvania.
Myers, Oscar M., Ph.G.,	Rochester,	New York.
McMillan, James H., A.B. (Wash- ington University),	St. Louis,	Missouri.
Nixon, John Howard,	Wilmington,	Delaware.
O'Brien, Harry J.,	St. Paul,	Minnesota.
Paris, Louis J.,	Philadelphia,	Pennsylvania.
Pennock, Walter I.,	Oxford,	Pennsylvania.
Pfoutz, Gilbert B.,	Philadelphia,	Pennsylvania.
Perry, Charles F.,	Norristown,	Pennsylvania.
Peter, Nathaniel C.,	Siegfried's Bridge,	Pennsylvania.
Pierce, William Chandler,	Wilmington,	Delaware.
Rabe, J. William,	Cleveland,	Ohio.
Ray, Frank W., A.B. (Union Col- lege),	Columbia,	South Carolina.
Riley, Gustavus T.,	Washington,	Dist. of Columbia.
Roberts, John B., A.M., M.D.,	Philadelphia,	Pennsylvania.
Ross, Thomas Haven,	Chestnut Hill,	Pennsylvania.
Rothrock, John L., A.B. (Penna. College),	Mifflintown,	Pennsylvania.
Saiki, Riichi, M.D.,	Tokio,	Japan.
Salade, Louis Audenried, A.B. (Franklin and Marshall),	Tamauqua,	Pennsylvania.
Schantz, William S.,	Hosensack,	Pennsylvania.
Schoch, Lester E.,	Philadelphia,	Pennsylvania.

Schoch, Will E.,	Easton,	Pennsylvania.
Seibert, Albert A.	Pottsville,	Pennsylvania.
Sharples, Caspar Wistar, A.M. (Oregon University),	Eugene City,	Oregon.
Sharpless, William T.,	West Chester,	Pennsylvania.
Shick, William F.,	Easton,	Pennsylvania.
Shurtleff, Harry C.,	Philadelphia,	Pennsylvania.
Slocum, Charles E., Jr., M.D.,	El Paso,	Illinois.
Snavely, Harry B.,	Lancaster,	Pennsylvania.
Stavely, A. Livingston, A.B. (Princeton),	Lahaska,	Pennsylvania.
Stevens, John C., B.S. (Dickinson),	Duncannon,	Pennsylvania.
Steltz, P. Harry,	Allentown,	Pennsylvania.
Stiles, William E.,	Pittston,	Pennsylvania.
Sweringen, Budd V.,	Fort Wayne,	Indiana.
Taillacq, Ricardo,	Cienfuegos,	Cuba.
Tam, John L.,	Georgetown,	Delaware.
Thomas, Thomas B.,	Wilkes-Barre,	Pennsylvania.
Thompson, Jesse B.,	Hurffville,	New Jersey.
Vanneman, William S.,	Salem,	New Jersey.
Voorhees, Shepard,	Daggetts Mills,	Pennsylvania.
Walter, Charles, A. B., (Central High School),	Philadelphia,	Pennsylvania.
Warder, Charles, B., M.D.,	Philadelphia,	Pennsylvania.
Webster, Charles F.,	Philadelphia,	Pennsylvania.
Wilbur, William L., A. B. (Prince- ton),	Hightstown,	New Jersey.
Winston, David Y.,	Auburn,	Kentucky.
Wood, Alfred C., Ph.G.,	Hatboro',	Pennsylvania.
Yeager, Frank N.,	Berrysburg,	Pennsylvania.
Zimmermann, Mason W., Ph.G.,	Philadelphia,	Pennsylvania.

June 6th, 1888.

Cawley, Morris F.,	Allentown,	Nicaragua.
Chamorro, Filadelfo,	Granada,	Pennsylvania.
Foltz, J. Clinton,	Lancaster,	Pennsylvania.
Gillam, William S.,	Langhorne,	Pennsylvania.

Of the foregoing there were from:

Australia, . . . . .	1	New Jersey, . . . . .	5
Cuba, . . . . .	1	New York, . . . . .	4
Delaware, . . . . .	5	Nicaragua, . . . . .	2
District of Columbia, . . . . .	2	Nova Scotia, . . . . .	1
Illinois, . . . . .	2	Ohio, . . . . .	2
Indiana, . . . . .	1	Oregon, . . . . .	1
Japan, . . . . .	1	Pennsylvania, . . . . .	73
Kentucky, . . . . .	1	Rhode Island, . . . . .	1
Maryland, . . . . .	1	South Carolina, . . . . .	2
Mexico, . . . . .	3	Tennessee, . . . . .	1
Minnesota, . . . . .	1	Wisconsin, . . . . .	2
Mississippi, . . . . .	1		
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New Brunswick, . . . . .	3		

*Doctor of Dental Surgery.—*

Aguilar, Arturo,	Leon,	Nicaragua.
Ascher, Hugo,	Königsberg,	Germany.
Ayres, Percy C.,	Philadelphia,	Pennsylvania.
Baker, Boyd H.,	Hughesville,	Pennsylvania.
Baumgardner, Ira G.,	Philadelphia,	Pennsylvania.
Beck, Harry M.,	Wilkes-Barre,	Pennsylvania.
Belt, J. Ferris,	Wilmington,	Delaware.
Bower, Elmer E.,	Baumstown,	Pennsylvania.
Bowers, George A.,	Nashua,	New Hampshire.
Brown, Frederick W.,	New Haven,	Connecticut.
Bryant, William E.,	St. Paul,	Minnesota.
Burke, John J.,	Wilmot,	Pennsylvania.
Cabedo, Gabriel C.,	Gibraltar,	Spain.
Channell, William C.,	Montezuma,	Iowa.
Cogswell, Arthur W.,	Halifax,	Nova Scotia.
Cornelius, George T.,	Philadelphia,	Pennsylvania.
Dunwoody, J. Edward,	Philadelphia,	Pennsylvania.
Fenn, Henry H.,	Bridgeport,	Connecticut.
Fletcher, Charles R.,	Halifax,	Nova Scotia.
Fuller, Thomas B.,	Binghamton,	New York.
Gardner, Peter W.,	Milwaukee,	Wisconsin.
Gibbons, R. Hornsby,	Brighton,	England.
Graff, Mark W.,	Richmond,	Indiana.
Hart, Frank J.,	Girard,	Pennsylvania.
Heyde, Hans von der,	Constantinople,	Turkey.
Hopkins, Richard S.,	Cheyenne,	Wyoming Territ'ry.
Howard, Charles P.,	Champaign,	Illinois.
Jones, J. Benjamin,	Summit Hill,	Pennsylvania.
Keyes, William B.,	Rio de Janeiro,	Brazil.
Knod, Hans Ludwig,	Essen,	Germany.
Kuni, Harry W.,	Philadelphia,	Pennsylvania.
Le Fevre, Harry W.,	Hillsboro,	Ohio.
Link, Edward G.,	Rochester,	New York.
Lohmann, August,	Kassel,	Germany.
McCanna, Horace,	Atglen,	Pennsylvania.
McDaniel, W. Archie,	Birmingham,	Alabama.
Manship, John F.,	Milton,	Delaware.
Mayer, William J.,	New Haven,	Connecticut.
Meisburger, Louis C. J.,	Buffalo,	New York.
Paiste, James L.,	West Chester,	Pennsylvania.
Place, Eugene H.,	Freeport,	Illinois.
Ramsden, Harry M.,	Frankford,	Pennsylvania.
Rathbun, Chauncey M.,	Dunkirk,	New York.
Robinson, Will B.,	Greenfield,	Ohio.
Rue, Samuel F.,	Hightstown,	New Jersey.
Schwarze, Paul,	Leipzig,	Germany.
Segar, Albertus V.,	Westerly,	Rhode Island.
Smith, Charles E.,	Nashua,	New Hampshire.
Sullivan, George A.,	Lancaster,	Pennsylvania.
Tees, Louis F.,	Philadelphia,	Pennsylvania.
Tenny, Robert C.,	Eaton,	New York.

Thompson, Lamar I.,	Rochester,	New York.
Van Deursen, George L.,	Paris,	Illinois.
Weaver, Luther M.,	Hanover,	Pennsylvania.
Weinberg, Nathan,	St. John,	Kansas.
Wheeler, Walter F.,	Spencer,	Massachusetts.

## SUMMARY.

Alabama, . . . . .	1	New Hampshire, . . . . .	2
Brazil, . . . . .	1	New Jersey, . . . . .	1
Connecticut, . . . . .	3	New York, . . . . .	6
Delaware, . . . . .	2	Nova Scotia, . . . . .	2
England, . . . . .	1	Ohio, . . . . .	2
Germany, . . . . .	4	Pennsylvania, . . . . .	17
Illinois, . . . . .	3	Rhode Island, . . . . .	1
Indiana, . . . . .	1	Spain, . . . . .	1
Iowa, . . . . .	1	Turkey, . . . . .	1
Kansas, . . . . .	1	Wisconsin, . . . . .	1
Massachusetts, . . . . .	1	Wyoming Territory, . . . . .	1
Minnesota, . . . . .	1		—
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## HONORS.

## IN THE COLLEGE FACULTY.

At the Examination for Degrees, Honors were awarded as follows:—

In the Course in Arts—

Of the *First Class*, to Horace Clark Richards and Theodore William Kretschmann.

Of the *Third Class*, to William Wilson Longstreth, William Salter Porter, Samuel George Morton Montgomery, Ernest de Fremery Miel, James Martin Raker, John Duncan Ernest Spaeth, and Carleton Bicknel Zeilin.

In the Course in Science—

Of the *Third Class*, to Frederick Merwin Ives, John Richard Savage, Jr., Herbert Moses Kaufmann, and Edwin Robert Keller.

In the Course in Finance and Economy—

Of the *Third Class*, to Thomas Atkinson Jenkins, Lightner Witmer, Adam Keith Luke, George Clay Bowker, Samuel Kahn Louchheim, and Edward Alden Miller.

In the Course in Philosophy for Undergraduates—

Of the *Third Class*, to John Alexander McIlwain and Julian Hiland Dewey.

At the Annual Examination, Honors of the *First Class*,

In the Course in Arts—

To Josiah Harmar Penniman, of the Sophomore Class.

In the Course in Science—

To Edward Adams Shumway, of the Freshman Class.

## IN THE FACULTY OF DENTISTRY.

At the Examination for Degrees, Honorable Mention for averages, exceeding 90, to

Horace McCanna,	Pennsylvania.
James L. Paiste,	Pennsylvania.
George L. Van Deursen,	Illinois.
George A. Bowers,	New Hampshire.
Ira G. Baumgardner,	Pennsylvania.
John J. Burke,	Pennsylvania.
Edward G. Link,	New York.
Robert C. Tenny,	New York.
William E. Bryant,	Minnesota.
Elmer E. Bower,	Pennsylvania.
Luther M. Weaver,	Pennsylvania.

## COMMENDED THESES.

## IN THE COLLEGE FACULTY.

In the Course in Science—

With High Commendation—The Theses of Messrs. Spencer, Wagner, and McLean, of the Civil Engineering Section, Post-Senior Class.

With Commendation—The Theses of Messrs. Magilton, Martin, Redifer, Stever, and Weaver, of the Civil Engineering Section, Post-Senior Class, and of Messrs. Hibbs and Ives, of the Civil Engineering Section, Senior Class.

## IN THE FACULTY OF VETERINARY MEDICINE.

Honorable Mention for the best Thesis, Howard B. Felton; for general excellence, Leon N. Reefer.

## PRIZES.

JUNE 6, 1888.

## I. IN THE COLLEGE FACULTY—

1. For the best examination on the *Oration of Æschines against Ctesiphon* by a member of the Junior Class, equally to Conway Dillingham and Charles Peabody, with honorable mention of James Clayton Mitchell.

2. For the best examination on the *Lectures on Quaternions* given to the Voluntary Junior Class; First Prize to Charles Peabody; Second Prize to Charles Newton Clement Brown.

3. For the best Essay in History and English Literature by a member of the Senior Class, to Thomas Atkinson Jenkins. Subject: *The Constitutional Convention of 1787 and its Work.*

4. For the best Essay by a member of the Junior Class, to Elliston Joseph Perot. Subject: *The By-Ways of English Literature*.

5. For the best Declamation by a member of the Sophomore Class, to Hugh Walker Ogden, with honorable mention of Robert Reineck Truitt and William Wilson Barr, Jr.

6. To a member of the Scientific Classes for improvement in Drawing, and for general good conduct and application, to James Clark Irwin, with honorable mention of Edward Adams Shumway.

7. The SOCIETY OF THE ALUMNI Prize for the best Latin Essay, by a member of the graduating class, to Theodore William Kretschmann for his essay, *De Romana Satira*.

8. The SOCIETY OF THE ALUMNI Prize for the best Original Declamation by a member of the Junior Class, to Charles Newton Clement Brown, with honorable mention of Oscar Pearl Chamberlain.

9. The HENRY LA BARRE JAYNE Prize for the best English Composition by a member of the Freshman Class, to Francis Churchill Williams, with honorable mention of Edward Adams Shumway. Subject: *The Causes of the Mexican War*.

10. The JOSEPH YARDLEY WARNER Prize, founded by the Class of 1877, for the best thesis in Political Economy by a member of the Senior Class, to Franklin Derstine Hartzell. Subject: *The Causes that Determine the Rate of Wages*.

11. The D. VAN NOSTRAND Prize, to the member of the Junior Class in Civil Engineering who attains the highest general average of scholarship, to George Whitfield Taylor Miller.

12. The PHI KAPPA SIGMA FRATERNITY Prize, in honor of their founder, Samuel Brown Wylie Mitchell, M.D., of the Class of 1852, for the best work in English Composition done during the year by a member of the Sophomore Class, to Henry Warren Kilburn Hale, with honorable mention of William Wilson Barr, Jr., James Hartley Merrick, and Hugh Walker Ogden.

## II. IN THE FACULTY OF LAW—

1. The SHARSWOOD Prize, to William Wharton Smith.

2. The MEREDITH Prize, to Guy le Roy Stevick.

3. The Faculty Prize for the best written examination with all the Professors, to H. A. McCarthy of the Junior Class.

## III. IN THE FACULTY OF BIOLOGY—

Senior Prize, by the Professor of Comparative Embryology, for the best series of histological drawings, to Charles Meredith Burk.

## IV. IN THE AUXILIARY FACULTY OF MEDICINE—

1. The GEORGE B. WOOD Prize, a gold medal, to John Leffingwell Hatch, B.S., M.D., for his thesis, *The Silurian Rocks occurring at Rochester, N. Y., known as the Ontario Division.*

2. The Prize of \$50 for the best examination in Hygiene, to Hill S. Warwick, B.S., M.D., for his thesis, *The Yellow Fever Epidemic of 1878.*

MAY 1, 1888.

## IN THE FACULTY OF MEDICINE—

The "*Alumni Medal*," to the member of the Graduating Class who attained the highest general average in examinations, to Wm. T. Sharpless.

The "*Medical News Prize*," of One Hundred Dollars, for the best thesis, equally to John L. Hatch for his thesis, *Cadaveric Poisoning*, and Seneca Egbert for his thesis, *An Examination of Some of the Beers and other Malt Liquors and Wines Sold in Philadelphia.*

The award of Distinguished Merit was given to Adolfo Ferrer y Leon for his thesis, *Physiological Action of the Alkaloids of Colchicum.*

The Morbid Anatomy Prize of a Zentmayer Histological Microscope, by the Professor of Morbid Anatomy, for the best thesis on any subject connected with Pathology, to Caspar Wistar Sharples, for his thesis, *A Report on the Morbid Growths removed at the Surgical Clinic of the University of Pennsylvania, during Session 1887-8.*

A prize of a Pocket Case, by Dr. John B. Deaver, Demonstrator of Anatomy, for the best record of Anomalies found in the Dissecting Room, to John Traill Green.

The following prizes were awarded by Dr. J. Wm. White, Demonstrator of Surgery: First Year prize, Proficiency in Bandaging,—1st, Edgar Strayer, one copy Agnew's Surgery; 2d, Howard S. Anders, one copy Ashhurst's Surgery. Third Year prizes, for proficiency in Bandaging and in Operative Surgery—1st prize, one copy of Agnew's Surgery, to Frank P. Lenahan; 2d, one White's pocket-case of Surgical Instruments, to Charles Walter.

The following graduates of the Medical Department, Class of 1888, were appointed to Hospitals on competitive examinations. They are alphabetically arranged:

To the University Hospital—

Daniel M. Easton,  
Charles M. Hay,

W. Mallet-Prevost,  
Alfred C. Wood.

- To the Philadelphia Hospital—  
 Seneca Egbert,  
 Samuel M. Hamill,  
 Joseph Kahn,  
 Milo G. Miller,  
 James H. McMillan,  
 John L. Rothrock,  
 Caspar W. Sharples,  
 William T. Sharpless,  
 William S. Vanneman,  
 Shepard Voorhees.
- To St. Mary's Hospital—  
 Walter S. Green,  
 Howard Griesemer,  
 Frank P. Lenahan,  
 Frank W. Ray.
- To St. Joseph's Hospital—  
 Lewis W. Blake.
- To the Children's Hospital—  
 Philip N. Eckman,  
 W. Nelson Hand.
- To the Presbyterian Hospital—  
 Edwin S. Cooke,  
 John Traill Green,  
 Hulbert Agnew,  
 Randolph Faries.
- To the German Hospital—  
 Nathaniel C. Peters,  
 P. Harry Stelz.
- To Elizabeth General Hospital, Elizabeth, N. J.—  
 Charles F. Perry.
- To Hospitals the appointment to which is not based upon competitive examination:
- To the Germantown Hospital—  
 Frank W. Gumme, Mason W. Zimmerman.
- To the Pennsylvania Hospital—  
 Robert G. Le Conte.
- To the Episcopal Hospital—  
 William W. Farr (Class of 1887), Francis Rudderow (Class of 1887),  
 William R. Lincoln.
- To the Lying-in Hospital, Munich, Germany—  
 Richeo Saiki.

## SUMMARY.

## PROFESSORS, LECTURERS AND INSTRUCTORS.

College Department, . . . . .	48	
Department of Medicine, including Hospital Service, . .	66	
"    "    "    (Auxiliary Faculty), . . . . .	5	
"    "    Dentistry, . . . . .	32	
"    "    Veterinary Medicine, . . . . .	17	
"    "    Biology, . . . . .	15	
"    "    Law, . . . . .	5	
"    "    Philosophy, . . . . .	25	
Emeritus Professors, . . . . .	6	
		219
Repeated, . . . . .		50
		169

## STUDENTS.

College Department, . . . . .	370*	
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"    "    "    (Auxiliary Faculty), . . . . .	13	
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"    "    Veterinary Medicine, . . . . .	58	
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		1237
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		1222

## ACCOMMODATIONS.

Good board can be had near the University at from five to seven dollars a week. 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.

	Min.	Max.
Board, thirty weeks, † . . . . .	\$150 00	\$210 00
Tuition (according to Department and Year of the Course), . . . . .	100 00	200 00
Text-books, . . . . .	10 00	50 00
	\$260 00	\$460 00

\* Including students in Music.

† The session in some of the Departments is from five to nine weeks longer.

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