ROUTES OF ACCESS.

A Market St., and Chestnut & 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.

GROUND PLAN OF THE UNIVERSITY.

COLLEGE BUILDINGS.

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

1887.

Sept. 22, Thursday.  First Term begins: College Department.
Oct.  3, Monday.  Winter Session begins: Departments of Medicine, Law, Dentistry, Veterinary Medicine, Auxiliary Department of Medicine and Department of Biology.  10 A.M.
“  3, Monday.  First Term begins: Department of Music.
Nov. 24, Thursday.  Thanksgiving Day.  (With Friday, 25th, holiday.)
Dec. 23, Friday.  Christmas Recess begins.  5 P.M.

1888.

Jan.  4, Wednesday.  Christmas Recess ends.  9 A.M.
“  31, Tuesday.  First Term ends: College Department (Chapel at 10 A.M.) and Department of Law.
Feb.  1, Wednesday.  Second Term begins: College Department and Departments of Biology and Law.
“  22, Wednesday.  Washington’s Birthday.  Celebration in College Chapel, 10 A.M.
March 28, Wednesday.  Easter Recess begins: College Department.  5 P.M.
“  30, Friday.  Good Friday.  (Legal Holiday.)

EASTER RECESS.

April  4, Wednesday.  Easter Recess ends: College Department.  9 A.M.
“  16, Monday.  Final and Term Examinations begin: Departments of Medicine and Dentistry.
“  24, Tuesday.  Examination for Resident Physicians, University Hospital.  12 Noon.
May  1, Tuesday.  Annual Commencement: Departments of Medicine and Dentistry.  12 Noon.
“  2, Wednesday.  Spring Session opens: Department of Dentistry.
“  5, Saturday.  Senior Examinations, College Department, end.
“  7, Monday.  Spring Session opens: Department of Medicine.  11 A.M.  Entrance Examination, Department of Medicine.
“  20, Friday.  Examinations begin: Department of Law and Auxiliary Department of Medicine.
“  31, Tuesday.  Second Term ends: Department of Law.
CALENDAR.

June 4, Monday. Announcement of Results, Annual Examinations: College Department. 10 A.M.

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

“7, Thursday. Entrance Examinations begin: College Department. 9 A.M. each day.

Summer Vacation.

Sept. 11, Tuesday. Entrance Examinations begin: College Department. 9 A.M. each day.

“17, Monday. Introductory Course opens: Departments of Medicine and Dentistry. 11 A.M.

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

“26, Wednesday. Competitive Examination for Medical Scholarships. 12 Noon.

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

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

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

“1, “ First Term begins: Department of Law, Department of Music and Auxiliary Department of Medicine.

Nov. 29, Thursday. Thanksgiving Day (with Friday, 30th, holiday).

Dec. 21, Friday. Christmas Recess begins. 5 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 Department of Law.
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 andgovernors 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 thereunto, 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 Plumstead, Thomas White, William Cole-
man, Isaac Norris, and Thomas Cadwalader, of our city of Philadelphia, gentlemen, that for the erecting, establishing, and maintaining an academy within our said city, as well to instruct youth for reward, as poor children whose indigent and helpless circumstances demand the charity of the opulent part of mankind, several benevolent and charitable persons have generously paid, and by subscriptions promised hereafter to pay, into their hands as trustees, for the use of the said academy, divers sums of money, which sums already paid, they, the said trustees, have expended in the purchase of lands well situated, and a building commodious for the uses aforesaid, within our said city in maintaining an academy there as well for the instruction of poor children on charity, as others whose circumstances have enabled them to pay for their learning, for some time past, and in furnishing the said academy with books, maps, mathematical instruments, and other necessaries of general use therein, according to the intentions of the donors. And whereas, the said trustees to facilitate the progress of so good a work, and to perfect and perpetuate the same, have humbly besought us to incorporate them and their successors.

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

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

Under the 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 charitable school: Provided always, That the said trustees, the Provost, and Vice-Provost, and each Professor, before they shall exercise their several and respective powers or authorities, offices, and duties, do and shall take and subscribe the three first written oaths appointed to be taken and subscribed, in and by one act of Parliament, passed in the first year of the reign of our late sovereign lord, George the first, intituled, An Act for the further security of his Majesty's Person and Government; and the Succession of the Crown in the Heirs of the late Princess Sophia, being protestants, and for extinguishing the hopes of the pretended Prince of Wales, and his open and secret abettors; and shall also make and subscribe the declaration appointed to be made and subscribed by one other act of parliament, passed in the twenty-fifth year of the reign of king Charles the second, intituled, An Act for preventing dangers which may happen, etc. . . . . . . . . excepting only the people called Quakers, who, upon taking, making, and subscribing the affirmations and declarations appointed to be taken, made, and subscribed, by the acts of General Assembly of the province of Pennsylvania, to qualify them for the exercise of civil offices, shall be admitted to the exercise of all and every the powers, authorities, offices, and duties
above mentioned, any thing in this provision to the contrary notwithstanding. And we do hereby, at the desire and request of the said trustees, constitute and appoint the Reverend William Smith, M.A., to be the first and present Provost of the said college and academy, and the Reverend Francis Allison, M.A., to be the first and present Vice-Provost of the same. And we do further, for us, our heirs and successors, give and grant to the trustees of the said college and academy, That for animating and encouraging the students thereof to a laudable diligence, industry, and progress in useful literature and science, they and their successors, met together on such day or days as they shall appoint for that purpose, shall have full power and authority, by the provost, to admit any the students within the said college and academy, or any other person or persons meriting the same, to any degree or degrees, in any of the faculties, arts, and sciences, to which persons are usually admitted, in any or either of the universities or colleges in the kingdom of Great Britain. Provided always, and it is hereby declared to be our true meaning and express will, That no student or students, within the said college and academy, shall ever, or at any time or times hereafter, be admitted to any such degree or degrees, until such student or students have been first recommended and presented as worthy of the same, by a written mandate, given under the hands of at least thirteen of the trustees of the said college and academy.

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

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

On Dr. Smith's return, as it appears on the minutes of the 14th of June, 1764, a letter was received from the Archbishop of Canterbury, Thomas and Richard Penn, and the Rev. Samuel Chandler, D.D., addressed to the 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 follow:

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 politic, in law and in fact, to have continuance for ever by the aforesaid name, style, and title of "The Trustees of the University of Pennsylvania," and that the said university shall at all times be stationed in the city of Philadelphia.

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William Salter Porter, Media, Pa.
James Martin Raker, Philadelphia, do.
Horace Clark Richards, do.
John David Samuel, do.
John Duncan Ernest Spaeth, do.
Lawrence Savery Smith, do.
Carrow Thibault, do.
Carleton Bicknel Zeilin, Germantown, Tulpehocken-st.

COURSE IN SCIENCE.
1. George Brodhead Harris, Germantown, School Law.
1. Oliver Hough, do.
3. Frederick Mervin Ives, Rome, Italy, 325 S. 16th-st.
5. Maurice Davidson Wilt, do.

COURSE IN THE WHARTON SCHOOL.
George Clay Bowker, Manayunk, 4365 Main-st.
Benjamin Wilfrid Fleisher, Philadelphia, 2131 Green-st.
Franklin Derstine Hartzell, Sellersville, Pa.
Thomas Atkinson Jenkins, Gwynedd, Pa.
Samuel Kahn Louchheim, Philadelphia, 711 N. 6th-st.
Edward Alden Miller, Philadelphia, 1309 Pine st.
David Emanuel Simon, do.
Lightner Witmer, do.
Charles Sturgis Wood, do.
Continental Hotel.

COURSE IN PHILOSOPHY.
Julian Hiland Dewey Philadelphia, 1537 Centennial Ave.
John Alexander McIlwain, do.

JUNIORS.
COURSE IN THE ARTS.
Frederic Robeson Baker, Philadelphia, 1414 Arch-st.
William Alexander Bell, New York City, 717 S. 10th-st.
Leon Symony Dexter, do. do. 1435 Girard Ave.
Conway Dillingham, West Chester, Pa. 1409 Locust-st. 250 S. 18th-st.
William Innes Forbes, do. do. 3336 Chestnut-st.
Charles Harrison Frazier, Bryn Mawr, Pa. 1525 N. 16th-st. Wayne & Walnut Lane.
Matthew James Hyndman, Andalusia, Pa. 1740 Green-st. 1813 De Lancey Place.
Charles King Lennig, Germantown, do. do. 2.
Joseph Reynolds McCance, Pittsburgh, do. do. 3.
Charles Peabody, Germantown, do. do. 5.
Lloyd Mifflin Scott, do. do. 7.
Daniel Bussier Shumway, Philadelphia, do. do. 8.
William Macpherson Wiltbank, do. do. 9.

COURSE IN SCIENCE.

2. Franklin Bache, Philadelphia, Cor. 40th & Pine Sts. 4885 Green-st.
3. Timothy Raymond Beyer, Germantown, 3923 Aspen-st.
7. Thomas Willis Fleming, do. do. 3.
12. Rudolph Howard Klander, do. 5122 Green-st.
17. David Bowen Salter, do. 2203 Trinity Place.

COURSE IN THE WHARTON SCHOOL.

Herbert Hart Boyd, Philadelphia, 2223 Spruce-st.
George Brooke, Jr., Birdsboro, Pa. 1420 N. 16th-st.
Rodman Ellision Griscom, Haverford College. 1221 Arch-st.
William Guggenheim, Philadelphia, 129 N. 18th-st.
Tamio Hayashi, Tokio, Japan. 3928 Walnut-st.
George Henderson, Philadelphia, 3912 Chestnut-st.
Robert Carmer Hill, do. do. 1401 N. 17th-st.
Charles P. B. Jefferys, Jr., do. do. 1.
Ellis Paxson Oberholtzer, Norristown, Pa. 3808 Chestnut-st.
Walter Scott, Philadelphia, 506 N. 4th-st.
Robert Stulb, Philadelphia, do.
Nathan Young Worrall, do.

UNDERGRADUATE COURSE IN PHILOSOPHY.

Alfred Newlin Seal, do. 1418 Bowiter-st.
Archibald Graham Thomson, do. 1426 Walnut-st.

SOPHOMORES.

COURSE IN THE ARTS.

John Antrobus, Philadelphia, 2512 Hagert-st.
Lewis Audenried, do. 1823 Walnut-st.
William Wilson Barr, Jr., do. 1425 Christian-st.
John Hill Brinton, do. 1423 Spruce-st.
Herbert Charles Brown, do. 2221 Catharine-st.
William Herbert Burk, Clarksboro, N. J. 2110 Vine-st.
Joseph Warren Coulston, Jr., do. 1326 Walnut-st.
George Herbert Dennison, Roxborough, Pa. 2442 Oxford-st.
James Whalley Diggles, Philadelphia, 1629 Christian-st.
Robert Isaac Gamon, do. E. Walnut Lane.
Henry Riley Gummey, Jr., Germantown, 3928 Walnut-st.
Henry Leopold Jefferys, do. 4309 Spruce-st.
Henry Ashton Little, Wallingford, Pa. 4309 Spruce-st.
James Hartley Merrick, Philadelphia, 325 S. 12th-st.
Joseph Mac Gregor Mitcheson, Roxborough, Pa. 1018 Clinton-st.
Frederick Brooke Neilson, Philadelphia, 2106 Chestnut-st.
De Lancey Verplanck Newlin, do. 1633 Locust-st.
Hugh Walker Ogden, Roxborough, Pa. 1717 Carpenter-st.
William Hahn Patterson, Philadelphia, 325 S. 17th-st.
Josiah Harman Penniman, do. 107 S. 21st-st.
Robert McClellan Ramsey, do. 2019 N. 18th-st.
George David Rosengarten, Jr., do. 4025 Walnut-st.
John Gilbert Stoddart, do. 1303 Spruce-st.
William Henry Stubblebine, do. 3505 Baring-st.
Howard Hungerford Sypher, do.
William Henry Trotter, Jr., do.
Robert Reineck Truitt, do.
Horace Andrews Walton, Roxborough, Pa. 2406 Columbia Ave.
Peter Silas Zimmerman, Philadelphia, 528 Linden-st.

COURSE IN SCIENCE.

Charles Shimer Boyer, Camden, N. J., 3153 Mantua Ave.
Clarence Chew Burger, Philadelphia, 3505 Baring-st.
Evaristo Andrew Cálices, Philadelphia, 1814 Park Ave.
Henry Yale Dolan, do. 1809 N. Broad-st.
Maurice Mayer Feustmann, do. 1512 Girard Ave.
Edwin Stanton Field, do. 38th & Powelton Ave.
Hermann Fleck, Germantown, 108 Rittenhouse-st.
Frank Richards Ford, Philadelphia, 1823 Vine-st.
William Goodwin, Chestnut Hill, Pa. 2213 Locust-st.
Benjamin Lease Crozer Griffith, Upland, Pa. 636 Race-st.
William Oglesby Griffith, Philadelphia, 1515 Walnut-st.
Henry Warren Kilburn Hale, do. 1317 Walnut-st.
Atherton Holman Harlan, do. 3710 Walnut-st.
William Howard Hart, Ambler, Pa., 3934 Chestnut-st.
Philip Eugene Howard, Philadelphia, 3228 Walnut-st.
James Clark Irwin, Cheyney, Pa. 2112 Uber-st.
John George Klemm, Jr., Philadelphia, 945 N. 8th-st.
Manzo Kushida, Germantown, Pa., Coulter & Hancock Sts.
Benjamin Brentnall Lathbury, Philadelphia, 2144 Park Ave.
Nelson Baum Mayer, Merion, Pa. 3913 Walnut-st.
Thomas MacKellar Royal, Germantown, Pa., 2217 Vine-st.
Newton Webster Samuel, Philadelphia, 250 S. 12th-st.
John Franklin Stevens, Camden, N. J., 929 N. Broad-st.
Richard Saunders Stoye, do. 2210 Walnut-st.
William Henry Warrick, do. 4051 Sansom-st.
Albert Joseph Zeleni, do. 901 Clinton-st.

FRESHMEN.

Course in the Arts.

William Henry Ashhurst, Philadelphia, 1607 Walnut-st.
Henry Ingersol Brown, Germantown, 929 N. Broad-st.
Samuel Rakestraw Colladay Philadelphia, 733 N. 41st-st.
Erskine Hazard Dickson, do. 1737 N. 8th-st.
Jas. MacIntosh Longstreth Eckard, Abington, Pa. 1926 Bainbridge-st.
Thomas Powers Harris, Philadelphia, 1925 Walnut-st.
Herbert Rutherford Hogg, do. 2230 Spruce-st.
Frederick Lennig, Andalusia, Pa., Manheim-st.
George Francis Levan, Philadelphia, 721 Spruce-st.
Alfred Meyer Liveright, Osceola Mills, Pa., 4012 Spruce-st.
William MacAdoo, Jr., Philadelphia, 218 N. 32d-st.
Thomas McKeon, Jr., do. 124 Tulpehocken-st.
Alexander Wilson Norris, Jr., Germantown, 20th-st. & Ontario Ave.
James De Wolf Perry, Jr., Philadelphia, 3914 Locust-st.
Wilson Worrell Pile, do. 20th-st.
Wilmer Hershey Righter, Germantown, 124 Tulpehocken-st.
Sidney Wheaton Smith, Philadelphia, 20th-st. & Ontario Ave.
Cornelius Weygandt, do. 3914 Locust-st.
John Robert White, Jr., Germantown, 3914 Locust-st.
Francis Yarnall, Philadelphia, 3914 Locust-st.
COURSE IN SCIENCE.

William Batchelor, Philadelphia, 886 N. 6th-st.
Scott Beggs, Wilmington, Del.
James Lord Bernard, Manayunk, 117 Green Lane.
James Manderson Castle, Philadelphia, 4241 Walnut-st.
Daniel Bell Cummings Catherwood, 2112 Walnut-st.
Edgar Moore Church, Germantown.
Edwin Adams Damon, Philadelphia, 1606 Walnut-st.
George Peterson Deacon, Germantown, E. Walnut Lane.
Henry Delaplaine, Philadelphia, 3706 Baring-st.
John Joseph Elcock, Waverey Heights.
Richard Field, Philadelphia, 5600 Lansdowne Ave.
Sparta Fritz, Jr., Germantown, 5006 Green-st.
Edward Prime Goodell, Philadelphia, 1418 Spruce-st.
Lloyd Carpenter Griscom, Haverford College.
Francis Head, Germantown, 132 Price-st.
Hisaya Iwasaki, Tokio, Japan, 443 S. 41st-st.
Topliff Johnson, Germantown, Locust Ave.
Chester Hughes Kirk, Philadelphia, 1518 N. 18th-st.
William Gray Knowles, 1628 Spruce-st.
Burnet Landreth, Jr., Bristol, Pa.
Charles Ridgely Lee, Philadelphia, 4216 Walnut-st.
Arthur Loeb, do. 947 N. 5th-st.
George Ingels MacLeod, Jr., do. 3905 Locust-st.
John Maurer, do. 102 S. Second-st.
Frederick Rogers Meigs, do. 1713 Locust-st.
Harvey E. Platt, do. 2026 Wallace-st.
William Beni Rosskam, do. 1423 N. 15th-st.
Edward Koons Rowland, do. 2029 Spruce-st.
Walter Rowland, Frankford.
Edward Adams Shumway, Philadelphia, 1740 Green-st.
George Hughes Smith, Mahanoy City, Pa., 1918 Judson Place.
James Starr, Germantown, Cliveden & Morton Sts.
John Hermon Terry, Philadelphia, 2119 N. 13th-st.
John Andrew Tracy, Erie, Pa., 2006 Spruce-st.
James Mortimer West, Jr., Philadelphia, 1524 Swain-st.
Biddle Wood, Conshohocken, Pa.
Horatio Curtis Wood, Germantown, 147 School-st.
James Charles Ziegler, Philadelphia, 636 N. 35th-st.

COURSE IN MUSIC.

Second Year.

Stanley Addicks, Philadelphia, 706 Spruce-st.
Ella Ellis, Philadelphia, 3502 Hamilton-st.
Edward S. Field, do. 2113 Bond-st.
Anne F. Pond, do. 3104 Baring-st.
Hedwig M. Schmitz, do. 1832 Wylie-st.
Katharine Thunder,
### PARTIAL STUDENTS.

**First Year.**

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ida E. Bowser</td>
<td>Philadelphia</td>
<td>481 N. 4th-st.</td>
</tr>
<tr>
<td>Julia Plantholz</td>
<td>do</td>
<td>do</td>
</tr>
<tr>
<td>Clara R. Schaubel</td>
<td>do</td>
<td>do</td>
</tr>
<tr>
<td>James C. Warhurst</td>
<td>do</td>
<td>do</td>
</tr>
</tbody>
</table>

**SPECIAL STUDENTS.**

**Towne Scientific School.**

1. Daniel Byrne, Philadelphia, 1336 N. 11th-st.

3. Charles Samuel Gawthrop, Wilmington, Del.
1. Emlen Trenchard Hall, Philadelphia, 1623 Spruce-st.
3. William George Houston, do, 814 N. 21st-st.
1. Charles Tindel, Frankford, 236 E. Orthodox-st.
3. Jacob Orie Clark, Philadelphia, 2536 Park Terrace.
1. August A. Miller, do, 623 N. 13th-st.

**Wharton School of Finance and Economy.**

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Street</th>
</tr>
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<tbody>
<tr>
<td>Charles Sterling Bonsall</td>
<td>Philadelphia</td>
<td>221 N. 13th-st.</td>
</tr>
<tr>
<td>George Thorn Hunsicker</td>
<td>Olney, Pa.</td>
<td>do</td>
</tr>
<tr>
<td>Joseph Sommer Jaffa</td>
<td>Trinidad, Col.</td>
<td>514 N. 5th-st.</td>
</tr>
<tr>
<td>Jeremiah Berrell Larzelere, Jr.</td>
<td>Willow Grove, Pa.</td>
<td>do</td>
</tr>
<tr>
<td>Robert Lee McClure</td>
<td>Fort Smith, Ark.</td>
<td>320 N. 40th-st.</td>
</tr>
<tr>
<td>John Lamsey Stewart</td>
<td>San Antonio, Tex.</td>
<td>1826 Dickinson-st.</td>
</tr>
<tr>
<td>William Cusack Sullivan</td>
<td>Haddonfield, N.J.</td>
<td>do</td>
</tr>
<tr>
<td>Joseph Fithian Tatem</td>
<td>Philadelphia</td>
<td>750 N. 40th-st.</td>
</tr>
<tr>
<td>Clarence Burns White</td>
<td>do</td>
<td>1847 N. 21st-st.</td>
</tr>
<tr>
<td>Clinton Rogers Woodruff</td>
<td>do</td>
<td>do</td>
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</table>

**PARTIAL STUDENTS.**

**Department of Arts.**

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Du Hamel</td>
<td>Church Hill, Md.</td>
<td>3301 Woodland Ave.</td>
</tr>
<tr>
<td>Walter Bomberger</td>
<td>Collegeville, Pa.</td>
<td>do</td>
</tr>
</tbody>
</table>
COURSE IN SCIENCE.

5. George Hummel McNeely, do. S. W. Cor. 4th & Arch-st.
6. August Appleton Miller, do. 623 N. 13th-st.

John Joseph Borie, Philadelphia, 2215 Spruce-st.
Henry Lincoln Haines, do. 3601 Baring-st.
Charles J. McIlvain, Jr., do. 4044 Chestnut-st.

Henry Howard Cressman, Sellersville, Pa. 139 N. Water-st.
Joaquin Martinez, Managua, Nicaragua, 139 N. Water-st.
Clayton Foteral McMichael, Philadelphia, 2041 Walnut-st.
Frederick Kollner Mears, Clifton Heights, Pa.

WHARTON SCHOOL OF FINANCE AND ECONOMY.

Dickinson Sergeant Miller, Philadelphia, 1309 Pine-st.
George Stuart Patterson, do. Chestnut Hill.

SUMMARY OF COLLEGE DEPARTMENT.

<table>
<thead>
<tr>
<th></th>
<th>Arts</th>
<th>Science</th>
<th>Philoso-phy</th>
<th>Finance</th>
<th>Music</th>
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<tr>
<td>Post Seniors</td>
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<td>35</td>
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<td>Seniors</td>
<td>20</td>
<td>12</td>
<td>2</td>
<td>10</td>
<td>6</td>
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<td>Juniors</td>
<td>19</td>
<td>20</td>
<td>3</td>
<td>15</td>
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<td>61</td>
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<td>Sophomores</td>
<td>32</td>
<td>28</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>60</td>
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<tr>
<td>Freshmen</td>
<td>20</td>
<td>39</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>59</td>
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<tr>
<td>Special Students</td>
<td>—</td>
<td>18</td>
<td>—</td>
<td>10</td>
<td>—</td>
<td>28</td>
</tr>
<tr>
<td>Partial Students</td>
<td>10</td>
<td>18</td>
<td>—</td>
<td>3</td>
<td>—</td>
<td>31</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>101</td>
<td>170</td>
<td>5</td>
<td>38</td>
<td>10</td>
<td>324</td>
</tr>
</tbody>
</table>
COURSES OF STUDY.

The College Faculty conducts the following Courses of Study:
I. The Course in Arts.
II. The Courses in Science in the Towne Scientific School.
III. The Course in Finance and Economy in the Wharton School.
IV. A Course in Philosophy for Undergraduates.
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 History, English, 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., the Elective Courses of the last two years in Arts, the Technical Courses in Science, special studies in Finance and Economy, and a group of Studies mainly Biological. Students who wish to take a Technical Course in Science, however, must show a preparation equivalent to that given by the two first years of the Course in Science. (Detailed statements of the studies of Junior and Senior years may be found on pp. 41–43, 47–51, 57–59 and 61–62, below.)

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 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.

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.

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.

PUBLIC LECTURES.

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

- On German Literature, by Professor Seidensticker.
- On The Older English Classics, by Professor McElroy.*
- On Physics, by Professor Barker.
- On Inorganic, Organic and Applied Chemistry, by Professor Sadtler.
- On The Literary History of Israel, by the Rev. Professor Peters.
- On (a) Mohammed and Mohammedanism (six lectures), (b) The Talmud (two lectures), by Professor Morris Jastrow, Jr.
- On American Archaeology, by Professor Brinton.

The instruction in Analytical Chemistry, including practical work in the laboratory, under Professor Genth, 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 or for further information respecting lectures or instruction may be made to the Dean or to the Secretary of the Faculty.

FEES.

For College Fees, Expenses, Boarding, etc., see page 167.

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

*This course consists chiefly of Readings, with critical commentary.
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 sent by the Board of Public Education to the examinations for admission in June. They are examined at the same hours and on the same subjects as other candidates, but not necessarily on the same papers. The scholarships, according to the number of vacancies, are bestowed upon those who reach the highest grade in their examination, provided that grade be at least sixty-five per cent.

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

IV. The 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 fully been made up. For persistent neglect of study, great irregularity of attendance, or inability to keep up with the class, students are dropped from the rolls.

PRIZES FOR THIS YEAR.

1. 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. (Not to be awarded in 1887-88.)

2. A prize of twenty dollars for the best examination on the Oration of Aeschines 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. The examination will be on the whole of Arnold's Greek Prose Composition.
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 Constitutional Convention of 1787 and its Work.

6. A prize of twenty dollars for the best Essay by a member of the Junior Class. Subject: The By-Ways of English Literature.

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

8. A first prize of fifteen dollars, and a second prize of ten dollars, for the best special examinations in the Elements of Latin Prose Composition, by Freshmen on entering College. The examinations must reach a satisfactory standard of excellence. In 1888, they will be upon the first fifty-five exercises in Arnold's Latin Prose Composition. Certificates will be presented to all competitors whose examinations reach a satisfactory standard.

9. Two prizes of the same value as those offered for Latin Prose Composition for the best special examinations in Greek Prose Composition by Freshmen on entering College. In 1888, they will be on Jones' Greek Exercises, with the Accents.

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. The Essay must be handed to the Dean before the first day of May. Subject: The Relation of Reason to Poetry as suggested by Bacon. (Reed's British Poets, vol. ii, p. 47.)

III. THE SOCIETY OF THE ALUMNI PRIZES.

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

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

IV. A prize, founded by HENRY LA BARRE JAYNE, of the Class of 1879, for the best English Composition by a member of the Freshman
Class. It entitles the successful competitor to one year's interest on two hundred dollars. Subject: *The Causes of the Mexican War* (1845–48).

V. **The Joseph Warner Yardley Prize**, founded by the class of 1877 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: *The Causes that Determine the Rate of Wages*.

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.

**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, 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 History 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.

THE COURSE IN ARTS.

ENTRANCE EXAMINATION.

For the FRESHMAN CLASS, candidates are examined in—

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).


ENGLISH.—Grammar and Composition.

The examination will include: 1st. The grammatical analysis of a simple passage in prose or verse; 2d. The correction of specimens of English bad in grammar or expression, with a brief statement of the principles on which the correction is made; 3d. A short composition, correct in spelling, punctuation, grammar, expression, and division by paragraphs, 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., Alexander Smith's On the Writing of Essays, and A Shelf in My Book-case (Dreamthorpe, pp. 21-45, and 187-210); Kingsley's Hereward, The Last of the English; Shakespeare's As You Like It; and Scott's Rob Roy.

The following books indicate the amount and the kind of knowledge required to pass this examination; viz., Abbott's How to Parse, Whitney's Essentials of English Grammar, or Murray's Advanced Lessons in English Composition, Analysis and Grammar; and Abbott's How to Write Clearly.

The subjects of composition in 1889 will be taken from the last named of the following works, viz.: Shakespeare's As You Like It and Midsummer Night's Dream, Scott's Rob Roy, and Thackeray's English Humorists.

In 1890, the books will be Scott's Quentin Durward, Thackeray's English Humorists, Shakespeare's Midsummer Night's Dream, and Goldsmith's Deserted Village.

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

FOR ADVANCED STANDING, candidates must pass satisfactorily in all the subjects pursued by the lower class or classes.

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., Arithmetic, Algebra (subjects contained in the first eleven chapters of Wentworth), Greek Grammar, Greek Prose Composition, and Xenophon; Latin Grammar, Latin Prose Composition, and Virgil; French Grammar; German Grammar; English Grammar; History of the United States. A record will be kept of these examinations, and credit be given for such of them as are passed satisfactorily.

The examinations are held in June and September, but preliminary examinations will ordinarily be held only in June. 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.

COURSE OF STUDY.

FRESHMAN CLASS.

GREEK.—Xenophon's Helenica, Eschylus, Arnold's Greek Prose Composition, completed. [Prof. Easton. 4*]

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

ENGLISH.—Rhetoric (McElroy's Structure of English Prose). Readings from an English prose author, with Compositions on Themes selected from these Readings. [Mr. Schelling. 2]

DECLAMATION. Exercises in Reading and Speaking, with special reference to Expression, Emphasis, and Voice Culture. [Prof. McElroy. About once in three weeks.]

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


SOPHOMORE CLASS.

GREEK.—Thucydides (Sicilian Expedition). Euripides or Aristophanes. Greek Composition. [Prof. Muhlenberg. 3]

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

ENGLISH.—Gummere's Poetics. Lectures on the History of the English Language, with special reference to Historical English Grammar. (Lounsbury's English Language, Sweet's Anglo-Saxon Primer.) Six Compositions. Two or more Declamations. [Mr. Schelling. 2]

* Hours per week.
COURSE IN ARTS.

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

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

CHEMISTRY.—Inorganic and Organic Chemistry (Experimental Lectures, with Examinations). [Prof. Sadtler. 3]

GERMAN.—Whitney's Grammar. Grimm's Märchen. [Prof. Seidensticker. 2 hours, Second Term.]

JUNIOR CLASS.

REQUIRED,—

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 and Lectures.) [Prof. Barker. 4]

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

HISTORY.—History of English Literature. [Prof. Thompson. 2]

ELECTIVE,*—

A.

GREEK.—Sophocles. Lysias or Isocrates. Theocritus or Pindar. (Prof. Muhlenberg. 3]

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


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

ANGLO-SAXON.—Sweet's Reader. History of Anglo-Saxon Literature. [Prof. McElroy. 2†]

GERMAN.—Boisen's German Prose. Schiller's Jungfrau von Orleans. Goethe's Hermann und Dorothea. Grammar and Exercises continued. [Prof. Seidensticker. 3]

FRENCH.—Easy Prose. Harrison's Syntax. [Mr. Rennert. 3†]

B.

PURE MATHEMATICS.—Todhunter's Theory of Equations. Advanced Trigonometry and Analytical Geometry. [Prof. O. H. Kendall. 3]

* 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 more than eighteen.

† See Remark, page 43.
HISTORY.—General European History. [Mr. Kirk. 3]

ENGLISH.—Critical Study of English Prose Authors, with special reference to Composition. [Prof. McElroy. 2]

MINERALOGY.—The Systematic Description of Mineral Species. Their Geometric and Physical Properties. (Dana's Manual. Students handle the specimens.) [Prof. Kœnig. 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 Zoology. The Structure, Classification and Distribution of the Vertebrates. (Lectures.) [Prof. Leidy. 1]

DECLAMATION (Voluntary).—Exercises in Debating and Original Speaking. [Prof. McElroy. About once in two weeks.]

SENIOR CLASS.

REQUIRED,—


HISTORY.—Lectures on the Philosophy of History and on Modern History since 1789. [Prof. Thompson. 2]

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

SOCIAL SCIENCE.—International Law (Lectures). Thompson's Elements of Political Economy. [Prof. Thompson. 3 hours, Second Term.]

ASTRONOMY.—Newcomb's Astronomy. [Dean Kendall, 3 hours, First Term.]

ELECTIVE,*—

A.

GREEK.—Demosthenes De Corona. Plato (Apology and Crito or Phædo). [Prof. Muhlenberg. 2]

LATIN.—Cicero (Tusculana) or Lucretius (Selections). Horace (Ars Poetica). Reading at Sight. [Prof. Jackson. 3]


SANSKRIT.—Lanman's Reader. Selected Hymns from the Veda. [Prof. Easton. 2]


* The same rule holds for the Senior electives as for the Junior. (See page 41, foot-note.)
GERMAN.—Goethe's Faust. History of German Literature. Practical Exercises in Speaking. [Prof. Seidensticker. 2]

FRENCH.—Modern Drama. Molière. [Mr. Rennert. 2]

REMARK.—In Hebrew, Sanskrit, Anglo-Saxon and French two classes will be formed each year, open to either Juniors or Seniors, according to proficiency.

B.

MATHEMATICS.—Advanced Differential and Integral Calculus. Differential Equations. [Prof. O. H. Kendall. 2]

PHYSICS.—Mathematical Physics. [Prof. Barker. 3]


LINGUISTICS.—Whitney's Language and the Study of Language, with Lectures and Essays. [Prof. Easton. 1]

ANATOMY.—Demonstrations of the Anatomy of a Typical Mammal. (Mivart's The Cat.) [Prof. Jayne. 2]

ZOOLOGY.—Introduction to General Zoology. 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.]


DECLAMATION (Voluntary).—Exercises in Debating and Original Speaking. [Prof. McElroy. About once in two weeks.]

SPECIAL AND PARTIAL COURSES.

Students will be admitted to pursue, under the supervision of a standing committee of the Faculty, special studies in any subject taught in this 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.

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 is conferred on students who complete satisfactorily the full course.

The Degree of Master of Arts 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.

For further information see pp. 34-39, or address Prof. E. O. Kendall, LL.D., Dean of the Faculty.

THE COURSES IN THE TOWNE SCIENTIFIC SCHOOL.

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

The studies of Freshman and Sophomore years differ little from those of the course in Arts, except in the languages pursued and in Mathematics and Drawing. (See p. 34.)

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

The Courses are:

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

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

ENTRANCE EXAMINATIONS.

For the Freshman Class candidates are examined in the following subjects:

ENGLISH.—Grammar, Etymology and Composition.

The examination will include: 1st. The grammatical analysis of a simple passage in prose or verse; 2d. The correction of specimens of English bad in grammar or expression, with a brief statement of the principles on which the correction is made; 3d. The etymological analysis and synthesis of familiar English words, together with questions on the history of English and its relationship in the Indo-European family of languages; 4th. A short composition, correct in spelling, punctuation, grammar, expression, and division by paragraphs, on one of several subjects to be taken from the last named of the following books, all of which (or the last named and equivalents for the other three) must have been read by each candidate, viz., Alexander Smith's *On the Writing of Essays* and *A Shelf in my Book-case* (Dreamthorpe, pp. 21-45, and 187-210); Kingsley's *Hereward, the Last of the English*; Shakespeare's *As You Like It*; and Scott's *Rob Roy*.

The following books indicate the amount and the kind of knowledge required to pass this examination, viz., Abbott's *How to Parse*, Whitney's *Essentials of English Grammar*, or Murray's *Advanced Lessons in English Composition, Analysis and Grammar*; McElroy's *Essentials of English Etymology*; and Abbott's *How to Write Clearly*.

The subject of composition in 1889 will be taken from the last named of the following works, viz.: Shakespeare's *As You Like It* and *Midsummer Night's Dream*, Scott's *Rob Roy*, and Thackeray's *English Humorists*.

In 1890 the books will be Scott's *Quentin Durward*, Thackeray's *English Humorists*, Shakespeare's *Midsummer Night's Dream*, and Goldsmith's *Deserted Village*.

LATIN (elective with either French or German).—Cesar, *Commentaries*, 3 books; Virgil, *Aeneid*, 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 three first books or an equal amount of matter from any good modern prose author).


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

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

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, namely, Arithmetic, Algebra (subjects contained in the first eleven chapters of *Wentworth*), Plane Geometry; Latin Gram-
COURSE OF STUDY.

FRESHMAN CLASS.

MATHEMATICS.—Wells' *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 (Minifie), 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]

ENGLISH.—Rhetoric (McElroy's *Structure of English Prose*). Readings from an English prose author, with Compositions on Themes selected from these Readings. [Mr. Schelling. 2]

DECLAMATION.—Exercises in Reading and Speaking with special reference to Expression, Emphasis, and Voice Culture. [Prof. McElroy. About once in three weeks.]


LATIN.;†—Sallust, Cicero, Horace. [Mr. Cheyney. 3]

SOPHOMORE CLASS.

MATHEMATICS.—Descriptive Geometry. Bowser's *Analytical Geometry*. Elementary Differential Calculus. [Mr. Crawley. 5]

PHYSICS.—Mechanics. [Mr. Goodspeed. 2 hours, Second Term.]

CHEMISTRY.—Inorganic Chemistry (Experimental Lectures). [Prof. Sadtler. 3]


* Hours per week. † Elective with either French or German.
TECHNICAL COURSES.

JUNIOR CLASS.

PHYSICS.—Sound, Heat, Light, and Electricity. (Lectures and Recitations.) [Prof. Barker. 4]

GERMAN.—Scientific Essays. Schiller's Poems. [Prof. Seidensticker. 2]

FRENCH.—Racine or Corneille. Molière. [Prof. Easton. 2]

ENGLISH.—Critical Study of English Prose Authors, with special reference to Composition. Six Compositions. [Prof. McElroy. 2]

HISTORY.—Political and Social History of Recent Times. [Mr. Cheyney. 2]

LOGIC.—Jevons's Lessons in Logic. Ethics. [Prof. Fullerton. 2]

DECLAMATION (Voluntary).—Exercises in Debating and Original Speaking. [Prof. McElroy. About once in two weeks.]

1. Studies pursued by the Chemical Section.

CHEMISTRY.—Laboratory Practice and Recitations. Douglass and Prescott's Qualitative Analysis. [Prof's. Genth and Genth, Jr. 12]

Lectures on Organic Chemistry. [Prof. Sadtler. 2]

MINERALOGY.—Crystallography. Native Elements and Sulphides. [Prof. Köenig. 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. Köenig. 5]

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

GEOLoGY.—Lithology; Paleontology of Protozoa, Anthozoa, and Echinodermata. [Prof. Köenig. 1]

SURVEYING AND DRAWING.—The same as Third Section.

MATHEMATICS.—Differential and Integral Calculus. [Mr. Crawley. 3]

CHEMISTRY.—Qualitative Analysis. [Prof's. Genth and Genth, Jr. 5]

* Elective with either French or German.
† Elective with each other.
‡ The Metallurgical and Mining Section (Sec. 2), is excused from this study.
3. Studies by the Civil Engineering Section.

**MATHEMATICS.**—Differential and Integral Calculus. [Mr. Crawley. 3]

**ENGINEERING.**—Railroad Location. Spherical Projections, Shades, Shadows, and Perspective. [Messrs. Evans and Haupt, Jr. 2]

**STATICS.**—Roof and Bridge Trusses, and Merriam's *Mechanics of Materials*. [Messrs. Evans 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 Formulas*. Hydrographical, Mine, and Government Surveying. [Prof. Haupt. 4]

**CHEMISTRY.**—Qualitative Analysis. [Prof's. Genth and Genth, Jr. 3]

4. Studies pursued by the Dynamical Engineering Section.

**MATHEMATICS.**—Differential and Integral Calculus. [Mr. Crawley. 3]

**STATICS.**—The application of the principles of Statics to Rigid Bodies. The Elasticity and Strength of Materials. Forms of uniform strength. Theory of Framed Structures. Stability of structures. Theory of the Arch. Strains in parts of mechanism. The Equilibrium and Pressure of fluids, as water, air, steam, etc. The equilibrium of fluids with other bodies; stability of vessels; determinations of specific gravity; use of Hydrometers, Manometers, Gauges, etc. The Equilibrium of Funicular Structures. [Prof. Marks. 3]

**KINEMATICS.**—Slide, Valve, and Link motions. General mathematical theory of Kinematics. [Prof. Spangler. 3]

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

**ENGINEERING.**—Graphical Statics. Manual training in Pattern and Machine shop work.

5. Studies pursued by the Architectural Section.

**ARCHITECTURE.**—Classical Architecture and Mediaeval Ornament. Shading in India ink. Sketching. [Prof. Richards. 9]

**MATHEMATICS.**—Differential and Integral Calculus. [Mr. Crawley. 3]

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

SENIOR CLASS.

Studies pursued by the Whole Class.

**PHYSICAL SCIENCE.**—Practical Physics. [Prof. Barker. 3]

**ASTRONOMY.**—Newcomb's *Astronomy*. [Dean Kendall. 3 hours, First Term.]
ENGLISH.—Four Compositions. [Prof. McElroy.]

DECLAMATION (Voluntary).—Exercises in Debating and Original Speaking. [Prof. McElroy. About once in two weeks.]

SOCIAL SCIENCE.—International Law (Lectures.) Thompson’s Elements of Political Economy, and Lectures. [Prof. Thompson. 3 hours, Second Term.]


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

1. Studies pursued by the Chemical Section.

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

QUANTITATIVE ANALYSIS.—Lectures, Recitations, and Laboratory Practice in gravimetric and volumetric analysis. Assaying of Ores and Fuels. [Prof’s. Genth and Genth, Jr. 14]

APPLIED CHEMISTRY.—Instruction in the practical production of Salts, etc., in their greatest perfection and purity. Lectures. [Prof. Genth, Jr. 1]

ORGANIC CHEMISTRY.—Making of organic preparations. Proximate and Ultimate Organic Analysis. [Prof. Sadtler. 2]

THEORETICAL CHEMISTRY. Lectures. [Prof. Genth, Jr. 1]

MINERALOGY AND ASSAYING.—The same as Second Section. [Prof. Koenig. 4]


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. Drawing and modeling (wood and plaster) of topographical and underground surveys. [Prof. Koenig. 4]

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. Koenig. 2]

MINERALOGY.—Oxides, Chlorides, and Fluorides, Sulphates, etc., Phosphates, etc., Carbonates and Silicates. [Prof. Koenig. 4]

ASSAYING and Blow-pipe Analysis.—[Prof. Koenig. 2]

ANALYTICAL CHEMISTRY.—Qualitative examinations of more or less complex substances. Qualitative analysis by the blow-pipe, in connection with reactions in the humid way, for the rapid determinations of min-
erals and ores. Lectures, Recitations, and Laboratory Practice in Quantitative Analysis. [Prof’s. Genth and Genth, Jr. 9]

PALEONTOLOGY of Mollusca and Crustacea.—[Prof. Koenig. 1]

3. Studies pursued by the Civil Engineering Section.

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


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. [Messrs. Franklin and Evans. 3]

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


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

BLOW-PIPE ANALYSIS.—(Voluntary.)

4. Studies pursued by the Dynamical Engineering Section.

KINEMATICS.—Laws of motion. Elementary combinations of Pure Mechanism. Pulleys and belts. Trains of gearings and forms of teeth of wheels. Parallel motions. Practical design of link and valve motions, with a consideration of the various forms of valves, illustrated by working models. [Prof’s. Marks and Spangler. 4]

DESIGNING.—Determination of proper proportions for cylinders, valves, pistons, rods, shafts, flywheels, and making rough sketches and working drawings from the model and from original designs.

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

DYNAMICS.—Lectures on the conditions under which Power is transmitted. [Prof. Marks. 4]

HYDRODYNAMICS.—Water metres. Turbine, Overshot, Undershot, and Breast wheels. [Prof. Marks. 3]

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

BOTANY.—Laboratory work. [Prof. Rothrock. 3]

ENGINEERING.—Same as Section 3, so far as to include strength and properties of materials. [Prof. Haupt. 2]

POST-SENIOR CLASS.

STUDIES PURSUED BY THE WHOLE CLASS.

GEOL OGY.—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.

Theoretical Chemistry. [Prof. Genth, Jr. 1]
Lectures on Industrial Chemistry, with Excursions to Works. [Prof. Sadtler. 2]
Practice in the production of Chemical preparations.
Determination of the constituents of cast-iron and steel. Analysis of Manures. [Profs. Genth and Genth, Jr. 15]
Quantitative Blow-pipe Analysis. Original investigations. [Prof. Koenig. 2]
Special Metallurgy—Lectures with the 2d Section. [Prof. Koenig. 4]

2. Studies pursued by the Metallurgical and Mining Section.

MINING ENGINEERING.—Lectures on Ventilation and drainage of mines. Special mining problems in faulted strata, more especially in coal mining. The section goes for two weeks to the anthracite Coal region, to make an underground survey; to learn how to examine a mine and report on its condition. [Prof. Koenig. 2]

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

DYNAMICAL ENGINEERING.—Principles of Mechanism. Waterwheels and steam engine. Water and steam motors. Rock drills. [Prof. Marks. 1]

GEOL OGY.—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; Quantitative blow-pipe analysis. Lectures continued. [Prof. Genth. 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. Sani-
Studies pursued by the Dynamical Engineering Section.

The Analysis and Synthesis of Mechanism.—Machine Tools and their principles. [Prof. Spangler. 2]

Hydrodynamics.—Special experimental work in Dynamic Laboratory. [Prof. Marks. 5]

Thermodynamics.—Values of Fuels. Strength, safety, and evaporative power of boilers. Steam and its properties. The Mechanical Theory of Heat. Stationary, locomotive, and marine Steam Engine. Practical Laboratory work, including testing boilers, engines, gauges, indicators; determining duty of pumps, injectors; calorimetric work. [Prof. Spangler. 8]

Electrodynamics.—Measurement of transmission of power by Electricity, etc. [Prof. Marks. 3] Practical Laboratory work. Special instruction when desired. [Mr. Hering. 6]


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

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


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

Studies pursued by the Section in Architecture and Drawing.


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

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

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

In Chemistry, the Juniors, having already had during Sophomore year a full course of illustrated lectures on general inorganic chemistry, 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—which are followed by easy qualitative separations. Occasional written reports on the results of their work must be made.

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

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

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

The Post-Seniors also attend a course of lectures on the applications of Organic Chemistry in the Industrial Arts. This course is fully illustrated by lantern projections, and by suites of specimens from the chemical collections. The class also makes 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, the students are given the option of devoting themselves more particularly to either branch. Those inclining to become managers of mines, or examining and reporting engineers, will take more studies in civil and mechanical engineering; and those who possess greater aptitude for chemical studies will devote themselves rather to experimental Metallurgy; whilst the lectures provided for the course are participated in by all.—A greater thoroughness is expected to result from this provision. The instruction aims to develop the student's power of self-action and initiative.
Students in Civil Engineering are instructed by recitations, lectures, and practical work, in order to develop the qualities most required of the practical engineer. Afternoons and Saturdays are devoted to drawing and practical work in the shop, or to surveying or visiting public or private works, manufactories, etc.

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

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

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

The Course in Drawing includes the projection of maps; various methods of representing Topography; conventional signs; problems in shades, shadows and perspective; details of framing; composition; general drawing for constructions in wood, stone, and iron; special designs; working drawings for modelling; 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 regulating and transmitting the same; to the problems of hydraulics and hydraulic motors, and to the mechanical theories of heat and electro-dynamics with applications to the steam engine, etc., as will appear from the detailed course of study already given.

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

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

Special instruction in that part of Electrical Engineering which requires a knowledge of Dynamics is given to those who wish it in Post-Senior year. 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 elective and is intended for such students only as are competent to take it with advantage.

SPECIAL COURSES.

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

LIBRARY.

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

DEGREES.

The Degree of Bachelor of Science (B.S.) is conferred on students who have passed satisfactorily the first four years of the curriculum of this School. At the close of the fifth year an additional degree is conferred, indicating the Special Course pursued by each student. These Special Degrees are Practical Chemist (P.C.), Mining Engineer (E.M.), Civil Engineer (C.E.), Mechanical Engineer (M.E.), and Architect (Archt.) A satis-
factory Thesis must be prepared and presented by each Candidate for a Degree.

For further information see pp. 34-39, or address Professor E. O. Kendall, LL.D., Dean of the Faculty.

A COURSE IN PHILOSOPHY FOR UNDERGRADUATES.

This course provides instruction in English, Mathematics, Natural Science, and any two of the three following languages, Latin, French, German. During Junior and Senior years, 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.

ENTRANCE EXAMINATIONS.

For the Freshman Class, candidates are examined in the same subjects as are required for admission to the Towne Scientific School (see pp. 45-46).

For Advanced Standing, candidates must pass satisfactorily in all the subjects pursued by the lower class or classes. The examinations are held in June and September; preliminary examinations ordinarily only in June. 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.

COURSE OF STUDY.

FRESHMAN CLASS.

ENGLISH.—Rhetoric (McElroy's Structure of English Prose.) Readings from an English prose author, with Compositions on Themes selected from these Readings. [Mr. Schelling. 2]

DECLAMATION.—Exercises in Reading and Speaking with reference to Expression, Emphasis, and Voice Culture. [Prof. McElroy. About once in three weeks.]

HISTORY.—Myer's Medieval and Modern History. [Mr. Cheyney. 2]


FRENCH.—Modern French Prose. [Mr. Rennert. 4]

LATIN.*—Sallust, Cicero, and Horace. [Mr. Cheyney. 3]

* Elective with either German or French.
MATHEMATICS.—Wells' *Algebra*. Chauvenet's *Trigonometry*. [Prof. O. H. Kendall and Mr. Crawley. 5]

DRAWING.—Freehand Drawing: [Prof. Richards. 3]

**SOPHOMORE CLASS.**

ENGLISH.—Gummere’s *Poetics*. Lectures on the History of the English Language, with special reference to Historical English Grammar. (Lounsbury’s *English Language*. Sweet’s *Anglo-Saxon Primer.*) Six Compositions. Two or more Declamations. [Mr. Schelling. 2]

HISTORY.—American History. [Mr. Cheyney. 2]

GERMAN.—Selections from *Virchow & Holtzendorff’s Wissenschaftliche Vorträge*. Practical Exercises. Specimens of the Modern Drama. [Prof. Seidensticker. 4]

FRENCH. Modern French Prose. Molière. [Prof. Easton. 4]

LATIN.*—Selections from Latin History, Correspondence and Poetry. [Mr. Cheyney. 3]

MATHEMATICS.—Analytical Geometry. [Mr. Crawley. 3]

PHYSICS.—Mechanics. [Prof. Barker. 4 hours, Second Term.]

CHEMISTRY.—Inorganic and Organic Chemistry (Experimental Lectures, with Examinations). [Prof. Sadtler. 6]

**JUNIOR CLASS.**

REQUIRED,—

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

ENGLISH.—Critical Study of English Prose Authors, with special reference to Composition. Six Compositions. [Prof. McElroy. 2]

PHYSICS.—Sound, Heat, Light, Electricity. (Stewart’s *Physics.*) [Prof. Barker. 4]

CHEMISTRY.—Inorganic Analytical Chemistry. (Lectures and Laboratory Exercises.) [Prof. Genth. 4]

ZOOLOGY.—Introduction to General Zoology. 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,†—

HISTORY.—Political and Social History of Recent Times. [Mr. Cheyney. 2]

MINERALOGY.—The Systematic Description of Mineral Species. Their Geometric and Physical Properties. (Dana’s *Manual.*) [Prof. König. 2]

ORGANIC CHEMISTRY.—Lectures. [Prof. Sadtler. 2]

* Elective with either German or French.

† 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.
ANATOMY.—Demonstrations of the Anatomy of a Typical Mammal. (Mi-
vart'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 (Voluntary).—Exercises in Debating and Original Speaking.
[Prof. McElroy. About once in two weeks.]

**SENIOR CLASS.**

**REQUIRED,—**

**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. 3 hours, Second Term.]

**ENGLISH.**—Chaucer (*The Canterbury Tales, Selections*). Spenser (*Fairy
Queene, Book 1*). Shakespeare (Three Plays). Milton (Minor
Poems). Six Compositions. [Prof. McElroy. 3]

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

**ELECTIVE,—**

**ASTRONOMY.**—(Newcomb's *Astronomy.*) [Dean Kendall. 3 hours, First
Term.]

**ORGANIC CHEMISTRY.**—Laboratory Exercises in making Organic Prepara-
tions. [Prof. Sadtler. 2]

**GEOLOGY.**—Stratigraphy in connection with Palaeontology 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. (Mi-
vart'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 Em-
bryology.*) [Prof. Ryder. 8 hours, Second Term.]

**PHYSIOLOGY.**—Lectures and Demonstrations. [2]
COURSE IN PHILOSOPHY.


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 (Voluntary).—Exercises in Debating and Original Speaking. [Prof. McElroy. About once in two weeks.]

At the close of Sophomore Year, students may elect to enter the Junior Class in the Course in Arts or in the Wharton School, or, on showing their competency, may take any one of the Technical Courses in the Towne Scientific School.

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. Latin, History, Philosophy, Mathematics, and the Physical Sciences are assigned in proportions suited to the general purpose of the Course. French and German receive special attention in the two first years, with a view to the effective use of text-books in these languages in Junior and Senior years.

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

The instruction in General Biology is in the form of practical laboratory exercises, accompanied by explanatory lectures, and comprises the study of the structure, functions, and development of a series of plants and animals. The student in this manner gains a general knowledge of the vital phenomena, manifested in the different forms of living matter, before beginning the study of either Botany or Zoology. The series studied are:

1. Amoeba, Paramaecium, Vorticella, Bacterium, Yeast-plant, and Protococcus, as unicellular forms of life;
2. Moulds, Chara, 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 of 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 the Senior year all students electing 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, the life history of plants is carefully studied.

The lectures on Systematic Zoölogy begin in the Junior and continue through the 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 direction of additional types, of series of organs, or special parts chosen by the instructor.

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

Embryology is taught in the second term, and the student is instructed in the processes by which the complex tissues and organs are built up from the simple egg. The instruction consists 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.

**DEGREES.**

The Degree for the full course is Bachelor of Philosophy (Ph.B.), but students who have taken their two first years in the Course in Arts or in that in Science receive (respectively) Bachelor of Arts (A.B.) and Bachelor of Science (B.S.).

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**THE COURSE IN FINANCE AND ECONOMY IN THE WHARTON SCHOOL.**

One of the prominent objects of this course is to give a thorough, liberal, and professional training to young men who intend to engage in business, or upon whom will devolve the management of property. It also equips more completely persons who are preparing for active business life, for
Journalism, or for Public Service, for teaching History and Political Science, and for the study of Law. A no less important object is to provide, in the words of its founder, adequate education in the principles underlying successful civil 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.

COURSE OF STUDY.

The course of study extends through two years, and during the year 1887–8 embraces the following subjects:

JUNIOR CLASS.

FIRST TERM.

POLITICAL SCIENCE.—Theory of the State. Public Functions. (Lectures and Text-book.) [Prof. James. 3]


POLITICAL ECONOMY.—Thompson's Elements of Political Economy. [Prof's. Thompson and —. 4]

ENGLISH LITERATURE.—Lectures. [Prof. Thompson. 2]

LOGIC.—Jevons's Lessons in Logic. Ethics. [Prof. Fullerton. 2]

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

INTERNATIONAL LAW.—Lectures. [Prof. Hare. 2] (Optional).

METHODS OF ACCOUNTING.—[Mr. Gilpin. 3]
SECOND TERM.


AMERICAN POLITICS.—Jackson to date. (Sumner's Jackson.) Johnston's American Politics. Johnston's Half Century of American History. Lectures. [Prof. McMaster. 3]

POLITICAL ECONOMY.—Thompson completed. [Prof's. Thompson and ——. 4]

MORAL PHILOSOPHY.—Lotze's Outlines of Psychology. [Prof. Fullerton. 2]

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

METHODS OF ACCOUNTING.—[Mr. Gilpin. 3]

SENIOR CLASS.

FIRST TERM.

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


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]

PHILOSOPHY.—[3]

SECOND TERM.

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

AMERICAN CONSTITUTIONAL HISTORY.—Second Period, 1825–1885. (Lectures and Textbooks.) [Prof. McMaster. 3]


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

PHILOSOPHY.—[3]

CONSTITUTIONAL LAW.—(Optional.)*

ROMAN LAW.—(Optional.)*

PREPARATION OF THESIS.

*These courses are given in the Law School, but are open to Wharton School students.
The instruction in Political Economy during the Junior year is that which is usually given to the Junior and Senior classes in colleges. During the Senior year instruction in this branch is given through compositions and discussions by the class, followed by a review, exposition and application of principles by the professor.

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

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

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

SUPPLEMENTARY LECTURES.

Several lecturers not otherwise connected with the Faculty of the School have been engaged to treat special points relating to the regular subjects of instruction. The following lectures were delivered during the year 1886-7.

1. Twelve lectures on the "Constitutional Law of the United States," by Dr. F. N. Thorpe, Professor of History in the Manual Training High School of Philadelphia, and Fellow in Political Science of the University of Pennsylvania. Four of these lectures are devoted to a discussion of the "Fundamental Rights," two to the Legislative Departments, two to the Judiciary, two to the Executive, one to the Law of Administration, and one to the Historical Developments.


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

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

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

DEGREES.

The Degree of Bachelor of Philosophy (Ph.B.) is conferred (1) on students who complete satisfactorily the full course; (2) on graduates in Arts or in Science of the University of Pennsylvania or of any college of equal standing, who pursue satisfactorily the Senior year of this Course. But students who have taken the two first years in the Course in Arts or its equivalent receive the Degree of Bachelor of Arts (A.B.); those who have taken these years in the Course in Science receive the Degree of Bachelor of Science (B.S.).

For additional information, apply to the Secretary, Professor J. B. McMaster, University.
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 completed 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.
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.

FACULTY.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.
RICHARD A. P. PENROSE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children.
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 Clinical Gynaecology.
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.

CLINICAL PROFESSORS.

WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.
GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.
HORATIO C. WOOD, M.D., LL.D., Clinical Professor of Nervous Diseases.
LOUIS A. DUHRING, M.D., Clinical Professor of Skin Diseases.
LOUIS STARR, M.D., Clinical Professor of Diseases of Children.
J. WILLIAM WHITE, Clinical Professor of Genito-urinary Diseases.
DEPARTMENT OF MEDICINE.

ASSISTANT PROFESSOR.

EDWARD T. BRUEN, M.D., Assistant Professor of Physical Diagnosis.

AUXILIARY PROFESSORS.

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

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 Pharmacy, and Instructor in Practical Pharmacy.

DE FOREST WILLARD, M.D., Lecturer on Orthopedic 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 Still Medical Library.

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

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

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

THOMAS R. NEILSON M.D., EDMUND W. HOLMES, M.D., Assistant Demonstrators of Anatomy.

ALBERT L. A. TOBOLDT, M.D., Assistant Demonstrator of Practical Pharmacy.

WILLIAM A. EDWARDS, M.D., JUDSON DALAND, M.D., Assistant to the Professor of Theory and Practice of Medicine.

GEORGE E. DE SCHWEINITZ, M.D., Prosector to the Professor of Anatomy.

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

W. M. L. ZIEGLER, M.D., Instructor in 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 Orthopedic 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 Gynecology.
GWILLYM G. DAVIS, M.D., Assistant Demonstrator of Surgery.
EDWARD MARTIN, M.D., Instructor in Operative Surgery, Assistant Demonstrator of Surgery, Lecturer on Minor Surgery.
JOHN K. MITCHELL, M.D., Instructor in Clinical Medicine.
W. FRANK HAEHNLEN, M.D., Assistant Demonstrator of Normal Histology.
GEORGE H. CHAMBERS, M.D., Assistant Demonstrator of Normal Histology.
JAMES K. YOUNG, M.D., Assistant Demonstrator of Surgery.
DAVID D. RICHARDSON, M.D., Assistant Demonstrator of Anatomy.
BARTON COOK HIRST, M.D., Lecturer on Clinical and Operative Obstetrics, and Demonstrator of Operative Obstetrics.
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., Acting Assistant Demonstrator of Morbid Anatomy and Pathological Histology.
ROBERT FORMAD, Acting Assistant Demonstrator of Normal Histology.
ARTHUR A. STEVENS, M.D., T. PASSMORE BERENS, M.D., Instructors in Physical Diagnosis.

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

W. M. Carothers ............................................................... Wooster University.
J. M. Fordham ................................................................. Wyoming Seminary.
A. B. Gilliland ................................................................. Cornell University.
Rowland Haines ................................................................. Swarthmore College.
Wallace R. Hunter ............................................................ Penna. State College.
Robert M. Kennedy ............................................................ U. S. Naval Academy.
Junzo Kawamoto ............................................................... Oberlin University.
W. K. Maglaughlin, ............................................................. Dickinson College.
Thomas G. McConkey ......................................................... Wittenberg College.
Oscar W. Richards ............................................................. Lafayette College.
Edgar Strayer ................................................................. West Chester Normal School.
A. L. Smith ................................................................. Rochester University.
Arthur P. Summers ............................................................ Yale College.
Jacob D. Updegrove  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  Lafayette College.
E. L. Walmer  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  Millersville Normal School.

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.

HOSPITAL STAFF.

WILLIAM PEPPER, M.D., LL.D., Professor of Clinical Medicine.
D. Hayes Agnew, M.D., LL.D., Professor of Clinical Surgery.
WILLIAM GODELL, M.D., Professor of Clinical Gynaecology.
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. C. CROZER GRIFFITH, M.D.,
JOHN K. MITCHELL, M.D.,
J. WM. WHITE, M.D.,
H. R. WHARTON, M.D.,
RICHARD H. HARTE, M.D.,

Assistant Physicians.

Assistant Surgeons.
DEPARTMENT OF MEDICINE.

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 H. DERCUM, M.D., Assistant Neurologist.

CHARLOTTE M. HUGO, Superintendent of the Hospital.
WILLIAM E. HUGHES, M.D., Medical Registrar.
JAMES K. YOUNG, M.D., Surgical Registrar.
HENRY F. FORMAD, M.D., Pathologist.
JUDSON DALAND, M.D., Curator.
W. M. POWELL, M.D., Surgical Anaesthetizer.

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.

DISPENSARY SERVICE.

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

DE FOREST WILLARD, M.D., Attending Surgeons in the Orthopaedic Dispensary.
A. SYDNEY ROBERTS, M.D., Dispensary.
J. H. MUSSER, M.D., Physician in the Medical Dispensary.
CARL SELLE, 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. HART, M.D., Attending Surgeons in the Surgical Dispensary.
CHARLES W. DULLES, M.D., Dispensary.
JOSEPH M. FOX, M.D.,
JOHN B. DEAVER, M.D.,
JAMES WALLACE, M.D., Assistant Surgeons in the Dispensary for Diseases of the Eye.
G. E. DE SCHWEINITZ, M.D., Diseases of the Eye.
JAMES HENDRIE LLOYD, M.D., Assistant Physician in the Dispensary for Nervous Diseases.

THOMAS R. NEILLSON, 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., Attending Physician in the Dispensary for Diseases of Children.
FREDERIC H. MILLIKEN, M.D., Assistant Surgeons in the Orthopaedic Dispensary.
JAMES K. YOUNG, M.D., Assistant Surgeon in the Dispensary for Diseases of the Ear.
WILLIAM K. HOCH, M.D., Assistant Surgeon in the Dispensary for Diseases of the Throat.
J. HOWARD REEVES, M.D., Assistant Physician in the Dispensary for Diseases of Children.
EDWIN C. BAILEY, M.D., Assistant Surgeon in the Dispensary for Diseases of Women.
W. CONSTANTINE GOODELL, M.D., Assistant Surgeons in the Dispensary for Diseases of Women.
W. A. CAREY, M.D., Assistant Surgeons in the Dispensary for Genito-Urinary Diseases.
H. M. CHRISTIAN, M.D., Assistant Surgeon in the Dispensary for Diseases of the Eye.
B. ALEXANDER RANDALL, M.D., Assistant Surgeons in the Dispensary for Diseases of the Eye.
G. ORAM RING, M.D., Assistant Surgeons in the Dispensary for Diseases of the Throat.
SPENCER TROTTER, M.D., Assistant Physician in the Dispensary for Diseases of Children.
WILLIAM M. POWELL, M.D., Assistant Physicians in the Dispensary for Diseases of Children.
CHARLES CLAXTON, M.D., Assistant Physicians in the Medical Dispensary.
WM. E. HUGHES, M.D., Assistant Physicians in the Medical Dispensary.
M. HOWARD FUSSELL, M.D., Assistant Physicians in the Medical Dispensary.
GEORGE DOCK, M.D., Assistant Physicians in the Medical Dispensary.

All communications should be addressed to

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

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

FOURTH YEAR.

Clewell, Cary K., M.D., Telford, University of Penna.
Moyer, Irwin J., M.D., Pittsburgh, Western Res. Univ.
Slocum, Charles E., Jr., M.D., El Paso, Ill., College Physicians & Surgeons, N. Y.

Students of the Fourth Year, 3.

THIRD YEAR.

Alleman, Horace M., A.B. (Lafayette), Hanover, H. Alleman.
Baker, James H., A.B. (Hamilton College), Philadelphia, University.
Barberena, Narciso, B.S., Granada, Nicaragua, University.
Bolton, Samuel, Jr., A.B. (Bucknell), Philadelphia, University.
Bowman, John H., B.S. (Dickinson Seminary), Hazleton, W. R. Longshore.
Bushong, John W., Philadelphia, University.
Canfield, William C., Bristol, R. I., Herman Canfield.
Cates, Benjamin B., Marysville, Tenn., J. W. Cates.
Cawley, Morris Franklin, Allentown, J. I. Cawley.
Chamorro, Filadelfia, Grenada, Nic., University.
Dongion, Giragos, Dearbecker, Armenia, Judson Daland.
Downes, Randolph H., Ph.G., Templesville, Md., University.
Downs, Norton, Germantown, R. N. Downs.
Easter, Daniel M., Baltimore, Md., University.
Eckman, Philip N., Scranton, University.
Egbert, Seneca, A.M. (Princeton), Franklin, S. Bredin.
Faries, Randolph, A.B. (Univ. of Penna.), Philadelphia, J. Wm. White.
Ferrer, Adolfo Leon, A.B. (Ocampo, Mex.), Tabasco, Mex., University.
Foltz, J. Clinton, A.B. (Princeton), Lancaster,

Frame, Joseph K.,
Frey, Lewis,
Friend, Samuel H.,
Gentry, Alan F., A.B. (Central High School),
Gillam, William S.,
Gill, Walter Myers,
Goodwin, Eugene B.,

Greenevelt, Frank L.,

Greene, Walton S.,
Green, John Traill, A.B. (Lafayette),

Griesemer, Howard,
Guerrero, José B.,
Gummey, Frank Bird,
Hall, George Benjamin,
Hall, Harry N., Ph.G.,
Hamill, Samuel M.,
Hand, William Nelson,
Harding, Frank H.,

Hay, Charles McKenzie,
Hayes, Joseph,

Hepler, Harry A.,
Heyl, Ashton Bryant,
Hatchkiss, Walter William,
Huber, William S.,
Humphrey, Glennis E.,

Hunter, James, Jr., Ph.G.,
Johnson, Elmer, E., A.B. (Muhlenberg),

Jones, Charles J.,
Kahn, Joseph,
Kalbach, A. Frank, A.B. (Franklin & Marshall),
Kelly, John J.,
Kerns, Alvin J., B.S. (Ursinus),

Klapp, Willbur P.,
Knoll, John G. W.,
Lake, Wilson A.,
Landis, Eli Barr,
Le Conte, Robert G., A.B. (Univ. of Penna.),

Lenahan, Frank P.,
Lincoln, William R.,

Millsboro', Del.,
Scranton,
Milwaukee, Wis.,
Philadelphia,

Langhorne,
Allegheny,
Kenton, Del.,

Chambersburg,

Aberdeen, Miss.,
Easton,

Reading,
Managua, Nicarag.,
Germantown,
Renovo,
Aguascalientes, Mex.,
Lemont,
Woodstock, N. B.,
Mansfield, Ohio,
Rochester, N. Y.,

Woodstock, N. B.,

Spring Hill Mines, N. S.,

Reading,
Philadelphia,
Meadville,
Lebanon,
Union City,

Philadelphia,
Milwaukee, Wis.,
Philadelphia,

Parsons,
Slatington,
Philadelphia,
Buffalo, N. Y.,
Green Creek, N. J.,
Lancaster,

Philadelphia,

Wilkes-Barre,
Philadelphia,

W. S. W. Ruschenberger.
H. G. M. Kollock.
R. H. Gibbons.
H. M. Brown.
University.

Samuel G. Dixon.
B. Kerr.
W. W. Keen & J. A. Goodwin.
S. G. Lane & C. F. Palmer.

J. M. Greene.
Traill Green and E. M. Green.

W. Murray Weidman.
University.


Wm. E. Hall.

H. S. Squires.
R. H. Hamill.
C. P. Connell.
R. Harvey Reed.

Jos. A. Biegler and Judson Daland.

M. F. Bruce.
J. W. Cove.

Howard S. Reeser.
Theo. C. Heyl.
Jno. C. Cotton.

Wm. M. Guilford.

O. L. Abbey and A. C. Sherwood.
University.

B. K. Johnson and Judson Daland.

J. Wm. White.
University.

S. B. McDowell.

University.

L. E. Taubel.
University.

A. G. Gumael.

J. H. Ingram.

S. T. & M. L. Davis.

W. W. Keen.

C. W. Spayd.
Allen J. Smith.
Long, Frederick P., Pittsfield, Ill., J. G. West.
Mackey, David, Lewisville, R. H. Hamill and

Mathews, George S., A. B. (Brown), Temple, A. Mathews.
Miller, Edwin H., Camden, N. J., University.
Miller, Milo G., A. M. (Western Pittsburgh, Jno. M. Duff.
Univ.),

Myers, Oscar M., Ph. G., Rochester, N. Y., Chas. E. Darrow.
McFarland, Joseph, Philadelphia, George H. Horn.
McMillan, James H., A. B. (Washington University), University.

Nixon, John Howard, Wilmington, Del., R. J. McKay.

Pennock, Walter I., Oxford, University.
Pfoutz, Gilbert B., Philadelphia, James Tyson.
Perry, Charles F., Norristown, J. Wm. White.
Peter, Nathaniel C., Siegfried's Bridge, C. W. Sieger.
Pierce, William Chandler, Wilmington, Del., University.
Rabe, J. William, Cleveland, Ohio, B. A. Rabe.
Randolph, Philip J. S., Philadelphia, University.
Rodgers, Robert, Jr., Philadelphia, J. Howard Evans.
Ross, Thomas Haven, Chestnut Hill, James K. Young.
Roth, Emil, Philadelphia, John Strobel.
College),

Saiki, Riichiro, M. D., Tokio, Japan, R. N. Ramsey.
Saladé, Louis Audenried, A. B., Tamaqua, University.
(Schultze and Marshall),
Schantz, William S., Hosensack, H. Bobb.

Sharples, Caspar Wistar, A. M., Eugene City, Ore., A. Sharples.
(Chapman University),
Sharpless, William T., West Chester, Isaac Massey.
Shick, William F., Easton, University.
Shissler, Alfred G., Shamokin, University.
Shurtleff, Harry C., Philadelphia, Augustus Shurtleff.
Silva, Manuel C. Da, Rio de Janeiro, Braz., University.
(Princeton),
SECOND YEAR.

Adams, J. Howe, Philadelphia, D. Hayes Agnew.
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. St. Peter, Minn., Chas. N. Hewitt.
Minn.),
Bashore, Harvey B., A.B. (Yale), West Fairview, D. W. Bashore.
Bolling, Robert H., Chestnut Hill, Robt. Bolling.
Brooke, Benjamin, FortressMonroe, Va., J. Brooke.
Brown, James G., Peola Mills, Va., O. R. Quaintance.
Butcher, Alexander C., Philadelphia, B. F. Butcher and
Canby, Edmund, Wilmington, Del., University.
Carpenter, John T., Jr., Pottsville, University.
Clarke, James F., B.S. (Iowa State Fairfield, Iowa, Louis Starr.
Univ.),
Clark, Robert, Philadelphia, University.

Students of the Third Year, 136.
Cleveland, Arthur H., B.S. (La-fayette), University.
Cressman, George S., Lafayette Hill, B. R. Peltz.
Cross, George D., Chester, R. H. Milner.
Crothers, S. Ross, Ph.G., Zion, Md., University.
Curry, Edw. A., A.B. (Dickinson), Danville, J. D. Strawbridge.
Davis, Charles N., Bryn Mawr, University.
Dunn, Walter, Ph.G., Clifton Heights, J. S. Pearson.
Ferguson, Albert D., Philadelphia, J. F. Holt.
Fowler, Charles C., A.B. (Emory Coll.), Spartanburg, S. C., University.
Fox, Horace, Philadelphia, Wm. Osler.
Frasse, Irvin N., Brooklyn, N. Y., Geo. G. Hopkins.
French, Edward M., Bethlehem, University.
Gallagher, George W., Dawson, Hobart A. Hare.
Grelach, E. Rudolph, Trenton, N. J., University.
Gillespie, Frank, Principio, Md., R. R. Crothers.
Grebe, William, Ph.G., Philadelphia, J. A. McAuley.
Hall, William D. W., A.B. (Princeton), Lewes, Del., David Hall.
Hamme, John M., B.S. (La-fayette), York, Jacob Hay.
Harris, Thomas J., A.B. (Dartmouth), Claremont, N. H., University.
Heil, Ulysses S. Grant, Easton, M. T. Prendergast.
Hileman, John S., Pittston, G. W. Underwood.
Horning, Frank L., Landingville, D. Deechert.
Howeter, Emanuel L., B.E., Stony Run, University.
Hull, Waldo W., Williamsport, W. R. Hull.
Hunsberger, J. Newton, Skippack, Sam'l Wolfe.
Johnston, William G., Titusville, University.
Keefer, Frank R., Ph.B. (Dickinson), Sprague, Wash. Ter., Calvin DeWitt.
Keiser, Elmer E., A.B. (Bucknell Univ.), Lewisburg, John B. Deaver.
Kneass, Samuel S., A.B. (Univ. Penna.), Philadelphia, University.
Kulp, John Stewart, Wilkes-Barre, J. A. Murphy.
Lakin, Harry P.,
La Motte, Harry,
Lear, John, A.M. (Lafayette),
Lederman, Moses D.,
Leonard, Charles L., A.B. (Univ. of Penna. and Harvard),
Lightfoot, Sidley levers,
Linderman, Herbert,
Longshore, James B.,
Mallon, James P., Ph.G.,
Massinger, Charles Jerome,
Mercer, Charles P., Ph.B. (Univ. of Penna.),
Michel, Bernard, Ph.G.,
Miles, Thomas J.,
Miller, Charles L.,
Miller, Horace W.,
Miller, Morris Booth,
Milnor, William S., A.B. (C.H.S.),
Moore, Cyrus Chester,
Moore, J. Demuth, Ph.G.,
Motter, Murray G., A.B., B.S. (Penna. Coll.),
McClure, John T.,
McConnell, James W.,
McCormick, Louis P.,
McGalliard, Benjamin W., Ph.B. (Lafayette),
McGill, Will. B.,
McKelway, George I., Ph.G.,
McNaugher, Samuel N., A.B. (Westminster),
Naylor, Walter W.,
Neuber, George G. E., A.B. (Univ. of Penna.),
Nicholson, George M.,
O'Brien, Christopher, Ph.G.,
O'Hara, Michael, Jr.,
Paff, Edwin H.,
Patrick, William S.,
Phillips, Horace,
Pickerell, Evan,
Posey, William C., A.B. (Univ. of Penna.),
Price, William H., A.B. (C.H.S.),
Rawlins, Benjamin L.,
Reagan, Arthur D., Ph.G.,
Reisert, William, Ph.G.,
Rhodes, Oreon S.,
Roach, Walter W., A.B. (C.H.S.),
Wheeling, W. Va.,
Fort Wingate, N.M.,
Allentown,
Lancaster,
Philadelphia,
Limerick, Ireland,
Quakertown,
Philadelphia,
Philadelphia,
Chalfont,
Dubuque, Iowa,
Sac & Fax Agency, Ind. Ter.,
Lebanon,
Urbana, Ill.,
Media,
Moore's Salt Works, Wm. W. Jones.
Ohio,
Wrightsville,
Washington, D. C.,
Philadelphia,
Manayunk,
Connellsville,
Bridgeton, N. J.,
Philadelphia,
Marionville, Mo.,
Philadelphia,
Allegheny,
New Hope,
Philadelphia,
Jersey City, N. J.,
Conshohocken,
Philadelphia,
Allentown,
Quinton, N. J.,
Philadelphia,
Minerva, Ky.,
Philadelphia,
Philadelphia,
Philadelphia,
Philadelphia,
Samuel L. Jepson.
University.
John Sandt.
M. L. Herr.
University.
C. B. Gaffney.
R. J. Linderman.
G. D. O'Farrell.
J. P. Strotmater.
I. S. Moyer.
S. T. Neuber.
S. Weiss, Jr.
J. T. Miller.
Chas. J. Essig.
University.
D. Hayes Agnew.
University.
G. L. Romine.
S. T. Neuber.
A. A. Latkins.
University.
M. O'Hara.
W. S. Berlin.
T. J. Smith.
University.
J. A. Reed.
University.
R. J. Levis.
S. D. Thruston.
University.
University.
T. C. Walton.
Horace Ladd.
Rosenau, Milton J., A.B. (C.H.S.),
Rote, John P., A.B. (K.S.U.),
Rothermel, Pius,
Rottner, Charles S., Ph.G.,
Ruiz, Jesus,
Schaeffer, Charles D., A.B. (F. & M. Coll.),
Schneider, Louis T.,
Schroeder, Charles B., A.B. (Lafayette),
Scott, Charles G.,
Scott, J. Allison, A.B. (Univ. of Penna.),
Sharp, J. Riddle,
Sinnamon, George,
Smith, Franklin A., Jr.,
Small, J. Frank,
Smith, Rolla L.,
Snyder, Elmer R.,
Speers, Albert C.,
Spellissy, Joseph M., A.B. (George-town University),
Stengel, Alfred,
Stichter, Henry Deischer, Ph.G.,
Stitt, Edward R., A.B., Ph.G.,
Striegel, Charles A.,
Swaving, J. Harry,
Swift, Elisha P., A.B. (Lafayette),
Toulmin, Harry, Ph.B. (Lehigh),
Trexler, Jacob F.,
Tyson, T. Mellor,
Tunis, Joseph P., A.B. (Univ. of Philadelphia, Penna.),
Umsted, William M.,
Van Buskirk, Frederic W.,
Vannmeter, Seymour D.,
Weiss, George L.,
Weissgerber, John, Ph.B. (Univ. of Pennsylvania),
White, Abraham E., A.B. (Lincoln University),
Williams, Charles B., A.B. (Univ. of Pennsylvania),
Wilson, E. Ellsworth, Ph.G.,
Wilson, George B.,
Wilson, Henry Delano,
Wilson, Richard,
Wilson, Samuel M., B.A. (C.H.S.),
Wolf, Charles N.,
Woodland, George Y.,
Zuniga, Francisco J., A.B.,

Philadelphia, University.
San Antonio, Texas, University.
Molltown, University.
Philadelphia, University.
Guayata, U. S. Col., University.
Kutztown, A. L. C. Hottenstein.
Philadelphia, Geo. A. Bodamer.
Roarkee, India, University.
Harrington, Del., Jno. A. Klump.
Philadelphia, University.
York, I. C. Gable.
Oakville, I. Betz.
Hilltown, E. T. Johnson.
Belle Vernon, University.
Philadelphia, University.
Pittsburgh, Walter Stengel.
East Greensville, H. Bobb.
Shenandoah, University.
Pennsylvania, University.
Pennsylvania, University.
Pennsylvania, University.
Pennsylvania, University.
Pennsylvania, University.
Pennsylvania, N. F. Mossell.

Students of the second year, 150.
FIBST YEAH.

Anders, Howard S., B.A. (C.H.S.), Philadelphia,

Anders, Wesley A., North Wales,

Anderson, Thomas B., Washington, D.C.,

Ashhurst, William W., Philadelphia,

Backenstoe, Martin J., Emaus,

Barnes, Harry D., Woodlawn, Md.,

Bennett, James C., Jr., Cape May City, N.J.,

Blackburn, James P., Jacob's Creek,

Bohlen, Robert M., Philadelphia,

Bower, Alexander J., Schuylkill Haven,

Boyer, Samuel H., Schellsburg,

Brimhall, John B., Titusville,

Bromley, John L., St. Paul, Minn.,

Bryant, Ernest A., Philadelphia,

Carothers, William M., A.B., St. Paul, Minn.,

Carter, William S., Turtle Creek,

Clegg, William H., A.B. (C.H.S.), Easton,

Cochran, Joseph D., Parkesburgh,

Corbus, Howard S., B.A., Easton,

Cranckshaw, Charles W., Woodbury, N.J.,

Cummins, Robert H., Philadelphia,

Dager, Howard A. B. (C.H.S.), Folly Mills, Va.,

Daly, Harry C., Beaver Falls,

Dickson, Thomas G., Conshohocken,

Doan, Henry H., Wheeling, W. Va.,

Donahay, De Witt S., Manayunk,

Donges, Clarence B., Gibsonton,

Dunn, Ira J., A.B. (Allegheny), Troy, N.Y.,

Dungan, S. Potts, Philadelphia,

Evans, Frederick H., Howell, N.J.,

Evans, William K., Camden, N.J.,

Evins, Thomas E., West Chester,

Farr, James C., Philadelphia,

Frishmuth, John P., A. B. (C.H.S.), Chester,

Gazzam, Edwin D., Chester,

Geist, James W., M. E., Spartansburg, S.C.,

Gilliland, A. Bertram, Ph.B. (Cornell), Livermore, N. Scotia, H. G. Parish,

Graham, Wm. F., A.B. (Princeton), Philadelphia,

Griffith, Robert Constantine, Philadelphia,

Guest, Middleton Semmes, Philadelphia,

Gunning, Thomas F., Baltimore, Md.,

Haines, E. Everitt, Fall River, Mass.,

Haines, Rowland L., Vincentown, N. J.,

Hamann, Carl A., Norristown,

Hanly, M. William, A.B., Davenport, Iowa,

Harland, William, G. B., Hopedale, Ohio,


University. University.


Lewis Sutton. University.


University. University.


Isaac Ott.

W. R. Blakeslee.

J. S. Hunt.

H. C. Clark.

University.

University.

D. McKinney, Jr.

Beaver & Highley.

L. D. Wilson.

A. H. Mellelesh.

University.

John B. Harvie.

University.

Wm. M. Hepburn.

J. W. Donges.

T. D. Dunn.

Jas. M. Eagleton.

F. J. Evans.

Wm. G. Knowles.

Means & Moore.

University.

University.

University.

University.

University.

University.

University.
Harris, Charles D., Philadelphia, University.
Hoch, Charles August, Basel, Switzerland, W. R. Hoch.
Holly, Clarke W., B.A. (Yale), W. J. Holly.
Hoopes, William E., University.
Howell, William P., University.
Hunsicker, James, E. M. Corson.
Hunter, Wallace, J. Y. Dale.
Kamerly, E. Forrest, Jr., E. F. Kamerly.
Kaufman, Frederick S., J. W. Loch.
Kawamoto, Junzo, Ph.B. (Oberlin), University.
Kerr, Edward, Thos. E. Parke.
Kolb, Louis John, University.
Langhorne, Stepney T., University.
Lathrop, Walter, University.
Leisher, Charles A., University.
Lesher, George S., University.
Levis, Minford, University.
Lewars, Horace S., University.
Leys, James Farquharson, University.
Longaker, Daniel, University.
List, Charles W., Wheeling, W. Va., University.
McComb, George S., M.E., University.
McFadden, Charles J., Thos. E. Parke.
Maison, Robert S., A.B. (Univ. Pa.), University.
Malone, Charles A., University.
Maloney, John B., University.
Martin, Charles S., University.
Marshall, Robert J., University.
Maglaughlin, W. Kieffer, A.B. (Dickinson), University.
Maury, John M., University.
Menah, William McClellan, University.
Miler, Emmitt Palmer, University.
Morris, Daniel E., University.
Muttart, George, University.
Myers, Frank E., University.
Niesley, Charles M., B.S. (Lafayette), University.
Niblock, Charles A., A.B. (C.H.S.), University.
Nicholson, Joseph L., University.
O'Drain, Thomas I., A.B., University.
Pennepacker, Edward M., University.
Potter, Edwin S., University.
Price, Lucius G., University.
Reese, David L., University.
Rettew, David P., University.
Reynolds, Frederick P., University.
Rhett, Henry J., Ph.B., University.
Philadelphia, University.
Philadelphia, University.
Media, University.
Wheeling, W. Va., University.
Norristown, University.
Stormstown, University.
Town Hill, University.
Auburn, University.
Pottsville, University.
Downingtown, University.
Philadelphia, University.
Philadelphia, University.
Montrose, University.
McAllisterville, University.
Richland, University.
Philadelphia, University.
Philadelphia, University.
Philadelphia, University.
Norristown, University.
Wheeling, W. Va., University.
Hubers, University.
Springfield, Ohio, University.
Lewistown, University.
Philadelphia, University.
Lancaster, University.
Key West, Fla., University.
Allentown, University.
Camden, N. J., University.
Memphis, Tenn., University.
Philadelphia, University.
Stroudsburg, University.
Millcove, P. E. I., University.
Souris, P. E. I., University.
Lewistown, University.
Mechanicsburg, University.
Elmira, N. Y., University.
Elmira, Manor, N. G. Thompson.
Henry Flood.
Henry M. Wetherill, Jr.
Richards, Oscar M., B.S., (Lafayette),
Ruffner, Samuel A.,
Russell, William W., C.E.,
Samaniego, José A.,
Saxman, Nathaniel H., A.B., Franklin and Marshall,
Schaadt, Clinton J., A.B. (Muhlenberg),
Scott, J. Ernest,
Shaw, John W., Jr.,
Smith, Arthur L. A.B. (Rochester),
Snyder, Harvey L.,
Spelman, James P.,
Steinwandel, John A.,
Strayer, Edgar,
Strickler, Charles Miller,
Summers, Arthur P., Ph.B. (Yale),
Torrance, Harry S.,
Tyson, Thomas F.,
Updegrove, Jacob D., A.M. (Lafayette),
Vanneman, Walter, A.R.,
Van Wart, George C.,
Wagner, Edward C.O., B.A. (Canisius),
Walker, William K.,
Walmer, Ephraim L.,
Webster, I. Daniel,
Weems, Marcus A.,
Welty, Collen P.,
Windsor, Arthur D.,
Yeager, Norton R.,

Cross Creek,
Lewistown,
Old Zionsville,
Fulda, Minn.,
Lancaster,
Paterson,
Lebanon,
Jenkintown,
Easton,
Camden, N. J.,
Fredericton, N. B.,
Wilkes-Barre,
Phenixville,
Linglestown,
Wakefield,
Columbia, Texas,
Shamrock,
Canton, Ohio,
Titusville,
Allentown,

SPECIAL STUDENTS.

Arndt, Oliver E. E., M.D.,
Boyce, Henry P.,
Brinton, George,
Eastlake, A. C. deLano,
Evans, Horace Y., Jr.,
Hardecastle, Edward M.,
Kelly, William Clarence, Ph.G.,
Klug, Oliver R.,
Kobayashi, Sankio, M.D.,
Leinbach, Elmer E. E.,
Macdonnell, Æneas,
Pool, Stewart N.,
Sayre, Cliford, M.D.,
Van Pelt, Harry,

Easton,
Lafayette Hill,
Philadelphia,
Germantown,
Haverford College,
Trappe, Md.,
Thurlock,
Highspire,
Wakayama, Japan,
Leinback's,
Montreal, Can.,
McDonough, Del.,
Spencer's Island, NS.,
Salem, N. J.,

Students of the First Year, 128.
TOTAL

- Students of the Fourth Year: 3
- Students of the Third Year: 136
- Students of the Second Year: 150
- Students of the First Year: 128
- Special Students: 18

The total number of new matriculates the present session, including those admitted to advanced standing, is 169.

SUMMARY.

<table>
<thead>
<tr>
<th>Country</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>1</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>2</td>
</tr>
<tr>
<td>Colorado</td>
<td>1</td>
</tr>
<tr>
<td>Cuba</td>
<td>2</td>
</tr>
<tr>
<td>Delaware</td>
<td>10</td>
</tr>
<tr>
<td>District Columbia</td>
<td>4</td>
</tr>
<tr>
<td>Florida</td>
<td>1</td>
</tr>
<tr>
<td>Illinois</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td>1</td>
</tr>
<tr>
<td>Indiana</td>
<td>1</td>
</tr>
<tr>
<td>Indian Territory</td>
<td>1</td>
</tr>
<tr>
<td>Iowa</td>
<td>3</td>
</tr>
<tr>
<td>Ireland</td>
<td>1</td>
</tr>
<tr>
<td>Japan</td>
<td>3</td>
</tr>
<tr>
<td>Kentucky</td>
<td>2</td>
</tr>
<tr>
<td>Maine</td>
<td>1</td>
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<tr>
<td>Maryland</td>
<td>11</td>
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<tr>
<td>Massachusetts</td>
<td>1</td>
</tr>
<tr>
<td>Mexico</td>
<td>4</td>
</tr>
<tr>
<td>Minnesota</td>
<td>6</td>
</tr>
<tr>
<td>Mississippi</td>
<td>2</td>
</tr>
<tr>
<td>Missouri</td>
<td>2</td>
</tr>
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<td>New Brunswick</td>
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<td>New Jersey</td>
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<td>New Mexico</td>
<td>1</td>
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<tr>
<td>New York</td>
<td>10</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>4</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>3</td>
</tr>
<tr>
<td>Ohio</td>
<td>9</td>
</tr>
<tr>
<td>Oregon</td>
<td>1</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>283</td>
</tr>
<tr>
<td>Prince Edw. Island</td>
<td>2</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>1</td>
</tr>
<tr>
<td>South Carolina</td>
<td>6</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1</td>
</tr>
<tr>
<td>Tennessee</td>
<td>3</td>
</tr>
<tr>
<td>Texas</td>
<td>4</td>
</tr>
<tr>
<td>U. S. of Colombia</td>
<td>1</td>
</tr>
<tr>
<td>Virginia</td>
<td>3</td>
</tr>
<tr>
<td>Washington Ter.</td>
<td>1</td>
</tr>
<tr>
<td>West Indies</td>
<td>1</td>
</tr>
<tr>
<td>West Virginia</td>
<td>4</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>435</td>
</tr>
</tbody>
</table>

ORGANIZATION OF THE MEDICAL SCHOOL.

This venerable Institution, the oldest of its class in the United States, was founded in 1765, by Dr. John Morgan, who filled 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 “Commence-
ment 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 three.

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 7th, and Friday, September 28th, but arrangements may be made for examination at other times throughout the year, except July and August, upon application to the Secretary.*

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

Students who have attended one course in a Medical School (not Homoeopathic 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.

* 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, Texas. The names of the examiners will be found on page 70.
Graduates of regular medical schools in good standing are admitted to the third year without an examination. The diplomas of graduates from other schools are not endorsed by the Faculty of this school for registration except after an examination of their holders, similar in all respects to that required of its own graduates. The fee for such examination is thirty dollars.

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

Examinations for admission to advanced standing for Session 1888-9 will be held Thursday, September 27th, at noon.*

COURSE OF STUDY.

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

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

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

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

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

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

OUTLINE OF THE COURSE.

FIRST YEAR.

<table>
<thead>
<tr>
<th>Course</th>
<th>Total hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy—3 lectures per week, 10 hours practical anatomy</td>
<td>13</td>
</tr>
<tr>
<td>Topographical anatomy—2 lectures per week</td>
<td>2</td>
</tr>
<tr>
<td>Histology—2½ hours laboratory instruction, 1 hour demonstration for half session</td>
<td>3</td>
</tr>
<tr>
<td>Materia Medica and Pharmacy—1 lecture per week, 2 hours laboratory</td>
<td>3</td>
</tr>
<tr>
<td>General Chemistry, including Chemical Physics—2 lectures per week, 4 hours laboratory</td>
<td>6</td>
</tr>
<tr>
<td>Physiology—3 lectures per week</td>
<td>3</td>
</tr>
<tr>
<td>General Pathology—1 lecture per week, until March 1st</td>
<td>1</td>
</tr>
<tr>
<td>Hygiene—1 lecture per week until March 1st, after which 2 lectures</td>
<td>1</td>
</tr>
<tr>
<td>General Clinics, Medical and Surgical</td>
<td>4</td>
</tr>
<tr>
<td>Bandaging—1 hour lecture, 1 hour practice</td>
<td>2</td>
</tr>
</tbody>
</table>

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

SECOND YEAR.

<table>
<thead>
<tr>
<th>Course</th>
<th>Total hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy—3 lectures per week, 10 hours evening dissection</td>
<td>13</td>
</tr>
<tr>
<td>Topographical Anatomy—2 lectures per week</td>
<td>2</td>
</tr>
<tr>
<td>Medical Chemistry—1 lecture per week, 4 hours laboratory</td>
<td>5</td>
</tr>
<tr>
<td>Physiology—3 lectures per week</td>
<td>3</td>
</tr>
<tr>
<td>General Pathology and Morbid Anatomy—2 lectures per week, 1¼ hours laboratory</td>
<td>3½</td>
</tr>
<tr>
<td>Physical Diagnosis—1 lecture per week, 1 hour demonstration</td>
<td>2</td>
</tr>
<tr>
<td>Therapeutics—2 lectures per week</td>
<td>2</td>
</tr>
<tr>
<td>Theory and Practice of Medicine—3 lectures per week</td>
<td>3</td>
</tr>
<tr>
<td>Surgery—3 lectures per week</td>
<td>3</td>
</tr>
<tr>
<td>Obstetrics—2 lectures per week</td>
<td>2</td>
</tr>
</tbody>
</table>
### Course in Medicine

**General Clinics, Medical and Surgical, including Philadelphia Hospital Clinics:** 8

**Special Clinics (Nervous Diseases, Diseases of Skin, Eye, Ear, Gynecology):** 5

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

#### Third Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures/Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Pathology and Morbid Anatomy</td>
<td>2 lectures per week</td>
</tr>
<tr>
<td>Demonstrations in Morbid Anatomy</td>
<td>2 hours per week</td>
</tr>
<tr>
<td>Therapeutics</td>
<td>2 lectures per week</td>
</tr>
<tr>
<td>Theory and Practice of Medicine</td>
<td>3 lectures per week</td>
</tr>
<tr>
<td>Surgery</td>
<td>3 lectures per week</td>
</tr>
<tr>
<td>Operative Surgery and Minor Surgery</td>
<td>1 lecture per week, 2 hours practice</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>2 lectures per week</td>
</tr>
<tr>
<td>Operative Obstetrics</td>
<td>1 hour practice for half the term</td>
</tr>
<tr>
<td>Diseases of Woman and Children</td>
<td>1 lecture per week</td>
</tr>
<tr>
<td><em>Gynecology</em></td>
<td>1 lecture per week, 1 hour bedside teaching</td>
</tr>
<tr>
<td>*Bedside Instruction in Practical Medicine</td>
<td>1</td>
</tr>
<tr>
<td>*Bedside Instruction in Practical Surgery</td>
<td>1</td>
</tr>
<tr>
<td>General Clinics, Medical and Surgical, including Philadelphia Hospital Clinics</td>
<td>8</td>
</tr>
<tr>
<td>Special Clinics (Nervous Diseases, Diseases of the Skin, Eye, Ear, Paediatrics, Gynecology at both University and Philadelphia Hospitals), Genito-Urinary Diseases</td>
<td>8¼</td>
</tr>
<tr>
<td>Medical Jurisprudence and Toxicology</td>
<td>1</td>
</tr>
</tbody>
</table>

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

#### Fourth Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures/Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Medicine and Physical Diagnosis, including Laryngology</td>
<td>2 hours clinical lecture, 2 hours practical instruction</td>
</tr>
<tr>
<td>Clinical Surgery</td>
<td>2 hours clinical lecture, 1 hour practical instruction</td>
</tr>
<tr>
<td>Operative Surgery</td>
<td>1 hour practical instruction for half the term</td>
</tr>
<tr>
<td>Nervous Diseases and Electro-Therapeutics</td>
<td>1 hour clinical lecture, 1½ hours practical instruction</td>
</tr>
<tr>
<td>Mental Diseases</td>
<td>1 hour lecture</td>
</tr>
<tr>
<td>Gynecology</td>
<td>1 hour didactic lecture, 1 hour clinical lecture, 1 hour practical instruction</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>1 hour practical instruction for half the session, 1 hour clinical lecture for half the session</td>
</tr>
<tr>
<td>Dermatology</td>
<td>1 hour didactic lecture for half the session, 1 hour practical instruction</td>
</tr>
</tbody>
</table>

*For these courses the class is divided into sections, so that each student may receive direct personal instruction.*
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 ¼
Orthopedic 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, Surgery, and Obstetrics.

TEXT-BOOKS.

FIRST YEAR.

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

COLLATERAL READING.

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

SECOND AND THIRD YEARS.

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

Wormley's Micro-Chemistry of Poisons; 2d edition.
Quain; Allen; Wilson; Stricker. Carpenter.
Green, Pathology and Morbid Anatomy; Orth's Diagnosis in Pathological Anatomy.
Wood & Bache's Dispensatory.
Pepper's System of Practical Medicine; Stille's Therapeutics; Stille's & Maisch's Dispensatory;
Surgery: Agnew; Ashhurst.

Obstetrics: Playfair's Midwifery.

Gynecology: Goodell's Lessons in Gynecology.

Medical Jurisprudence and Toxicology: Reese.

Duhring on Diseases of the Skin; Tyson on Bright's Disease and Diabetes; Seiler, Diseases of Throat and Nose.

Ashhurst's International Encyclopaedia of Surgery; Erichsen; Billroth's Surgical Pathology.

Galabin's Midwifery; Grieg Smith's Abdominal Surgery; Meigs and Pepper on Children; Starr on Children.

Thomas on Diseases of Women; Emmet's Gynecology.

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.

<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 A.M.</td>
<td>General Chemistry</td>
<td>General Chemistry</td>
<td>Chemical Laboratory, two hrs.</td>
<td>Topographical Anatomy</td>
<td>Dissection</td>
<td>Philadelphia Hospital, Medical and Surgical Clinics, 10 to 12.</td>
</tr>
<tr>
<td>10 A.M.</td>
<td>Hygiene</td>
<td>Chemical Laboratory, two hrs.</td>
<td>Dissection</td>
<td>Gen. Pathology, until March 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 A.M.</td>
<td>Topographical Anatomy</td>
<td></td>
<td>Dissection</td>
<td>Materia Medica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 M.</td>
<td>Practical Normal Histology, one section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology, one section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology, one section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology, one section two hours. Others Osteology or Dissection.</td>
<td>Practical Normal Histology, one section two hours. Others Osteology or Dissection.</td>
<td></td>
</tr>
<tr>
<td>1 P.M.</td>
<td>Anatomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3½ P.M.</td>
<td>Pharmacology Laboratory</td>
<td>Pharmacology Laboratory</td>
<td>Pharmacology Laboratory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4½ P.M.</td>
<td>Physiology</td>
<td>Histology</td>
<td>Physiology</td>
<td>Bandaging, Lecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7½ to 10 P.M.</td>
<td>Pharmacy, Laboratory.</td>
<td>Bandaging</td>
<td>Pharmacy, Laboratory</td>
<td>Bandaging</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 attend Clinics.—See SPECIAL ROSTER.
# Order of Lectures, Daily.—Second Year

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 A.M.</td>
<td>Physical Diagnosis, Laboratory two hours.</td>
<td>Morbid Anatomy.</td>
<td>Medical Chemistry, Laboratory two hours.</td>
<td>Medical Chemistry, Laboratory two hours.</td>
<td>Phila. or Penna Hosp., Med. and Surgical Clinics.</td>
<td></td>
</tr>
<tr>
<td>12 M.</td>
<td>Practical Physical Diagnosis, Sections.</td>
<td>Practical Pathol. Histology, one section one hour. Others attend Gynecological and General Surgical Clinic, U. H.</td>
<td>Surgical Clinic.</td>
<td>Surgery.</td>
<td>Practical Pathol. Histology, one section one hour. Others attend Gynecological and General Surgical Clinic, U. H.</td>
<td></td>
</tr>
<tr>
<td>4½ P.M.</td>
<td>Physiology.</td>
<td>Physical Diagnosis.</td>
<td>Therapeutics.</td>
<td>Physiology.</td>
<td></td>
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</tr>
</tbody>
</table>

**U. H. University Hospital.**

For the study of Pathological Histology and Physical Diagnosis the Class is divided into sections, one of which is occupied at a time; those of the Second Year Students not thus engaged attend Clinics.
<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 A.M.</td>
<td>Demonstrations in Morb. Anat., 2 Secs.</td>
<td>Clinic Paediatrics U.H., until Jan. 1st.</td>
<td>Philadelphia or Penna. Hospital, Medical and Surgical Clinics.</td>
<td>Medical Clinic, U. H.</td>
<td>Autopsies at 9 o'clock</td>
<td>Philadelphia or Penna. Hospital, Medical and Surgical Clinics.</td>
</tr>
</tbody>
</table>

U. H. University Hospital.

For WARD CLASS instruction the Third Year Class is divided in sections. See Special Roster.
### ORDER OF LECTURES, DAILY.—FOURTH YEAR.

<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
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</table>

U.H. University Hospital.
* Children’s Hospital.
ROSTER OF CLINICS.

ROSTER OF BEDSIDE INSTRUCTION AND SPECIAL CLINICS FOR STUDENTS OF THE THIRD YEAR.
SESSION 1887-1888.

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. 3d, to Friday, Nov. 18th, inclusive.

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>D</td>
<td>—</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>B</td>
<td>D</td>
<td>—</td>
<td>A</td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>C</td>
<td>A &amp; C</td>
<td>B &amp; D</td>
<td>C &amp; D</td>
</tr>
<tr>
<td>Special Clinics</td>
<td>—</td>
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Second Period, from Monday, Nov. 21st, to Friday, Jan. 13th, inclusive.

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<tr>
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<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
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</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>A</td>
<td>—</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>—</td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>C</td>
<td>B</td>
<td>—</td>
<td>D</td>
</tr>
<tr>
<td>Special Clinics</td>
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Third Period, from Monday, Jan. 16th, to Friday, March 2d, inclusive.

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<tr>
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<th>Monday</th>
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<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Goodell</td>
<td>B</td>
<td>—</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>&quot; Ashhurst</td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>—</td>
</tr>
<tr>
<td>&quot; Osler</td>
<td>D</td>
<td>A</td>
<td>—</td>
<td>C</td>
</tr>
<tr>
<td>Special Clinics</td>
<td>—</td>
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Fourth Period, from Monday, March 5th, to Friday, April 13th, inclusive.

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

The instruction is given at the University Hospital at 1 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.

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Strawbridge</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Prof. Dühring</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Prof. Norris</td>
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<td></td>
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</tr>
<tr>
<td>Prof. Wood</td>
<td></td>
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</tr>
<tr>
<td>Otology</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermatology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophthalmology</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nervous Diseases</td>
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</tbody>
</table>

The entire Third Year Class will attend the General Medical, Surgical,
and Gynaecological Clinics, held on Wednesday and Saturday, from 12 to 2 o'clock, in the Upper Lecture Room; also Medical Clinic on Thursday, at 11 o'clock, and the Demonstrations in Morbid Anatomy, by Prof. Tyson and Dr. Formad, at 10 and 11 o'clock on Monday.

SPECIAL ROSTER OF LABORATORY INSTRUCTION IN HISTOLOGY, OSTEOLOGY, AND SYNDESMOLOGY, FOR STUDENTS OF THE FIRST YEAR. SESSION 1887-1888.

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

<table>
<thead>
<tr>
<th>1st Period.</th>
<th>From Monday, October 3d, to November 12th, inclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology,</td>
<td>A</td>
</tr>
<tr>
<td>Osteology,</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2nd Period.</th>
<th>From Monday, November 14th, to December 17th, inclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology,</td>
<td>B</td>
</tr>
<tr>
<td>Osteology,</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3rd Period.</th>
<th>From December 19th, to January 28th, inclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology,</td>
<td>C</td>
</tr>
<tr>
<td>Osteology,</td>
<td>A &amp; E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4th Period.</th>
<th>From January 30th, to March 3d, inclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology,</td>
<td>D</td>
</tr>
<tr>
<td>Osteology,</td>
<td>A &amp; E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5th Period.</th>
<th>From March 5th, to April 14th, inclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology,</td>
<td>E</td>
</tr>
<tr>
<td>Osteology,</td>
<td>B</td>
</tr>
</tbody>
</table>

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, and 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 1888 begins Monday, May 7th, and continues until the middle of June.

The Introductory Course for the Session of 1888–9 begins Monday, September 17th.

The Winter Session 1888–9 begins on Monday, October 1st, and ends at Commencement, on Wednesday, May 1st, 1889.

EXPENSES.

WINTER TERM.

First Year.

Matriculation Fee ............................................... $5.00
For general ticket, admitting to all the lectures and laboratory work assigned to this year, including dissection ................... $150.00
Dissecting material ............................................. $1 a part.
Second Year.
For general ticket, admitting to all the lectures and laboratory work assigned to this year, including dissection $150 00
Dissecting material $1 a part.

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

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

The Tuition fee of $150 each year is on condition 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. At least twenty-five dollars must be paid on account before the student can be admitted to the chemical laboratory.

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

Fees for Special Courses.
(Students taking special or partial courses, if not graduates of the School, are required to pay the matriculation fee, in addition to the fees named below.)
For the full third Course, including bandaging and operating, to graduates of this school $75 00
For a single Course of Lectures, except Materia Medica 20 00
For Course on Materia Medica, and on Bandaging and Operating, each 10 00
For Practical Course in the Chemical Laboratory 25 00
For the Course in Practical Gynecology of the third year 25 00
For any one of the remaining Practical Courses of the third year 15 00
Graduates of the School are admitted to the lectures free of charge; but they pay the fees for the practical courses.

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

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

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

**SCHOLARSHIPS.**

A competitive examination of candidates to fill six free scholarships is held annually. (In 1888, on Wednesday, September 26th, at 12 o'clock, noon.) The candidates will be required—

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

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

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

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

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

**FACILITIES FOR INSTRUCTION.**

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

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

The **Wistar and Horner Museum**, founded nearly one hundred years ago, has been annually augmented, and is unequaled 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 unrivaled 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 minutiæ, 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-syndesmolological Laboratory is under the supervision of the Professor of Anatomy and Demonstrator of Osteology. The first year student is required, in this Laboratory, to make himself familiar with the skeleton and the articulations, as a part of his instruction in practical anatomy.

The Physiological Laboratory is under the personal direction of the Professor of Physiology and the Demonstrator. It is furnished with every form of apparatus likely to be used by the practical physiologist. 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 of Path-
ological Histology, was opened in 1874, and attracts, from remote sections of the country, a large number of physicians and students who desire special preparation in Microscopic Technology, Normal and Pathological Histology, and Experimental Pathology. It is furnished with microscopes, and all appliances requisite for practical study and for original research.

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

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

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

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

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

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

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

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

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

The Stillé Medical Library, founded by Professor Alfred Stillé, now contains over six thousand bound volumes and as many pamphlets. During the Winter and Spring Courses it is accessible to advanced students and graduates of the Medical Department under appropriate regulations.
THE LABORATORY BUILDING.

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

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

The fourth floor is occupied by the Dissecting Room.

CHEMICAL LABORATORIES.—The Working Laboratories for Practical Chemistry are under the supervision of the Professor of Chemistry and the Demonstrator, with assistants. Students of the First Year devote four hours each week to the study of General Chemistry. The course includes chemical manipulations and the detailed study of the chemical reactions of the principal metals, acids, and their combinations, with the general principles of Qualitative Analysis, especially as they relate to the detection and separation of metals and compounds of importance to the physician. Each student is provided with a separate table and apparatus, and is required to exhibit by 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, splints and bandages 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 1886, there were treated 8405 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, Gynecology and the Specialties. These subjects are taught by the several Clinical Professors.

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

The resident physicians of the University Hospital are every year selected by competitive examination from among the graduating class of the University. The next examination will be held Tuesday, April 24th, 1888, at 12 m.

OTHER HOSPITALS AND HOSPITAL CLINICS.

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

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

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

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

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

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

PRIZES.

The Medical News Prize of One Hundred Dollars will be awarded to the member of the Graduating Class of 1887–88 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.

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

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

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

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 on Commencement Day.

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

OFFICERS FOR 1887.

President—ALFRED STILLÉ, M.D., LL.D.
Vice-Presidents—MEREDITH CLYMER, M.D.
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Philadelphia.

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

The Alumni Association has just published a complete Catalogue of the Graduates of the Medical Department, which may be obtained for $1, sent to Dr. Thomas R. Neilson, Secretary and Treasurer of the Society of the Alumni, Medical Department, 346 South Fifteenth Street, Philadelphia. Orders for copies should be sent at once.

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.

Dorland, Wm. A. N., M.D., do. do.
Gill, Walter Myers, Allegheny, do.
Hatch, John Leffingwell, Rochester, New York.
Lambert, H. Edgar, M.D., do. do.
Landis, Eli Barr, Lancaster, do.
Rodgers, Robert, Jr., Philadelphia, do.
Stevens, Auther Albert, M.D., do. do.
Warwick, Hill Sloane, M.D., Jersey City, New Jersey.

Total, 10.

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 1887–88 will begin on Monday, October 1st, and continue until the early part of May.

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

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

DEGREES.

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

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

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

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

SPECIAL STUDENTS.

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

PRIZES.

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

2. A fifty-dollar microscope will be given to the student who passes the best examination in Hygiene.

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 valu-
able philosophical apparatus; a growing collection of specimens of Comparative Anatomy and Zoology; chemical preparations and apparatus illustrative of Toxicology; diagrams, etc. These collections are arranged in the rooms of the Faculty.

COURSE OF STUDY.

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

- Signs of Death; Personal identity (identification of the living and the 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 Zoology.—1. An outline of the classes of animals. 2. A succinct account of their anatomy and embryology. 3. Explanation of “varieties” of human anatomy, and the proper method of studying malformations. 4. A description of human parasites. 5. An account of the more important sources of those articles of the materia medica which are derived from the animal kingdom.

The principal text-books used are:

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

Works of reference:

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

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On Library and Museum: JOHN ASHHURST, Jr., M.D.

(110)
The Medical Staff and Officers of the Hospital are given on pages 70, 71.

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

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

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

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

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

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

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

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

There are elected annually from the graduating class of the Medical
School three Resident Physicians, who come on duty for one year at inter-
vals 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.
DEPARTMENT OF DENTISTRY.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
CHARLES J. ESSIG, M.D., D.D.S., Professor of Mechanical Dentistry and Metallurgy.
EDWIN T. DARBY, M.D., D.D.S., Professor of Operative Dentistry and Dental Histology.
JAMES TRUMAN, D.D.S., Professor of Dental Pathology, Therapeutics and Materia Medica.—SECRETARY.
JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.
THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry.
EDWARD T. REICHERT, M.D., Professor of Physiology.

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

CLINICAL INSTRUCTORS.

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

DEMONSTRATORS.

J. JUDSON EDWARDS, D.D.S., Demonstrator of Mechanical Dentistry.
HARRY B. McFADDEN, D.D.S., Assistant Demonstrator of Mechanical Dentistry.
DEPARTMENT OF DENTISTRY.

AMBLER TEES, JR., D.D.S., Assistant Demonstrator of Mechanical Dentistry.
FREDERICK W. AMEND, JR., D.D.S., Assistant Demonstrator of Mechanical Dentistry.
JOHN MARSHALL, M.D., NAT. SC. D., Demonstrator of Practical Chemistry.
JOHN B. DEAVER, M.D., Demonstrator of Anatomy.

MATRICULATES.

<table>
<thead>
<tr>
<th>Matriculate</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascher, Hugo</td>
<td>Königsberg, Germany</td>
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<tr>
<td>Ayres, Percy C.</td>
<td>Philadelphia</td>
</tr>
<tr>
<td>Baker, Boyd H.</td>
<td>Hughesville</td>
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<tr>
<td>Baumgardner, Ira G.</td>
<td>Philadelphia</td>
</tr>
<tr>
<td>Beck, Harry M.</td>
<td>Wilkes-Barre</td>
</tr>
<tr>
<td>Belt, J. Ferris</td>
<td>Wilmington, Del.</td>
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<tr>
<td>Bower, Elmer E.</td>
<td>Baunstown</td>
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<tr>
<td>Bowers, George A.</td>
<td>Nashua, N. H.</td>
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<tr>
<td>Brown, Frederic W.</td>
<td>New Haven, Conn.</td>
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<tr>
<td>Bryan, William E.</td>
<td>St. Paul, Minn.</td>
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<tr>
<td>Burgin, Welby W.</td>
<td>Richmond, Ky.</td>
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<tr>
<td>Burke, John J.</td>
<td>Wilmot</td>
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<tr>
<td>Cabedo, Gabriel C. (L.D.S.)</td>
<td>Gibraltar, Spain</td>
</tr>
<tr>
<td>Calves, Antonio D.</td>
<td>Havana, Cuba</td>
</tr>
<tr>
<td>Channell, William C.</td>
<td>Montezuma, Ia.</td>
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<tr>
<td>Cogswell, Arthur W. (M.D.)</td>
<td>Halifax, Nova Scotia</td>
</tr>
<tr>
<td>Cornelius, George T.</td>
<td>Philadelphia</td>
</tr>
<tr>
<td>Daboll, Louis B.</td>
<td>Buffalo, N.Y.</td>
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<tr>
<td>Dunwoody, J. Edward</td>
<td>Philadelphia</td>
</tr>
<tr>
<td>Fenn, George L.</td>
<td>Bridgeport, Conn.</td>
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<tr>
<td>Fenn, Henry H.</td>
<td>Bridgeport, Conn.</td>
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<tr>
<td>Fletcher, Charles R.</td>
<td>Halifax, Nova Scotia</td>
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<tr>
<td>Fuller, Thomas B.</td>
<td>Binghamton, N.Y.</td>
</tr>
<tr>
<td>Gardner, Peter W.</td>
<td>Milwaukee, Wis.</td>
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<tr>
<td>Gibbons, R. Hornsby</td>
<td>Brighton, England</td>
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<tr>
<td>Gibbs, C. Franklin</td>
<td>Bridgeport, Conn.</td>
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<tr>
<td>Graff, Mark W.</td>
<td>Richmond, Ind.</td>
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<tr>
<td>Hart, Frank J.</td>
<td>Girard</td>
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<tr>
<td>Heyde, Hans von der</td>
<td>Constantinople, Turkey</td>
</tr>
<tr>
<td>Hopkins, Richard S.</td>
<td>Cheyenne, Wyoming Territory</td>
</tr>
<tr>
<td>Howard, Charles P.</td>
<td>Champaign, Ills.</td>
</tr>
<tr>
<td>Jones, J. Benjamin</td>
<td>Summit Hill</td>
</tr>
</tbody>
</table>

S. Simon, University.
Wm. L. Winner, University.
C. S. Beck, University.
Fuller & Caroli.
C. E. Hale.
A. Wilkes Smith, University.
W. P. Channell.
A. C. Cogswell.
Joseph Head.
G. C. Daboll.
J. T. Lippincott, University.
L. E. Sage.
Penna. College of Dental Surgery.
M. H. Fish.
W. C. Wendel.
S. C. Gibbons.
Gibbs & Wilcox.
J. W. Jay.
W. L. Battles.
Hans von der Heyde.
Rees Williams.
C. M. Shreve, University.
Keyes, William B. (C.D.),
Knod, Hans Ludwig (Zahn-Arzt),
Kuni, Harry W.,
Le Fevre, Harry W.,
Link, Edward G.,
Lohmann, August,
McCanna, Horace,
McDaniel, W. Archie,
Manship, John F.,
Mayer, William J.,
Melsburger, Louis, C. J.,
Miro, José Luis,
Nuñez, Emilio,
O'Bourke, John M.,
Paiste, James L.,
Place, Eugene H.,
Ramsden, Harry M.,
Rathbun, Chauncey M.,
Reap, Joseph C.,
Robinson, Will B.,
Rue, Samuel F.,
Ruiz, Jesús,
Schwarze, Paul (Zahn-Arzt),
Segar, Albertus V.,
Smith, Charles E.,
Sullivan, George A.,
Tees, Louis F.,
Tenny, Robert C.,
Thompson, Lamar L.,
Van Deursen, George L.,
Weaver, Luther M. (A.M.),
Weinberg, Nathan,
Wheeler, Walter F.,

Adams, Philip W.,
Albury, Robert W.,
Ayala, Victor M.,
Barner, Miles C.,
Barnett, George E.,
Bruce, James A.,
Cheney, Lewis W.,
Cooney, Edward J. M.,

Río de Janeiro, Brazil,
Essen, Germany,
Philadelphia,
Hillsboro, Ohio,
Rochester, N. Y.,
Kassel, Germany,
Atglen,
Birmingham, Ala.,
Milton, Del.,
New Haven, Ala.,
Buffalo, N. Y.,
Havana, Cuba,
Sagua, Cuba,
Trinidad, Cuba,
West Chester,
Freeport, Ills.,
Frankford,
Dunkirk, N. Y.,
Pittston,
Greenfield, Ohio,
Hightstown, N. J.,
Guayata, U. S. of Colombia,

Westerly, R. I.,
Nashua, N. H.,
Lancaster,
Philadelphia,
Eaton, N. Y.,
Rochester, N. Y.,
Paris, Ills.,
Hanover,
St. John, Kan.,
Spencer, Mass.,

First Year.

Worcester, Mass.,
Nassau, Bahamas,
Matanzas, Cuba,
Jersey Shore,
Walla Walla, Washington Territory,
Melbourne, Australia,
Lee, Massachusetts,
Providence, R. I.,

J. F. Adams.
University.
F. A. de Zayas.
P. B. Swisher.
L. M. Davis.

Heath & Kernot.
S. K. Saunders.
G. Carrow Chance.
Cooper, Arthur, W.,
Curlis, George H.,
Darby, George D. B.,
DeLacy, William P.,
DeWalt, J. Edward,
Diehl, Walter R.,
Dunbar, Henry T.,
Eaton, Horace E.,
Essig, Norman S.,
Evans, Milton H.,
Faust, William F.,
Focht, Frank D.,
Fordham, J. Merritt,
Fuller, John G.,
Goldsmith, Samuel L. (A.B.),
Gray, George R.,
Grotefend, George A.,
Guiteras, Albert F.,
Hart, Frank T.,
Higgs, Allan,
Horgan, Cornelius F.,
Jewett, Benn C.,
Lamson, Frank E.,
Lamson, William F.,
Leake, Walter J.,
Littig, Henry A.,
Luxemburger, George,
Mayer, George H.,
Mills, William R.,
Mogel, Peter S.,
*Nellins, George F.,
*Osborne, Robert J.,
Parry, Ira W.,
Peeso, Frederic A.,
Pierce, James F.,
Rees, Frank W.,
ReQua, Leroy,
Rhone, Charles E.,
Robinson, John Best,
Root, George S.,
Roys, Frank E.,
Sauers, Frederick,
Stewart, Howard T.,
Stine, Frederick M.,
White, Leonard,
Milwaukee, Wis.,
Pennington, N. J.,
Lansdowne,
Scranton,
Freeport, Ills.,
Pittsburgh,
North Hartland, Vt.,
Parrsboro, Nova Scotia,
Philadelphia,
Tower City,
Womelsdorf,
Philadelphia,
Scranton,
Philadelphia,
Philadelphia,
Worcester Mass.
Shasta, Cal.,
Matanzas, Cuba,
Pennington, N. J.,
Nassau, Bahamas,
Philadelphia,
Waterville, N. Y.,
Worcester, Mass.,
New York, N. Y.,
Lockport, N. Y.,
Davenport, Iowa,
Scranton,
Mauch Chunk,
Lyons, N. Y.,
Bernville,
Philadelphia,
Exeter, England,
Utica, N. Y.,
Syracuse, N. Y.,
New Haven, Conn.,
Walla Walla, Washington Territory,
Rochester, N. Y.,
Bellefonte,
Philadelphia,
Johnson Creek, N. Y.,
Bridgeport, Conn.,
Philadelphia,
Chattanooga, Ala.,
Walla Walla, Washington Territory,
Sumter, S. C.,
R. G. Richter & T. Judd,
University.
Edwin T. Darby.
W. B. Henwood.
Kingsley, Allen &
*Sunderland.
Chas. E. Diehl.
G. W. Hoffman.
University.
Chas. J. Essig.
University.
P. K. Filbert.
University.
J. L. Fordham.
W. L. Cave & G. G. Milliken.
W. Lewis Cave.
Harris & Toombs.
University.
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University.

* Not in attendance.
Williams, G. Frank, Bridgeport, Conn., C. W. Strang.
Wix, William H., Wilmington, Del., University.
Woolsey, Charles G., Girard, H. G. Keeler.
Yarnall, Joseph T., Lenni, University.

Students of the First Year 57.

SPECIAL STUDENTS.
Limberg, Alexander (M.D.), St. Petersburg, Russia, University.

Students of the Second Year 65
Students of the First Year 57
Special Students 1

Total 123

The total number of new matriculates the present session, including those admitted to advanced standing, is 71.

SUMMARY.

Alabama . . . . . . 2 Indiana . . . . . . 1 Pennsylvania . . . 38
Australia . . . . . 1 Iowa . . . . . . 2 Rhode Island . . . 2
Bahamas, W. I. . . 2 Kansas . . . . . . 1 Russia . . . . . . 1
Brazil . . . . . . . . 1 Kentucky . . . . . 1 South Carolina . . . 1
California . . . . . 1 Massachusetts . . 5 Spain . . . . . . 1
Connecticut . . . . 8 Minnesota . . . . 1 Turkey . . . . . . 1
Cuba . . . . . . . . . 6 New Hampshire . . 2 U. S. of Colombia . . 1
Delaware . . . . . . 3 New Jersey . . . . 3 Vermont . . . . . . 1
England . . . . . . 2 New York . . . . . 16 Washington Terr. . 3
Germany . . . . . . 4 Nova Scotia . . . 3 Wisconsin . . . . 2
Illinois . . . . . . 4 Ohio . . . . . . 2 Wyoming Territory 1

Total . . . . . . 123

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.

<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday.</th>
<th>Tuesday.</th>
<th>Wednesday</th>
<th>Thursday.</th>
<th>Friday.</th>
<th>Saturday.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 A.M.</td>
<td>General Chemistry.</td>
<td>General Chemistry.</td>
<td>Chemical Laboratory.</td>
<td>Mechanical Clinic.</td>
<td>Mechanical Clinic.</td>
<td>Dental Materia Medica.</td>
</tr>
<tr>
<td>10 A.M.</td>
<td>Mechanical Clinic.</td>
<td>Chemical Laboratory.</td>
<td>Chemical Laboratory.</td>
<td>Mechanical Clinic.</td>
<td>Mechanical Clinic.</td>
<td>Dental Materia Medica.</td>
</tr>
<tr>
<td>1 P.M.</td>
<td>4-1/2 P.M.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Dental Materia Medica.</td>
</tr>
</tbody>
</table>

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

### SECOND YEAR.

<table>
<thead>
<tr>
<th>Hour</th>
<th>Monday.</th>
<th>Tuesday.</th>
<th>Wednesday</th>
<th>Thursday.</th>
<th>Friday.</th>
<th>Saturday.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 A.M.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Univ. Hosp. Clinics.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
</tr>
<tr>
<td>10 A.M.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
<td>Laboratory of Mechanical Dentistry, or Operative Clinic.</td>
</tr>
<tr>
<td>11 A.M.</td>
<td>1 P.M.</td>
<td>Operative Clinic.</td>
<td>Operative Clinic.</td>
<td>Operative Clinic.</td>
<td>Operative Clinic.</td>
<td>Operative Clinic.</td>
</tr>
<tr>
<td>1 P.M.</td>
<td>3-1/2 P.M.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Physiology.</td>
<td>Physiology.</td>
</tr>
</tbody>
</table>

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 compoundung 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.
INSTRUCTION IN DENTISTRY.

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

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

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

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

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

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

CLINICAL INSTRUCTION.

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

INFIRMARY AND LABORATORY.

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

THE STILLÉ MEDICAL LIBRARY.

This library, founded by Professor Alfred Stillé, for the purpose of promoting scientific research and literary culture, contains upwards of 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, 1888, begins on Wednesday, 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 17th, and is free to those who enter for the Winter Session.

The Winter Session, 1888–89, begins on Monday, October 1st, 1888, and ends on May 1st, 1889.

EXAMINATIONS.

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

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

Students who have attended one full term in another dental school recognized by the Faculty, will be admitted to the graduating class without examination, upon presentation of the required certificate.
Students holding a medical diploma will be admitted to the Senior Class without examination, but will be required to spend a year in the study of practical Dentistry in the Operative and Mechanical Departments, including the regular winter’s course of lectures.

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

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

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

DEGREES.

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

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

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

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

TEXT-BOOKS AND WORKS OF REFERENCE.

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

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

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

First Year.

Tuition Fee, ................................................................. $100 00

Second Year.

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 3917 gold fillings can be appreciated only by the experienced operator.

The number of patients (4825), 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.

Number of Patients .................................................. 4825

Gold Fillings ........................................................... 3917
Tin Fillings ........................................... 869
Cement " ........................................... 1059
Amalgam Fillings ................................. 212
Gutta Percha " ..................................... 690
Canal " ............................................. 258
Pulps capped ........................................ 163
" devitalized ........................................ 190
" extracted .......................................... 237
Artificial Crowns ................................. 60
Pulpitis .............................................. 366
Treatment Pulp Canals ......................... 851
Pericementitis ...................................... 131
Alveolar Abscess ................................. 159
Inflammation of Gums ......................... 115
Pyorrhea Alveolaris ............................. 76
Irregularities Corrected ....................... 45
Salivary Calculi .................................... 266
Teeth and Roots extracted ..................... 3613

Total, .................................................. 13,277

MECHANICAL DEPARTMENT.
Number of patients ............................... 512
Full cases ........................................... 291
Partial " ............................................ 157
Pivot teeth ......................................... 126
Repairing cases ................................... 12
Regulating " ........................................ 21

Total, .................................................. 647
DEPARTMENT OF VETERINARY MEDICINE.

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 Zoötechnics, and pro tempore Professor of Veterinary Anatomy.
JOSEPH LEIDY, M.D., LL.D., Professor of Zoölogy.
JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.
HORATIO C. WOOD, M.D., LL.D., Professor of Materia Medica, Pharmacy and General Therapeutics.
THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry and Toxicology.
JOSEPH T. ROTHROCK, M.D., B.S., Professor of Botany.
ROBERT MEADE SMITH, M.D., Professor of Comparative Physiology.
WILLIAM L. ZUILL, M.D., D.V.S., Professor of Surgical Pathology and Obstetrics.
WILLIAM POWELL WILSON, M.D., Professor of Anatomy and Physiology of Plants.

DEMOCRATORS.

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. (Tübingen), Demonstrator of Practical Chemistry.
ALEXANDER GLASS, V.S., Demonstrator of Therapeutics, Materia Medica and Pharmacy.
GARRETT EDWARDS, Farrier, Demonstrator of Forging and Horse-shoeing.

R. S. HUIDEKOPER, Dean,

(125)
MATRICULATES, 1887–88.

THIRD YEAR.

Bachman, B. Frank,  
Balzer, Helmut C.,  
Birch, William A.,  
Boon, George M.,  
Breisacher, Leo,  
Feltom, Howard B.,  
Formad, Robert,  
Garrett, Caspar,  
Gatchel, Enoch M.,  
Hartman, Guldin R.,  
Lusson, Louis Olry,  
Maurise, Antoni,  
Reefer, Leon N.,  
Ridge, William Hodgson,  
Schreiber, Albert F.,  
Tintsman, John Z.,  
Werntz, William B.,  

SECOND YEAR.

Baer, Benjamin S. J.,  
Brimhall, Simon D.,  
Earley, Thomas B.,  
Flower, Richard,  
Harker, George Frank,  
Kilbride, Thomas J.,  
Mackie, Frank H.,  
Magill, Chalkley H.,  
Mattson, William H.,  
McNeil, James C.,  
Smith, Frank L.,  
Willard, Samuel B.,  

FIRST YEAR.

Bannister, Harry,  
Batten, Eugene C.,  
Coate, Horace G.,  
Cohen, Nathan A.,  
Collom, William B.,  
Dohan, Charles A.,  
Eshleman, John M.,  
Jolly, Charles Rudolph,  
Jones, William H.,  
Keen, Thomas J.,  
Landes, Edgar H.,  
Larzelere, Samuel D.,  
Le Fevre, Christian E.,  
Maher, John J.,  
Massinger, Eber M.,  

Strasburg.  
Meriden, Conn.  
Philadelphia.  
Philadelphia.  
Detroit, Mich.  
Olney.  
Philadelphia.  
Lansdowne.  
West Chester.  
Philadelphia.  
Philadelphia.  
Philadelphia.  
Meadville.  
Trevose, Pa.  
Philadelphia.  
Philadelphia.  

Mount Joy.  
Minneapolis, Minn.  
Philadelphia.  
Philadelphia.  
Wrightstown, N. J.  
Philadelphia.  
Fair Hill, Md.  
Philadelphia.  
Ward, Pa.  
Pittsburgh.  
Philadelphia.  
Yardley, Pa.  

Philadelphia.  
Philadelphia.  
Trenton, N. J.  
Philadelphia.  
Doyleston, Pa.  
Philadelphia.  
Faggs Manor, Pa.  
Philadelphia.  
Millerstown, Pa.  
Lock Haven, Pa.  
Philadelphia.  
Willow Grove, Pa.  
Lampeter, Pa.  
Philadelphia.  
Chalfont, Pa.
Meisner, Harry A., Baltimore, Md.
Michener, Mayhew, Colmar, Pa.
Millar, Harry C., Hatboro, Pa.
Oat, Charles F., West Chester, Pa.
Raynor, Thomas, Philadelphia.
Ringel, William E., Camden, N. J.
Seither, Joseph B., Philadelphia.
Turner, John P., West Chester, Pa.
Worrall, Frederick H., Media, Pa.
Zuill, Jeremiah P., Bermuda, W. I.

Special Students.

Brown, Albert, Windsor, N. J.
McFayden, John, Chester, Pa.

Students.

Students of the Third Year ........................................... 17
Students of the Second Year ......................................... 12
Students of the First Year ........................................... 26
Special Students ....................................................... 2

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

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

ADMISSION.

Candidates who have received a collegiate degree, or passed the matric-
ulate 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 orthog-
raphy and grammar; Second, to pass an examination in Elementary
Physics (Part I. of Fownes's Chemistry).

Graduates of recognized Medical Schools may enter the second year with-
out examination. Graduates from recognized Veterinary Schools which
require three years attendance, may enter the third year without examina-
tion. Graduates from recognized Veterinary Schools which require too
years attendance, may enter the second year without examination. Stu-
dents who have attended one or more sessions in a recognized Veterinary or
Medical School, will be allowed credit for time, but must pass examination
upon entering.

INSTRUCTION.

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

THE FIRST YEAR:—Chemistry; Materia Medica and Pharmacy; Physi-
oLOGY; 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 Con-
tagious Diseases; Sanitary Police; Obstetrics and Zootechnics.

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

CHEMISTRY.

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

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

MATERIA MEDICA AND PHARMACY.

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

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

PHYSIOLOGY.

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

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

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

**BOTANY.**

The Botanical instruction 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 the 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 will have, during the first term, four hours drill each week in observation and description of plants. During the second term he will also have 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 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,
DEPARTMENT OF VETERINARY MEDICINE. 131

general facts of embryology, metamorphosis, alternation of generation, polymorphism and heterogeny; systems of classification; the evolution theory; species and varieties; a succinct account of the various groups of animals, their anatomy, development and distribution.

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

ANATOMY.

The instruction in Descriptive Anatomy extends over two entire sessions, and embraces the study of the bones, articulations, muscles, digestive tract, respiratory apparatus, urino-genital organs, organs of circulation of the blood and lymph, nervous system, organs of special sense, and embryology of the horse, the mule, the ass, the ox, sheep and goat, hog, dog, cat and poultry. Constant dissection is required. The horse is used as the type until the parts have been thoroughly learned, and the student is then given other animals, to learn the differences which exist. During the first year the dissections are made with special reference to the bones, articulations and muscles, while the second year is devoted to the blood vessels and nerves. The dissections are under the supervision of the Professor of Anatomy, aided by a Veterinary Assistant. A detail is made each week of students of the Second Year, who dissect in the laboratory of the Professor of Anatomy, preparing the pieces to be used for his lectures.

The dissecting room is unsurpassed in convenience and cleanliness. The floors are of cement, the hot and cold water facilities are ample, and the room is thoroughly lighted 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 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, 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 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, and 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 Theory and Practice of Medicine, completed in two years, is given under the following headings:

**General Pathology.**

1. **Origin of Veterinary Medicine, Medical Doctrines, Classes of Disease.**
2. **Etiology.**—Effects on the various domestic animals of locality, climate, food, water, habitation, work, individual, race, sex and hereditary predisposition, temperament, constitution, exciting causes, poisons, specific causes, medical constitution, idiosyncrasy and immunity.
3. **Symptomatology and Semiology.**
4. **Physical Diagnosis.**—Percussion, auscultation, examination of blood, and urine.
5. **Diagnosis.**
6. **Prognosis.**
7. **Autopsies.**
SPECIAL PATHOLOGY.

DISEASES OF RESPIRATORY SYSTEM.
CONTAGIOUS AND ZYMOTIC DISEASES.—With the laws of Sanitary Police in force in various parts of the United States and in Europe.

DISEASES OF THE DIGESTIVE APPARATUS.
" " Urino-Genital Apparatus.
" " Nervous System.
" " Circulatory System.
" " Ear.
" " Eye.
" " Skin.

PARASITIC DISEASE 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; and in no other 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, suppuraton, mortification, cicatrization.

WOUNDS.—Incised, lacerated, bruised and punctured wounds, bites, gunshot wounds, summer wounds.

FRACTURES.—Healing of fractures, incomplete fractures, special fracture.
Diseases of Bone.—Inflammation of, bone tumors, ring bones, side bones, splints, spavin, curb, osteomalacia, osteoporosis.

Diseases of Synovial Membranes.

" " Articulations.

" " Teeth.

" " Testicles and their Envelopes.

" " Tendons.

" " Muscular Tissue.

Dislocations.

Diseases of Veins.—Thrombus, phlebitis.

" " Lymphatics.

" " Withers, Neck and Poll.

Sprains.—Subcutaneous emphysema.

Physiological Horseshoeing.

Classification of Lectures on Major Surgery.

Diseases of the Foot.—Anatomy, physiology, pathology.

Corns, fissures, keraphylocele, 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, eventration, diaphragmatic, umbilical.

Tumors.—Lipoma, encondroma, osteoma, odontoma, lymphadenoma, osteosarcoma, carcinomas. Inflammation of the sinus.

Castration.—Normal, cryptorcia, female, other animals.

Pathological Shoeing.

Obstetrics.

A full course of instruction is given in this branch to senior students, about fifty lectures being devoted to this subject. Practical instruction will be mainly confined to demonstrations on the 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 fetal, diseases of the fetus, monstrosities, dystokia from malpresentation, obstetrical operations, accidents of parturition, pathology of parturition, diseases and abnormalities of the young animal.
ZOOTECHNICS AND HYGIENE

Include the study of the origin and domestication of animals employed for profit by man, the laws of breeding and production, heredity, race characteristics and individual impressions, the effect of climate, aliment, work, and the means to be employed in the selection and handling of animals 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 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 elephant, giraffe, camel, zebus, tapir, pecary, antelopes, etc.

HOSPITAL.

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

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

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

A large number of animals 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, in which the student must duly pass before he is allowed to proceed to the studies of the next year. At the close of the course, and after passing a satisfactory examination, the student receives the Degree of Veterinarice Medicinæ Doctor (V.M.D.).

FEES.

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

HOSPITAL.

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, $1.00 per day
- Donkeys and Dogs, $0.50
- Cattle, Sheep, Cats, Birds, and small pet animals, $0.25

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 Veterinarian in charge, or must come recommended by one of the Veterinary Surgeons, or other responsible citizen of Philadelphia.

The animals are under the professional care of Prof. Huiderkoper and Prof. 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 Shoeing.

- Full set of Shoes, $3.50
- Pair of Front Shoes, $2.50
- Removal of Set of Shoes, $1.00
Pathological Shoeing.

Bar or Defy's Shoe (each), $2.00
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.

For further information, address,

RUSH SHIPPEN HUIDEKOPER,
Dean of Veterinary Department,
University of Pennsylvania.
DEPARTMENT OF BIOLOGY.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
JOSEPH LEIDY, M.D., LL.D., Professor of Zoology and Comparative Anatomy, Director.
JOSEPH T. ROTHROCK, M.D., B.S., Professor of Botany.
HORACE JAYNE, M.D., Professor of Vertebrate Morphology.
JOHN A. RYDER, Ph.D., Professor of Comparative Embryology.
WILLIAM P. WILSON, B.S., 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, Assistant in Mammalian Anatomy.
MILTON J. GREENMAN, Assistant in General Biology.

HORACE JAYNE, M.D., Secretary.

MATRICULATES, 1887–1888.

GRADUATE STUDENTS.
George Fetterolf, A.B., Philadelphia.
Robert S. Maison, A.B., Philadelphia.
Olivia Rodham, Swarthmore, Pa.
Hill S. Warwick, M.D., Jersey City, N. J.

UNDERGRADUATE STUDENTS.

SECOND YEAR.
Edward Bancroft, Philadelphia.
John A. Blouse, York, Pa.
Charles M. Burk, Clarksboro, N. J.
John A. McIlwain, Philadelphia.
Charles F. Nassau, Philadelphia.
George G. Ross, Philadelphia.
Edwin G. Whinna, Manayunk.
Albert D. Whiting, Philadelphia.
Bernard Zweighaft, Philadelphia.

FIRST YEAR.
Rodman Barker, Wyncote, Pa.
Samuel H. Barker, Wyncote, Pa.
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 Zoological and Botanical collections and libraries, laboratories for advanced and special work in Botany, Zoology, Histology, Embryology and Physiology, besides private laboratories for the use of the instructors, and rooms for Photography, with ample space for the Aquaria, Animals and storage.

Proper and abundant Material is furnished to students engaged in special work. A supply of the ordinary forms used in the practical laboratory exercises is kept, as far as possible, in the building 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 libra-
ries of the city are, under regulations, open to students. The Academy of Natural Sciences, with its rich museum and large library, the most complete in Biology in the country, is accessible to students without charge.

1. GENERAL COURSE IN BIOLOGY.

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

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

FIRST YEAR.

GENERAL BIOLOGY.—1. Lectures on the General Principles of Biology. Systematic Zoology. Dr. Leidy. (1*)

2. Laboratory Course. Dolley's Syllabus. Dr. Dolley and Mr. Greenman. (8)

MAMMALIAN ANATOMY.—1. Lectures on Descriptive Anatomy. Dr. Jayne. (2)

2. Laboratory Course (dissection). Mivart's The Cat. Dr. Jayne and Mr. Kelley. (8)

BOTANY.—1. Structural and Systematic Botany. (Lectures). Dr. Rothrock. (1)


SECOND YEAR.

SYSTEMATIC ZOOLOGY.—The structure, classification and distribution of animals. (Lectures). Dr. Leidy. (1)

ANIMAL MORPHOLOGY.—Advanced laboratory course. Dr. Jayne and Mr. Kelley. (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)

* The numerals indicate number of hours of instruction per week.
Botany.—1. Advanced Structural Botany. (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, Paramecium, Vorticella, Bacterium, Yeast-plant and Protococcus, as unicellular forms of life; (2) Moulds, Chara, Braken-fern and Bean-plant as exhibiting the structure and activities of Plants; (3) These compared with Sponge, Hydra, Starfish, Earthworm, Leech, Cyclops, Crayfish, Grasshopper, Clam, Squid, Amphioxus, Skate, Cod, Frog, Snake, Terrapin and Pigeon, as Animals.

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

The work in Botany, during the First Year, consists in the study of the microscopic 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 history of plants is 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. 56-60, 155, 156.

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 frequently for the discussion of recent discoveries in the various branches of Biology.

PRIZES.

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

All students pay, on entering, a matriculation fee of five dollars, and deposit each year five 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, Embryology and Physiology, thirty dollars each.

A fee of ten dollars is charged to each student receiving a certificate on completion of the full course.

There are no extra charges for material used in the practical classes, or for the use of instruments or reagents.

ADMISSIONS, EXAMINATIONS AND DEGREES.

The next session will begin October 1st, 1888, 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.
P. PEMBERTON MORRIS, A.M., LL.D., Emeritus Professor of Practice, Pleading, and Evidence at Law and in Equity.
HON. J. I. CLARK HARE, LL.D., Professor of the Institutes of Law, including, inter alia, International, Constitutional, and Commercial Law.
JAMES PARSONS, A.M., Professor of the Law of Personal Relations and Personal Property.

GEORGE TUCKER BISPHAM, A.M., Professor of Equity Jurisprudence.

C. STUART PATTERSON, A.M., Professor of the Law of Real Estate and Conveyancing.

A. SYDNEY BIDDLE, A.M., Professor of Practice, Pleading and Evidence at Law and Criminal Law.

GEORGE TUCKER BISPHAM, Dean of the Law Faculty, 502 Walnut Street, Philadelphia.

C. STUART PATTERSON, Secretary and Treasurer of the Law Faculty, 38 South Third Street, Philadelphia.

MATRICULATES.

SENIOR CLASS.

Bedford, J. Claude, Lost Creek, Philadelphia.
Bethell, J. Uhle, Estelville, N. J., Mauricestown, N. J.,
Bright, O. Percy, Philadelphia, Philadelphia.
Carlile, W. Wilson, Philadelphia, Philadelphia.
Cassidy, H. Gilbert, Philadelphia, Philadelphia.
Conrade, David Howard, Philadelphia, Philadelphia.
Cooper, A. Morton, Philadelphia, Philadelphia.
Dickson, Franklin Srawn, Philadelphia, Philadelphia.
Evans, F. H., Philadelphia, Philadelphia.

Kaercher & Heebner.
H. A. L. Pyle.
Leaming & Black.
Leaming & Black.
Walton Penniwill.
A. J. Maloney.
Jno. C. Bullitt.
R. E. Shapley.
Jas. H. Wolfe.
B. H. Brewster.
Robt. Hinckley.
Geo. McGowan.
Alfred Moore.
University.
Crawford & Dallas.
E. O. Michener.
<table>
<thead>
<tr>
<th>Name</th>
<th>Place</th>
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<tbody>
<tr>
<td>Felton, C. C.</td>
<td>Erie, Pa.</td>
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<tr>
<td>Galbraith, Davenport</td>
<td>Philadelphia</td>
<td>MacVeagh &amp; Bispham</td>
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<tr>
<td>Gallagher, Francis G.</td>
<td>Philadelphia</td>
<td>W. S. Lane</td>
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<tr>
<td>Charles W. Glaser</td>
<td>Philadelphia</td>
<td>R. H. Hinckley</td>
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<td>Goep, Phillip Henry</td>
<td>Philadelphia</td>
<td>Jos. R. Rhoads</td>
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<td>Gosh, Christian</td>
<td>Philadelphia</td>
<td>James Parsons</td>
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<td>Green, Harry</td>
<td>Philadelphia</td>
<td>Hall &amp; Lowry</td>
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<td>Gummey, Charles F., Jr.</td>
<td>Philadelphia</td>
<td>Samuel F. Flood</td>
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<td>Horwitz, George Q.</td>
<td>Philadelphia</td>
<td>Jno. G. Johnson</td>
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<td>Jacobs, Geo. W., Jr.</td>
<td>Philadelphia</td>
<td>Samuel Wakeling</td>
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<td>Littleton, Wm., G.</td>
<td>Philadelphia</td>
<td>A. S. Ashbridge, Jr.</td>
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<td>Lodge, R. G.</td>
<td>Philadelphia</td>
<td>W. E. Littleton</td>
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<td>McCaffrey, H. S.</td>
<td>Philadelphia</td>
<td>Maxwell Stevenson</td>
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<td>McCann, David S.</td>
<td>Philadelphia</td>
<td>B. H. Brewster</td>
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<td>McDevitt, Henry C.</td>
<td>Philadelphia</td>
<td>Kennedy &amp; Doty</td>
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<td>McPherson, Jno. Bruce</td>
<td>Philadelphia</td>
<td>Eugene S. Daly</td>
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<td>Mayer, Clinton O.</td>
<td>Philadelphia</td>
<td>MacVeagh &amp; Bispham</td>
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<td>Morrell, Edw. DeV.</td>
<td>Philadelphia</td>
<td>W. W. Carr</td>
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<td>Mossell, Aaron A.</td>
<td>Philadelphia</td>
<td>Jno. G. Johnson</td>
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<td>Myer, Geo. DeB</td>
<td>Philadelphia</td>
<td>University</td>
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<td>Norris, Isaac 3rd.</td>
<td>Philadelphia</td>
<td>Leonard Myers</td>
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<td>Patterson, Henry L.</td>
<td>Philadelphia</td>
<td>Francis T. Chambers</td>
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<td>Pierce, W. Grant</td>
<td>Philadelphia</td>
<td>A. M. Burton</td>
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<td>Robb, Henry B.</td>
<td>Philadelphia</td>
<td>Riddle &amp; Ward</td>
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<td>Rommel, J. Martin</td>
<td>Philadelphia</td>
<td>W. W. Porter</td>
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<td>Rumsey, Horace M.</td>
<td>Philadelphia</td>
<td>Jas. M. West</td>
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<td>Sheive, C. S.</td>
<td>Philadelphia</td>
<td>F. C. Brewster</td>
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<td>Smith, Alfred P.</td>
<td>Philadelphia</td>
<td>H. K. Weand</td>
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<td>Smith, G. I.</td>
<td>Philadelphia</td>
<td>MacVeagh &amp; Bispham</td>
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<td>Smith, Henry Austin</td>
<td>Philadelphia</td>
<td>W. H. Smith</td>
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<td>Smith, H. Forrest</td>
<td>Philadelphia</td>
<td>MacVeagh &amp; Bispham</td>
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<td>Smith, Wm. L.</td>
<td>Philadelphia</td>
<td>Robert J. Williams</td>
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<td>Smith, W. Wharton</td>
<td>Philadelphia</td>
<td>Wm. L. Nevin</td>
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<td>Stackhouse, J. Burton</td>
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<td>Stitzell, Harry F.</td>
<td>Philadelphia</td>
<td>Jas. Parsons</td>
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<td>Stockley, Frank B.</td>
<td>Philadelphia</td>
<td>W. L. C. Biddle</td>
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<td>Stoughton, A. B.</td>
<td>Philadelphia</td>
<td>Morgan &amp; Lewis</td>
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<td>Taylor, George Herbert</td>
<td>Philadelphia</td>
<td>Learning, Black &amp; Rhoads</td>
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<td>Taylor, G. Morrison</td>
<td>Philadelphia</td>
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<td>Thomson, William G.</td>
<td>Philadelphia</td>
<td>Jno. G. Johnson</td>
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<td>Vaux, George Jr.</td>
<td>Philadelphia</td>
<td>P. Pemberton Morris</td>
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<td>Wadsworth, Ed. D.</td>
<td>Philadelphia</td>
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<td>Waldron, H. S.</td>
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<td>Wooters, William W.</td>
<td>Philadelphia</td>
<td>Furth &amp; Singer</td>
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<td>Worman, George W.</td>
<td>Philadelphia</td>
<td>S. S. Hollingsworth</td>
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<td>Wray, Henry Russell</td>
<td>Philadelphia</td>
<td>Jno. M. Strong</td>
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<tr>
<td>Adler, F. C.</td>
<td>Philadelphia</td>
<td>J. W. Williams</td>
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</tbody>
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**JUNIOR CLASS.**

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<tr>
<td>Adler, F. C.</td>
<td>Philadelphia</td>
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</table>
Amram, David W.,
Anderson, Forrest M.,
Arnold, Arthur S.,
Ashhurst, Frazer,
Beale, Geo. W.,
Bechtel, Clifton R.,
Bebee, Stacey Bancroft,
Bennett, Wm. M.,
Berkheiser, George H.,
Bierer, Irving W.,
Bruner, Meylert,
Buckley, Walter E.,
Byrne, Wm. Michael,
Campbell, Malcolm,
Cheyney, Horace L.,
Colesberry, A. R.,
Coll, Edw. J.,
Daix, Augustus Felix, Jr.,
Dolan, T. J.,
Dove, John S., Jr.,
Dudley, Wm. Elliot,
Durbin, Horace G.,
Durham, John G.,
Embery, William,
Evans, Chas. B.,
Fahy, Jos. R.,
Flood, Chas. W.,
Gates, Jay,
Genther, J. Oscar,
Graham, Fredk. Wilson,
Hawkins, F. K.,
Hilman, Geo. B.,
Horton, Nathan C.,
Howell, Thos. P.,
Ingram, Orrin M.,
Iszard, S. Stanger,
Johnson, Alfred G.,
Kane, Francis F.,
Kintzing, S. Carman,
Knaus, Frederick J.,
Kline, Irvin P.,
Lauer, Alex. D.,
Lavis, David,
Laws, Francis S.,
Lenhart, Harry,
Levin, J. S.,
Lloyd, J. Henry,
Lukens, Edwin Fell,
McLean, H. B.,
McCance, F. K.,
McCarthy, Henry A.,
McKim, Maurice,
Philadelphia,
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Scranton, Pa.,
Philadelphia,
Coshocon, O.,
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Philadelphia,
LaTrobe, Pa.,
Muncy, Pa.,
Wilmington, Del.,
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Cheyney, Pa.,
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Frankford,
Lukens, Pa.,
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Newark, Del.,
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Philadelphia,
Wilkesbarre, Pa.,
Hunts Mills, N. J.,
Philadelphia,
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Glassborough, N.J.,
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Huntingdon Valley,
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Magee, Christopher, Jr., Pittsburgh, Pittsburgh, Crawford & Dallas.
Montgomery, Wm. Morgan, Philadelphia, E. Clinton Rhodes.
Newitt, Harvey K., Jr., Philadelphia, University.
Pepper, Geo. Wharton, Philadelphia, Biddle & Ward.
Raymond, James B., West Chester, University.
Rhoads, J. Snowdon, Marple, Wm. Knight Shyrock.
Rhodes, Frank B., Pittsburgh, Howard & Smedley.
Sawyer, J. B., Philadelphia, Biddle & Ward.
Scott, Alex. H., Philadelphia, MacVeagh & Bispham.
Simmons, J. W., Philadelphia, University.
Sinnott, Jos. E., Philadelphia, MacVeagh & Bispham.
Thompson, D. J., Philadelphia, University.
Wright, Samuel Megargee, Philadelphia, Brinton, George.
Ziegler, I. E., Kulpsville, Pa., Chase, Philip P., Philadelphia.
Wm. Knight Shyrock, Philadelphia.
Biddle & Ward.
E. Clinton Rhodes.
University.
Special Students.
Brinton, George, Philadelphia.
Chase, Philip P., Philadelphia.
Fox, Frederick S., Philadelphia.
Kolb, Lewis J., Philadelphia.
MacIntosh, W. B., Philadelphia.
Smith, Fredk. Wm., Philadelphia.
Warner, W. Miskey, Philadelphia.
SUMMARY.
Seniors, .......................... 64
Juniors, ............................ 78
Special, ............................  7
Total, .............................. 149

COURSE OF STUDY.

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

The course occupies two years. Each year is divided into two terms, the first beginning on the first of October, the second on the first of February. Each term continues four months. The course is so arranged that a student entering at the beginning of any October term will complete his studies in two years.
The lectures upon Equity Jurisprudence include Practice, Pleading and Evidence in Equity, and cover the course of two years. The lectures upon the Law of Real Estate include Conveyancing, and likewise cover the course of two years.

Instruction is given by lectures, and by books and portions of books upon the subjects of the lectures, which are recommended by the Professors. The students are frequently and carefully examined.

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

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

FEES.

The Tuition Fee for the full course is fifty dollars a term. Each Professor will issue tickets for his own lectures to students who do not desire to attend the full course, and will fix the fee at his own discretion. Students who take the full course pay, also, a matriculation fee of five dollars. No other charges are made.
Students who have received the Degree of Bachelor of Laws from this University may attend all lectures free of charge.

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

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

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

EXAMINATIONS AND DEGREES.

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

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

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

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

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

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

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

The examinations required by the statute are both written and oral, and are held during the last week in May. The questions used at the written examination in May, 1887, will be found on a subsequent page.

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

Students who have attended the lectures of any of the Professors, without taking a full course, may receive certificates of proficiency.
PRIZES.

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

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

ADMISSION TO THE BAR.

Graduates of this Department having complied with the Rules of Court are admitted to practice in the Courts of Common Pleas and Orphans' Court of Philadelphia, in accordance with the following rule adopted by those courts in June, 1875—

"Any citizen of the United States, of full age, who shall have been graduated Bachelor of Laws by the University of Pennsylvania, after the course of study required in the University, may be admitted to practice as an attorney of this court, if he shall have complied with the rule now in force as to the preliminary examination and been registered for one year in the Prothonotary's office as a student of law in said University by the Dean of the Law Faculty thereof."

The preliminary examination referred to in this rule is conducted by the Board of Examiners appointed by the courts of Philadelphia County, and embraces all the branches of a good English education. No person can be registered as a student of law without passing this examination.

The lectures of the course are delivered in the University Building, West Philadelphia, on the days and at the hours stated, as follows:

- Mondays, 4.00 to 5.00, Professor Parsons.
  - 5.00 to 6.00, Professor Bispham.
- Tuesdays, 4.30 to 5.30, Professor Biddle.
- Wednesdays, 4.00 to 5.00, Professor Bispham.
  - 5.00 to 6.00, Professor Biddle.
- Thursdays, 4.00 to 5.00, Professor Parsons.
  - 5.00 to 6.00 Professor Hare.
- Fridays, 4.00 to 5.30, Professor Patterson.

The introductory lecture of the course of 1887–88 was delivered in the chapel of the University on Monday, 3d October, 1887, at 4.30 o'clock P.M., by George F. Baer, Esq., of Reading, Pennsylvania.

The first lecture of the regular course will be delivered on Monday, 1st October, 1888, at 4.30 o'clock.

Application for admission to the classes should be made to Professor C.
Stuart Patterson, Secretary and Treasurer of the Faculty of Law, at his office, No. 38 South Third Street, Philadelphia.

For information as to the post-graduate course, application should be made to Professor James Parsons, No. 1430 South Penn Square, Philadelphia.

EXAMINATION QUESTIONS, MAY, 1887.

PROFESSOR HARE.

1. Who are the parties to the Constitution, historically and according to the preamble?
2. Have the United States power to coerce a State, and by what means?
3. Are the powers of the government of the United States limited, or is it limited as to its powers?
4. State the doctrine of implied powers and its limitations.
5. Does the prohibition of laws impairing the obligation of contracts apply to the government of the United States, and how far may that government impair contractual rights?
6. What contracts are within the prohibition?
7. Is the charter of a municipal corporation such a contract, and what is the rule as to the contracts of municipalities?
8. What are deprivations within the clause that no person shall be deprived of life, liberty or property without due process of law?
9. Can a monopoly be created consistently with this clause, and for what ends?
10. In what ways may a case be brought before the Federal courts?

PROFESSOR PARSONS.

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

1. What is the rule of liability for torts by a married woman, and by an infant?
2. Is non-residence a disqualification for appointment as an administrator?
3. If a bequest is made to the issue of a legatee, if he leaves any, what interest passes?
4. What are legal investments in Pennsylvania?
5. When is a general legacy adeemed?
6. Why could a testator direct that advancements made by him, and entered in his books, should satisfy a legacy to a child?
7. Could a foreign administrator sue in Pennsylvania the maker of a note held by the intestate, or endorse it and enable the holder to sue here?
8. Has the Orphans' Court jurisdiction over a partnership account by reason of the decedent's being a partner?
9. What class of distributees, if any, takes by representation when next in degree?
10. In what sense is the interest of a creditor in decedent's land a lien?

Professor Bispham.

Practice and Pleading at Law.

1. What is Blackstone's classification of injuries to real property?
2. What remedies are there in this State for the injury resulting from the non-payment of ground rent?
3. Can a citizen of New York sue a citizen of Virginia in the Circuit Court of the United States sitting in the Eastern District of Pennsylvania, if the defendant is found within said district?
4. Explain the difference between Trespass and Trespass on the Case, and state the leading case on the subject.
5. In what cases can a writ of capias ad respondendum be used to begin an action in Pennsylvania?
6. What is the effect of a plea in abatement?
7. Explain what is meant by a plea puis darreign continuance.
8. Give the three rules of Stephen for the production of an issue.
9. What kind of action would you bring upon a mortgage in this State? Describe briefly the course of such an action.
10. In what cases is a levare facias writ of execution?

Mr. Balston.

[Professor Mitchell.]

Real Estate.

1. What is a license? How may it become irrevocable?
2. What is a way of necessity?
3. What is the difference between a contingent remainder and an executory devise?
4. If, at the present day, an estate be granted to A for life, remainder to the heirs of his body, what estate would A take, and why?
5. Explain the different methods of computing consanguinity. Which has been adopted in Pennsylvania?
6. If a man dies, leaving to survive him a widow and three nephews, two being the children of one deceased brother, and one the child of another deceased brother, how would his estate, real and personal, be distributed?
7. What is a deed? Upon what theory does a deed of bargain and sale operate to convey title?
8. What is the effect of a condition in restraint of alienation in a fee simple deed?
9. What is the difference between a covenant for general warranty and a covenant for special warranty?
10. How may an illegitimate child be legitimated?
DEPARTMENT OF PHILOSOPHY.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., Provost, and ex-officio President.
E. OTIS KENDALL, LL.D., Dean, and Professor of Mathematics.
JOSEPH LEIDY, M.D., LL.D., Professor of Zoology.
J. PETER LESLEY, LL.D., Emeritus Professor of Geology.
REV. ROBERT E. THOMPSOn, A.M., Professor of History.
FREDERICK A. GENTH, Ph.D., Professor of Inorganic Chemistry.
SAMUEL B. HOWELL, M.D., Assistant Professor of Geology.
GEORGE F. BARKER, M.D., Ph.B., Professor of Physics.
JAMES PARSONS, A.M., Professor of Law.
GEORGE A. Koenig, Ph.D., Professor of Mineralogy.
JOSEPH T. ROTHROCK, B.S., M.D., Professor of Botany.
THEO. G. WORMLEY, M.D., LL.D., Professor of Medical Chemistry.
MORTON W. EASTON, Ph.D., Professor of Comparative Philology.
EDMUND J. JAMES, Ph.D., Professor of Political and Social Science.
REV. GEORGE S. FULLERTON, A.M., B.D., Professor of Intellectual and Moral Philosophy.
JOHN P. PETERS, Ph.D, Professor of Hebrew.
DANIEL G. BRINTON, M.D., Professor of American Archaeology and Linguistics.
REV. HERMANN V. HILPRECHT, Ph.D., Professor of Assyrian.
MORRIS JASTROW, Jr., Ph.D., Professor of Arabic and Rabbinical Literature.
JAMES McKEEN CATTELL, Ph.D., Lecturer in Psycho-Physics.

EDMUND J. JAMES, Ph.D., Secretary.

MATRICULATES.

Frank S. Ballentine, A.M. (Univ. of Pa.), Philadelphia.
Newton Black, do.
L. W. Batten, A.B. (Harvard), Youngstown.
Olive J. Davis, A.B. (Wellesley), do.
R. S. DeBow, A.B. (Phil. H.S.), B.D. (Drew Seminary), Troy, N.Y.
G. Doering, A.B. (Wagner College), (153)
Of the foregoing students, 21 pursued Assyrian; 9, Hebrew; 2, Arabic; 6, Philosophy; 5, Comparative Philology; 3, English; 2, History; 3, Chemistry; 3, Mathematics; 1, Physics; and 8, Social Science.
The object of this department is to supervise advanced studies, and, as far as possible, to afford advanced instruction in the various branches of Literature and Science. In those subjects which are ordinarily taught in the undergraduate courses of our American colleges, the only instruction given will be of an advanced character. In those which are usually not represented at all, or only very inadequately, both advanced and elementary courses will be offered. The opportunities of the department in each branch of study are open to all (whether college graduates or not) who in the judgment of the professor in charge are qualified to profit by the instruction given.

Instruction suitable for advanced students is at present offered in the following subjects:

1. American Archaeology and Language.
3. Botany, Lectures and Laboratory practice.
5. Comparative Philology and Sanskrit.
6. Chemistry Inorganic, Lectures and Laboratory practice.
7. Germanic Philology and Literature.
8. Law, Roman and History of Common Law.
9. Mineralogy, Lectures and Laboratory practice.
10. Political and Social Science.
11. Philosophy—Mental, Moral, and History of Speculative Philosophy.
13. Semitic Languages.
   (a) Hebrew—Classical and Rabbinical.
   (b) Aramaean.
   (c) Assyrian and Babylonian (Sumerian and Akkadian).
   (d) Ethiopic.
   (e) Arabic.
   (f) Other dialects like Phenician and Himjaritic known only from a few inscriptions.

DEGREES.

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

1. The candidate must be either a Collegiate Bachelor of Arts or of Science, or must satisfy the Faculty, by examination or otherwise, that he possesses an equivalent preparation.
2. He must pursue during two years at least, under the supervision of
the Faculty, a course of study in three branches of literature or science (the choice to be approved by the Faculty), one of which shall be designated as the principal branch, and the other two as subordinate branches.

3. He must pursue detailed investigations in the principal study, must present a satisfactory thesis therein, and must pass an examination in all three branches.

For further information respecting this Department, address the Secretary of the Faculty.

FEES.

For those who are in regular course for the Ph.D. Degree the fee is $150.00 per 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.

POST-GRADUATE COURSE IN LAW.

MATRICULATES.

SENIORS.

Croasdale, John P., Hoffman, Charles, McCourt, Thomas F., Melcher, Webster A., Scott, William C.,
719 Walnut-st., 36 S. Third-st., 210 S. Fourth-st.,

5.

JUNIORS.

Bremer, Charles, Jr., Brace, Harrison H., Brennan, Louis P., Calmore, Walter W., DeWitt, Alex. Renshaw, Smith, Henry W.,

Total, 11.

This course has for its aim to broaden and deepen the foundation of legal education. The first step required for the student's progress is the thorough training of a Law School. In the drill of an ordinary course at such an institution, he acquires a practical experience in the machinery of litigation, and he also acquires the lawyer's process of handling cases or of reasoning from them by analogy, while at the same time he masters the leading principles as they are applied in the main departments of law.
The advanced student starts with this equipment. His task is now that of the true lawyer, to find out the reason for every legal proposition which is established, and also to discover its relative importance in the hierarchy of principles which make up the system of law. The investigation involves researches in two directions: First, the source of each principle must be discovered, and the germ when found must be traced through the changes which it has undergone in the course of its growth or decay. The soundness of a principle or the range of its application can thus be illustrated and tested by experience. Owing to the conservative energy of the English race, pre-eminently exemplified in its lawyers, legal doctrines have maintained their continuity in spite of conquests and revolutions, thus furnishing an opportunity for the study of principles in operation under different institutions.

The material for investigating the sources of our law are abundant. The Anglo-Saxon laws exist in a state of exceptional completeness; the Feudal system has been wrought out almost before our eyes and stands before us in its rigid symmetry. The mediaeval trade customs which entered England with commerce have been preserved in municipal statutes; the Pandects are a repository from which common lawyers have pillared, from Glanville to Story. A lawyer who reads the Digest of Justinian for the first time will be struck by the familiar ideas which he encounters at every turn, and which he thought were inspired by the common law until he met them in Justinian's compilation.

The sources of our law have been explored, but they have not been turned to account. A history of legal thought must be written in order to make our precious archives available, and until that desideratum is obtained the full benefit of experience, which is the only guide for the application of any legal doctrine, will not be at command. In the absence of such a history, the scattered information bearing upon the genesis and evolution of legal tenets must be gathered at a disadvantage.

The second study is to classify the law and reduce it to a system. The Profession shares the aspiration of the lay public for a body of law which everyone can understand. It is this professional craving which accounts for the multitude of text-books professing to abridge different parts of the law, and for the frequent attempts to embody sections of the law in a series of propositions. The common aim of the bar and of the public is to simplify the law. The profession, however, knows that this can be accomplished in but one way, and that is by mastering the principles which underlie the different phases of the law. Not only must every part be known, but its relation to every other part must be ascertained in order to organize a system. The epitomes, made of different parts, serve to counteract the segregation of law according to the objects to which it is applied, and to
correct this retrograde tendency. The principles which are universal, extracted from digests of all the parts, will form a body by themselves, and the rank of each principle will be regulated by its relative importance. The modifications which the principles undergo in special parts of the law will be the only qualifications requiring special mention. The principles, for instance, of patent law will then be severed from the arts and sciences and form an integral portion of the legal system. The best professional opinion could readily furnish such an analysis of this, as well as of other specialties. The law is not absorbed by the material in which it works; on the contrary, by classifying matter the law brings it under the sway of reason. The law will be simplified because it will be scientific. It will not be petrified by enactment.

COURSE OF STUDY.

The course of study covers two years. The student, however, can begin at the opening of either year, November 1st.

One year of the study is devoted to the study of the Roman law and of the principles that have grown out of it.

The text-books used in this course are Hadley's *Introduction to the Roman Law*, 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 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. The written questions put at the last examination are appended.

Graduates of this Course receive the Degree of Master of Laws, unless the post-graduate course of law is combined with two other courses of study in the Department of Philosophy. Then the Degree of Doctor of Philosophy is conferred, on conditions stated on pp. 155-156.

A thesis upon some topic connected with the course is required to be handed in as early as possible during the second year. It is expected to contain an exhaustive analysis of the subject-matter.

For further information apply to the Dean,

JAMES PARSONS,
1534 Locust Street,
Philadelphia.
DEPARTMENT OF PHYSICAL EDUCATION.

This Department carries into practical operation the conviction that during the period of growth the body needs quite as much training as the mind, and that a college which holds out incentives to intellectual progress should not overlook the bodily progress without which all intellectual prizes, when won, are useless. To what other cause than the neglect of physical culture is it due that, in times past, the first scholars in college generally failed in after life to make good their early promise? Impressed with the belief that those who seek to develop the mind should also exercise a supervision over the body, the University has instituted this Department, and, through the liberality of the City and the zeal of the Alumni, has provided the means, and, what is equally important, the system, for the due care and development of the Physical Education of its students.

The means are supplied in the Athletic Grounds, obtained from the City, lying next to and partly surrounded by the College buildings, and comprising four acres, which have been fenced, graded and improved, a fine quarter-mile track laid, the middle of the lot prepared for 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.
DEPARTMENT OF PHYSICAL EDUCATION.

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 the Class of 'Development Average Development
Strength Average Strength
Condition, viz.: Relation of Strength to development Average Condition
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 once every year of his college life, and the record will show the improvement or deterioration of each student, and the amount and the quality of exercise which each one demands, both of which must be administered or recommended by an experienced teacher. Merely competitive sports do not of themselves supply these demands. Some men, naturally athletic and fond of exercise, need to be guided and directed, sometimes to be restrained; others, of sluggish temperament or of too studious habits, must be stimulated; all require to have their work, whether voluntary or compulsory, directed by proper methods, so that the result may be a harmonious and symmetrical development of the entire organism.

For further information apply to

J. WILLIAM WHITE, M.D.,
Director of Physical Education,
1810 South Rittenhouse Square.

A. H. P. LEUF, M.D.,
Assistant-Director Physical Education,
210 S. 38th Street.
LIBRARY.

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 for the same by a Committee, of which Benjamin Franklin was chairman, in 1750, and 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 contains over 40,000 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 latter for later publications.

Valuable additions have been made to the departments of history and literature from the income of the Thomas Wagner Library Fund, donated in memory of a deceased Trustee of the University.

The Colwell Library, the munificent gift of the late Stephen Colwell, consisting of over 7,000 volumes, is one of the most complete collections of works on Finance and Political Economy in the world, containing 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, embracing many books of more recent date, being especially rich in statistics, European government reports, and the like, and including about 3,000 English pamphlets, bound in chronological order, covering the period from the close of the seventeenth century to our time, presented to Mr. Carey by Mr. McCalmont, of London.

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

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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, the recent gift of D. B. McCartee, M.D., 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, just 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 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 3,600 volumes relating to that subject in the Biological Laboratory.

Among the works on law are included many on Roman jurisprudence and the civil code from the library of the late Judge Bouvier, presented to the University by his son-in-law, R. E. Peterson, M.D., and the noted collection of American, English, Scotch and Irish Reports, formerly the property of the Hon. Benjamin H. Brewster, numbering 4,200 volumes, recent gift by George W. Biddle, Esq., and family, in memory of the late George Biddle, Esq.

The College 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 withdraw books for perusal at home. The use of the Library for consultation is also accorded graduates and other persons properly introduced. Libraries in other departments are accessible under regulations of those in charge.
CENTRAL COMMITTEE OF THE ALUMNI.

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 plan of organization is as follows:

The officers of the Central Committee are a President, Secretary, and 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 Collegiate Departments of at least three years' standing, two of the Medical Departments, and two of the Law Department. All persons are qualified electors that have received a degree, honorary or otherwise, from the University, except members of the Board of Trustees, or 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 twelve 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, and any who have not heretofore received postal-card ballots for the preliminary nominating election, and desire them, should send name and address, with degree and year of graduation, to the Secretary.
**CENTRAL COMMITTEE OF THE ALUMNI.**

**MEMBERS OF THE CENTRAL COMMITTEE.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Members</th>
<th>Address</th>
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<td>3903 Locust-st., do.</td>
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<td>404 Locust-st., do.</td>
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<td>201 S. Fifth-st., Philadelphia.</td>
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<td>1340 Chestnut-st., do.</td>
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<td></td>
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<td>2132 Pine-st., do.</td>
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<td>402 Walnut-st., do.</td>
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<td>Ninth and Walnut-sts., do.</td>
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<td></td>
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<td>913 Walnut-st., do.</td>
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<td>123 S. Twentieth-st., do.</td>
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<td>1806 Chestnut-st., do.</td>
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</table>

*President. J. Sergeant Price, Secretary. Alfred Lee, Treasurer. William H. Klapp, M.D.*

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

TUITION FEES.

The Tuition Fee in the College Department is one hundred and fifty dollars a year, except that for the last three years in the Towne Scientific School, and for the last two years in the course in Philosophy it is two hundred dollars a year, and for the course in Music thirty dollars a year.

The Tuition Fee in the Departments of Medicine, Biology and Philosophy is one hundred and fifty dollars a year; in the Departments of Dentistry and Veterinary Medicine, one hundred dollars a year; in the Department of Law, eighty dollars a year; and in the Auxiliary Department of Medicine, except to students and graduates of the Department of Medicine, thirty-five dollars for the course.

For time at which these tuition fees are payable, see tabulated statement below. All fees for special or partial courses are payable in advance.

Students in one department may attend lectures given in any other department, by consent of the Dean, without charge, but they shall pay the regular special fees for all practical work.

Graduates of a department may attend the lectures in that department, but shall also pay regular special fees for all practical work.

Under no circumstances are any changes made in the established fees.

GRADUATION FEE.

In the College Department the Graduation Fee is for the Baccalaureate Degree twenty dollars, for the Master's Degree ten dollars.

The Graduation Fee in the Department of Dentistry is thirty dollars; in the Department of Philosophy, thirty-five dollars; and in the Auxiliary Department of Medicine, ten dollars.

No graduation fee is required in the Departments of Medicine, of Veterinary Medicine, and of Law.

CERTIFICATE FEE.

A fee of ten dollars is charged each student receiving a certificate on completion of a special or partial course.
FEES AND EXPENSES.

COLLEGE DEPARTMENT.

Freshman Year and Sophomore Year.

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<th>Course</th>
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<td>Course in Arts</td>
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<td>Course in Philosophy</td>
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<td>Course in Science</td>
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<tr>
<td>Annual Tuition Fee</td>
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<tr>
<td>Annual Fee for Physical Culture</td>
<td>$5.00</td>
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Junior Year and Senior Year.

| Course in Arts                  | $150.00 |
| Course in Philosophy            | $200.00 |
| Course in Technical Science     | $200.00 |
| Course in Finance and Economy   | $150.00 |
| Course in Music                 | $30.00  |
| Annual Tuition Fee              |         |
| Annual Fee for Physical Culture | $5.00  |

Deposit required in Chemical Laboratory to cover breakage, balance refunded: $20.00

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

Graduation Fee, Baccalaureate Degree: $20.00

" Master's Degree: $10.00

Fee for Certificate of Special or Partial Course: $10.00

MEDICAL DEPARTMENT.

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

*This fee is not required of students in the course of Music.
Fee for the full third year course to graduates of other schools, including privilege of applying for graduation (no graduation fee), $150.00
Material for operating, $1 a part.

Fourth Year (Voluntary).
For general ticket, including all the practical courses of this year (no graduation fee), $150.00
To graduates of other schools, with the privilege of attending the didactic courses of the third year, and applying for graduation (no graduation fee), $200.00

Spring Session.
Matriculation fee (paid once only), $5.00
Tuition fee, $30.00
This sum will be credited on account of the fees for the ensuing Winter Term.

The Tuition Fee of $150 each year is conditioned on its being paid before November 1st. If a division of payments is desired, the fee will be $160 for the year, of which at least $80 must be paid before November 1st.

Fees for Special Courses.
(Students taking special or partial courses, if not graduates of the School, are required to pay the matriculation fee, in addition to the fees named below.)
For the full third course, including for bandaging and operating, to graduates of this School, $75.00
For a single Course of Lectures, except Materia Medica, $20.00
For Course on Materia Medica, and on Bandaging and Operating, each, $10.00
For Practical Course in the Chemical Laboratory, $25.00
For the Course in Practical Gynecology of the third year, $25.00
For any one of the remaining practical courses of third year, $15.00

Graduates of the School are admitted to the lectures free of charge; but they pay the fees for the practical courses.
At the beginning of the first year, each student is required to make a deposit of five dollars with the Professor of Chemistry, to cover “breakage” in the chemical laboratories. Any balance remaining is returned.
All fees are payable in advance to the Secretary of the Faculty, who will issue a general ticket of admission to all the lectures and practical instruction.
Under no circumstances are any changes made in the established fees. The only free scholarships granted are those under the regulations named below.
Board can be obtained in Philadelphia for $4 per week and upwards.
FEES AND EXPENSES.

AUXILIARY DEPARTMENT OF MEDICINE.
Matriculation Fee, ........................................... $5 00
Tuition Fee for the course, .................................. 35 00
Students and Graduates of the Department of Medicine may attend the lectures in this department without charge.
Graduation Fee, .............................................. 10 00

PARTIAL COURSES.
Tuition Fee for any one or more of the five courses, each, $15 00

DEPARTMENT OF DENTISTRY.
Matriculation Fee, ........................................... $5 00

WINTER TERM.
First Year.
Tuition Fee, .................................................. $100 00
Second Year.
Tuition Fee, .................................................. $100 00
Fee for Dissection, ......................................... 10 00
Graduation Fee, .............................................. 30 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.

DEPARTMENT OF BIOLOGY.
Matriculation Fee, ........................................... $5 00

GENERAL COURSE.
First Year and Second Year.
Annual Tuition Fee, ........................................ $150 00
Fee for Certificate, ......................................... 10 00

FEES FOR PARTIAL COURSES.
General Biology, ............................................ $90 00
Mammalian Anatomy, ........................................ 30 00
Botany, plant analysis, ..................................... 30 00
Histology, ..................................................... 30 00
Embryology, ................................................... 30 00
Zoology and Comparative Anatomy, .......................... 30 00
Botany and Morphology, ..................................... 75 00
Physiology, ..................................................... 25 00
DEPARTMENT OF VETERINARY MEDICINE.
Matriculation Fee, $5.00
Annual Tuition Fee, 100.00

DEPARTMENT OF LAW.
Matriculation Fee, $5.00
First Year and Second Year.
Annual Tuition Fee, $80.00
A graduation fee is not required.

DEPARTMENT OF PHILOSOPHY.
Matriculation Fee, $5.00
First Year and Second Year.
Annual Tuition Fee, $150.00
Graduation Fee, 35.00
The cases of Applicants for a Degree on examination alone, without instruction or supervision, will be considered separately.

POST-GRADUATE COURSE OF LAW.
First Year and Second Year.
Annual Tuition Fee, $25.00

ACCOMMODATIONS.
Good board can be had near the University at from five to seven dollars a week; and a list of recommended boarding-houses can be seen on application to the Rev. Jesse Y. Burk, Secretary of the Board of Trustees, at the University.

EXPENSES.

<table>
<thead>
<tr>
<th>Item</th>
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<tr>
<td>Board, thirty weeks*</td>
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<td>Tuition (according to Department and Year of the Course)</td>
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<td>Text-books</td>
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<td><strong>Total</strong></td>
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<td><strong>$460.00</strong></td>
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*The session in some of the Departments is from five to nine weeks longer.*
DEGREES, HONORS, AND PRIZES,
1886–1887.

HONORARY DEGREES.
JUNE 8, 1887.


Doctor of Laws.—Rev. Sabato Morais, Ferdinand V. Hayden, M.D.

Doctor of Philosophy.—Professor John A. Ryder.

DEGREES IN COURSE—CERTIFICATES.
JUNE 8, 1887.

Bachelor of Arts.—
William Allen, Jr.,
David Werner Amram,
William Sinclair Ashbrook,
Chauncey Ralston Baugh,
Edgar French Brown,
Charles Tyler Cowperthwait,
Edwards Sanford Dunn,
George Fetterolf,
George Harrison Frazier,
Fred. Wm. Wilson Graham,
John McArthur Harris,
James Haworth,
Crawford Dawes Hening,
Oliver Huckel,
Joseph Siegmund Levin,
Walter Rodman Lincoln,
Walter Biddle Lowry,

Bachelor of Philosophy.—
Forrest Murrell Anderson,
William Francis Audenreid,
Edward Charles Batchelor,
Charles Seligman Bernheimer,
Francis Asbury Bruner,
Joseph Alison Eyster, Jr.,

Christopher Magee, Jr.,
Robert Stephen Maison,
James Alan Montgomery,
Hyland Clark Murphey,
William Romaine Newbold,
George Wharton Pepper,
Francis John Pryor, Jr.,
Theodore Wood Reath,
Alexander Wilson Russell, Jr.,
Robert Bowen Saltier,
André William Séguin,
Henry Daniel Emanuel Siebott,
Henry Naglee Smaltz,
James Somers Smith, Jr.,
Witmer Stone,
George Flowers Stradling,
Charles Cooper Townsend.

(171)
Bachelor of Science.—


Bachelor of Music.—

Preston Ware Orem.

Bachelor of Laws.


Master of Arts.— John August William Haas, A.B., John Mullen, A.B., James Dallas Steele, A.B., Ardemus Stewart, A.B.

Bachelor of Sciences, Auxiliary to Medicine.— B. Franklin Stahl, M.D.

Bachelor of Divinity.— Frank Schell Ballentine, A.M., John August William Haas, A.M.

Practical Chemist.— Abram Trimble Eastwick, B.S., William Daniel Weikel, B.S.

Mining Engineer.— Amos Peaslee Brown, B.S., Percy McGeorge, B.S., Alfred Weeks, B.S., James Harmar Knight, B.S., Marshall Rogers Pugh, B.S., Samuel Jennings White, B.S.


Civil Engineer.— Thomas S. R. Flickwir, B.S., William Salter Freeman, B.S., Charles Herman Haupt, B.S., Joseph Edward Horn, B.S., Earl Thomson, B.S., Francis Emlen Hoskins, B.S., Henry Jackson Mullen, B.S., Edward Arnott Pearson, B.S., John Williamson Zeigler, B.S.


CERTIFICATES.

Department of Science.— Frank Herron Carothers, Louis Joseph Matos, William Vincent McGrath, Jr., James Clarence Ogden.
DEGREES.

Department of Biology.—
Milton J. Greenman, Marcus A. Weems.

Department of Finance and Economy.—
Norton Buel Young.

Department of Music.—
Margaret G. Devine, Evor Williams,
Elizabeth A. Reinboth, Sara Wilson,
Emma A. Whiteley.

May 2, 1887.

Doctor of Medicine.—

Allen, Americus R., Carlisle, Pennsylvania.
Andrews, George E., A.B. (Univ. of Rochester),
Baker, George Fales, B.S. (Univ. of Pa.),
Balliet, Tilghman M., A.B. (Franklin and Marshall),
Barney, Delbert, A.B. (Lafayette), Wilkes-Barre, Pennsylvania.
Bowen, Cuthbert F., B.A. (Dartmouth University),
Bowman, David P., B.E., Gallitzin, Pennsylvania.
Burns, Samuel W., New York.
Cameron, George A., Lancaster, Pennsylvania.
Carlisle, Paris T., Jr., Fredericka, Delaware.
Church, Joseph G., Shenandoah, Pennsylvania.
Clarkson, J. A. Coleman, A.B. Altoona,
(Dickinson Seminary),
Cleaver, J. Vale, E. Bethlehem, Pennsylvania.
Clewell, Cary K., Telford, Pennsylvania.
Cyphers, Millard F., Wilkes-Barre, Pennsylvania.
Davis, James A., Ph.G., Greensburg, Pennsylvania.
Doron, John George, A.B. (Brown), Mt. Holly, New Jersey.
Douglas, Malcolm, Jr., E. Wareham, Massachusetts.
Ely, Thomas C., Jr., Ph.B. (Madison Univ.),
Espinoza, Alexandre, Managua, Nicaragua.
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<tr>
<th>Name</th>
<th>Degree</th>
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<td>Fundenberg, George B., Jr., A.M.</td>
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<td>Gale, John P.</td>
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<td>Macias, José J., Ph.B.</td>
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<td>Cove</td>
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<td>Nickle, S. Pusey</td>
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Norris, Richard C., A.B. (Dickinson),
Prentice, Frederic W., M.D.,
Pyle, William L.,
Reath, Benjamin B., Jr., A.B. (Univ. of Pa.),
Reeder, Jeremiah V.,
Roessler, George F., Ph.G.,
Rudderow, Francis, A.B. (Univ. of Pa.),
Salinas, Sebastian, B.S.,
Smith, Joseph R.,
Sprissler, Theodore, Ph.G.,
Stahl, B. Franklin, Ph.G.,
Stein, James,
Talley, Frank W.,
Taylor, William B., A.B. (Univ. of Wooster),
Townes, William C., Ph.B. (Univ. of Miss.),
Trout, John Harry, Ph.G.,
Turnbull, Thomas, Jr.,
Tybout, Richard Raymond,
Walker, William J.,
Weston, George D., B.S. (Dartmouth),
Windrufva, Sven, M. F. C. (Univ. of Upsala),
Witherspoon, John A.,
Wood, Stephen Carroll, A.B. (Yale),

Washington, Urbana, West Chester, Philadelphia,
Muncy, Berlin, Philadelphia,
Leon, Wilmington, Philadelphia,
Girardville, Wilmington, Turtle Creek,
Oxford, Landisville, Hartford, New Castle, E. Bethlehem,
Windsor,
Philadelphia, Columbia, Philadelphia,

Of the foregoing there were from
California, 1 New Jersey, 1
Connecticut, 1 New York, 5
Delaware, 5 Nicaragua, 4
District of Columbia, 1 North Carolina, 1
Florida, 1 Ohio, 2
France, 1 Oregon, 1
Germany, 1 Pennsylvania, 57
Illinois, 1 Prince Edward Island, 1
Indiana, 1 Tennessee, 2
Iowa, 1 Vermont, 1
Maryland, 4 Virginia, 2
Massachusetts, 1 Wisconsin, 1
Mississippi, 1

Total, 99
Doctor of Dental Surgery—

Amend, Frederick W., Jr., Philadelphia, Pennsylvania.
Arnold, Wm. Frank, Rochester, New York.
Bentzen, Michael H., Bergen, Norway.
Bohn, Henry W., Robesonia, Pennsylvania.
Codman, Charles A. E., Philadelphia, Pennsylvania.
Darrell, Oliver D., Washington, District of Columbia.
Deming, Fay H., Orsay, France.
Dunn, Thomas J., Mansfield, Pennsylvania.
Elliott, Walter V., Jovellanos, Cuba.
Frick, Theodor, Zürich, Switzerland.
Fulcher, Dwight B., Jr., Philadelphia, Pennsylvania.
Garesche, Arthur F., Cardenas, Cuba.
Hammond, Julian T., Jr., Pennsylvania.
Herbein, Isaac W., Frankford, Pennsylvania.
Hill, William W., Sinking Spring, Pennsylvania.
Howe, John B., Washington, District of Columbia.
Jones, William L., Jr., Pennsylvania.
Outcault, Charles W., Lancaster, Pennsylvania.
Pancoast, Samuel A., Ashtabula, Ohio.
Paxson, Alfred, West Chester, Pennsylvania.
Payne, Ralph G., Cattaraugus, New York.
Pérez, Eduardo A., Guayaquil, Ecuador.
Swing, R. Hamill D., Coatesville, Pennsylvania.
Turner, Wm. Jarvie (M.D.), Brooklyn, New York.
Uhler, Orandus H., Easton, Pennsylvania.
Zayas, Fernando A. de, Matanzas, Cuba.

SUMMARY.

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Pennsylvania, 177

May 1, 1887.
HONORS.

In the College Faculty, at the examination for Degrees—

In the Arts—

Of the First Class, to George Flowers Stradling, and William Romaine Newbold.

Of the Second Class, to James Alan Montgomery, George Wharton Pepper, Joseph Siegmund Levin, John McArthur Harris, James Haworth, Walter Rodman Lincoln, and Witmer Stone.

Of the Third Class, to William Sinclair Ashbrooke, Oliver Huckel, Henry Daniel Emanuel Siebott, Charles Cooper Townsend, Robert Bowen Salter, Charles Tyler Cowperthwait, George Harrison Frazier, and James Somers Smith, Jr.

In the Towne Scientific School—

Of the First Class, to Alfred Henry Smith.

Of the Second Class, to Walter Eugene Harrington, Howard Smith Richards, and John Dawson Hawkins.


Wharton School of Finance and Economy—

Of the Second Class, to Forrest Murrell Anderson, and Miles Tucker.

Of the Third Class, to Edward Charles Batchelor, William Francis Audenried, Clement Acton Griscom, Jr., Charles Seligman Bernheimer, Francis Asbury Bruner, and Joseph Allison Eyster, Jr.

Undergraduate Course in Philosophy—

Of the Third Class, to Frank Remi Remont, George Fetterolf, Robert Stephen Maisen, and Hyland Clarke Murphey.

At the Annual Examination Distinctions of the First Class—

In the Arts to—

Juniors—Horace Clarke Richards, and Theodore William Kretschmann.

Sophomores—William Clarence Arrison, and Charles Peabody.

Freshmen—Josiah Harmar Penniman, and William Wilson Barr, Jr.

Theses mentioned as worthy of High Commendation—

In the Towne Scientific School—

Post-Senior Class—The Thesis, the joint work of Messrs. Eastwick, Matos, and Weikel, of the Chemical Section.
The Theses of Messrs. Bigler, Gould, Grier, and Kraft, Section of Mining Engineers.

Senior Class—The Theses of Messrs. Frankel, Hawkins, and Hovey, of the Chemical Section.

In the Faculty of Medicine for graduation theses—

May 2, 1887.

Distinguished Merit, to T. Passmore Berens, of Penna.
Honorable Mention, to William C. Townes, of Miss., Sven Windrafva, of Sweden, and Randall Hutchinson, of New Jersey.

The following graduates of the Medical Department, Class of 1887, were appointed to Hospitals on competitive examinations. They are alphabetically arranged:

To the University Hospital—

E. Kirby,
Leonidas Mial.

To the Philadelphia Hospital—

W. A. Atlee, Jr.,
T. P. Berens,
E. T. Bradley,
J. A. Davis,
A. G. Fell,
R. Hutchinson,
A. A. Stevens, of the Class of 1885.

To the St. Mary’s Hospital—

Jno. C. Heisler,
Fred. Lambach,

To the St. Joseph’s Hospital—

Joseph Otto, of Class of 1886.

To the Children’s Hospital—

C. F. Bowen,
W. W. Farr,

To the Presbyterian Hospital—

P. Kintzing,

The following were appointed to Hospitals, at which an examination is not made the basis of appointment:

To the Pennsylvania Hospital—

Walter D. Green, ’86,
Harvey Shoemaker, ’86,

To the Episcopal Hospital—

W. T. Van Pelt, ’85,

Joseph Leidy, Jr.,
P. Kintzing,
J. W. Lord,
R. C. Norris,
B. F. Stahl,
G. D. Weston.
P. F. Moylan.

Stephen Carroll Wood,

J. W. Lord.

Thomson S. Westcott, ’86.

Benj. B. Reath.
PRIZES.

To the Germantown Hospital—
L. J. C. Kimmel.

To the Harrisburg Hospital—
J. B. McAlister.

To the German Hospital—
A. D. Henkel.

In the Faculty of Dentistry, at the Examination for Degrees—
Honorable mention for averages, exceeding 90, to

Milton Powel, Pennsylvania.
Joseph W. White, Pennsylvania.
Oliver D. Darrell, District of Columbia.
Wm. Frank Arnold, New York.
Arthur F. Garesche, Cuba.
Fay H. Deming, Vermont.
Frederick W. Amend, Jr., Pennsylvania.
R. Peel Doherty, New Brunswick.
W. Howard Johnson, Pennsylvania.
William L. Jones, Jr., Pennsylvania.
Charles A. E. Codman, France.
Felix J. Despecher, Ohio.
Charles W. Outcault, Pennsylvania.
Henry W. Bohn, Pennsylvania.
Richard J. Wall, Pennsylvania.
William F. Rehfuss, Pennsylvania.
R. Hamill D. Swing, Pennsylvania.
Samuel A. Pancoast, Ohio.

PRIZES.
JUNE 8, 1887.

I. IN THE COLLEGE FACULTY—
1. For the best Essay in Intellectual and Moral Philosophy by a member of the Junior Class. Subject: "The Platonic Ideas," to Franklin Derstine Hartsee; with honorable mention of Lightner Witmer.

2. For the best examination on the "Oration of Æschines against Ctesiphon" by the members of the Junior Class, to Horace Clark Richards.

3. For the best examination by a member of the Freshman Class on Greek Prose Composition with the Accents, equally to William Wilson Barr and Josiah Harman Penniman; with honorable mention of Robert Bealle Burke.

4. For the best examination on the "Lectures on Quaternions" given to the Voluntary Junior Class, First Prize to Horace Clarke Richards; Second Prize to Theodore William Kretschmann.

5. A prize of twenty dollars for the best Essay in History and English Literature by a member of the Senior Class. Subject: "The Irish Union of 1801," to Joseph Siegmund Levin.
6. For the best Declamation by a member of the Sophomore Class, equally to Daniel Bussier Shumway and Robert Stulb; with honorable mention of Oscar Pearl Chamberlain and Rudolph Howard Klauder.

7. For the best special examinations in the Elements of Latin Prose Composition by Freshmen on entering College, Second Prize to William Wilson Barr, Jr.

8. For the best special examinations in Greek Prose Composition by Freshmen on entering College, First Prize to William Wilson Barr, Jr.; Second Prize equally to Henry Riley Gummey and Robert McClellan Ramsey.

9. To a member of the Scientific Classes for improvement in Drawing and general good conduct and application, to Frank Richards Ford of the Freshman Class.

10. The Henry Reed Prize, founded by the Alumni of the University for the best English Essay by a member of the Senior Class. Subject: "The Love of Nature as an Element in Poetry, considered especially in regard to the English Literature of the Eighteenth Century," to Oliver Huckel.

II. The Society of the Alumni Prizes—
1. For the best Latin Essay by a member of the Graduating Class, to William Romaine Newbold for his essay "De libris quinque notissimis Boetii."

2. For the best Original Declamation by a member of the Junior Class, to Lightner Witmer, with honorable mention of Theodore William Kretschmann and Horace Clark Richards.

III. The Henry La Barre Jayne Prize for the best English Composition by a member of the Freshman Class, to William Henry Lloyd, Jr., with honorable mention of William Wilson Barr, Jr., for their Essays on "Hugh Swinton Legaré."

IV. The Joseph Warner Yardley Prizé, founded by the Class of 1877, in memory of their classmate, for the best Thesis in Political Economy by a member of the Senior Class, to George Flowers Strading, for his Essay on "Profit Sharing as a Solution of the Labor Problem."

II. In the Faculty of Law—
1. The Sharswood Prize to William M. Smithers.
2. The Meredith Prize to Robert Hunter McGrath, Jr.
3. The Faculty Prize for the best written examination with all the Professors, to Harry F. Stitzell, of the Junior Class.

III. In the Faculty of Biology—
The Junior Prize for the best dissected preparations, Second Prize, to George G. Ross, with honorable mention to Charles F. Nassau.
MAY 2, 1887.

V.  BY THE FACULTY OF MEDICINE—

The "Medical News Prize" of One Hundred Dollars for sufficiently meritorious thesis was divided between Arthur C. Hugenschmidt for his thesis, entitled Experimental studies upon Men, of the action of Hyoscine Hydrobromate, Nitroglycerine, Hydrocyanic Acid, etc., and Peter J. J. Moylan for his thesis on the Physiological action of Antipyretics.

The following prizes were awarded by Dr. J. Wm. White, Demonstrator of Surgery. For proficiency in Operating and Bandaging, a copy of Agnew's Surgery to Joseph Head and a Surgical pocket case to Joseph Leidy, Jr.

A third prize for proficiency in Operating and Bandaging offered by the J. B. Lippincott Co., a copy of Agnew's Surgery to Sven Windrufoa.

By Dr. John B. Deaver, Demonstrator of Anatomy, for the best record of Anomalies found in the Dissecting Room, a pocket case to Henry W. Oattell.

By the Professor of Hygiene, Dr. N. Archer Randolph, for the best examination in Hygiene, a prize of a Zentmayer Histological Microscope to Samuel M. Wilson, of the first year.

For proficiency in Bandaging by a student of the first year, the prize of a copy of Agnew's Surgery by the J. B. Lippincott Co.
### SUMMARY.

#### Professors, Lecturers and Instructors.

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