NINETY-SEVENTH

ANNUAL CATALOGUE

OF THE

MEDICAL SCHOOL

(BOSTON)

OF

HARVARD UNIVERSITY.

1879-80.

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1879.

THE MEDICAL SCHOOL.

BOSTON.

Instruction in this School is given by lectures, recitations, clinical teaching, and practical exercises, uniformly distributed throughout the academic year. The year begins on the Thursday following the last Wednesday in September,* and ends on the last Wednesday in June. There is a recess at Christmas, beginning December 23, and ending January 2; and a spring recess, beginning on the Wednesday before Fast Day, and ending on the following Tuesday, inclusive.

The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically from one subject to another, in a just and natural order.

In the subjects of anatomy, histology, chemistry, and pathological anatomy, laboratory-work is substituted for, or added to, the usual didactic lectures, and is as much required of every student as attendance at lectures and recitations.

Instead of the customary oral examination for the degree of Doctor of Medicine, held at the end of the three years' period of study, a series of written examinations on all the main subjects of medical instruction has been distributed for regular students through the whole three years. Every candidate for the degree must pass a satisfactory examination in every one of the principal departments of medical instruction, at some time during his period of study.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department, without paying additional fees. Students in the Medical School, who wish to avail themselves of this opportunity of pursuing scientific or other studies, may do so without loss of time counted as medical study, to such extent and in such manner as the Medical Faculty shall in each case prescribe. Undergraduates intending to study medicine are advised to pay special attention to the study of Natural History, Chemistry, Physics, and the French and German languages, while in College.

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* That the time of study shall count as a full term, students must present themselves within the first week of the term.

FACULTY.

CHARLES W. ELIOT, LL.D., *President.*
CALVIN ELLIS, M.D., *Dean, and Jackson Professor of Clinical Medicine.*
OLIVER W. HOLMES, M.D., *Parkman Professor of Anatomy.*
HENRY J. BIGELOW, M.D., *Professor of Surgery.*
FRANCIS MINOT, M.D., *Hersey Professor of the Theory and Practice of Physic.*
JOHN P. REYNOLDS, M.D., *Professor of Obstetrics.*
HENRY W. WILLIAMS, M.D., *Professor of Ophthalmology.*
DAVID W. CHEEVER, M.D., *Professor of Clinical Surgery.*
JAMES C. WHITE, M.D., *Professor of Dermatology.*
ROBERT T. EDES, M.D., *Professor of Materia Medica.*
HENRY P. BOWDITCH, M.D., *Professor of Physiology.*
FREDERICK I. KNIGHT, M.D., *Instructor in Laryngoscopy.*
CHARLES B. PORTER, M.D., *Instructor in Surgery.*
J. COLLINS WARREN, M.D., *Instructor in Surgery.*
REGINALD H. FITZ, M.D., *Professor of Pathological Anatomy.*
WILLIAM L. RICHARDSON, M.D., *Instructor in Obstetrics.*
THOMAS DWIGHT, M.D., *Instructor in Histology.*
EDWARD S. WOOD, M.D., *Professor of Chemistry.*
HENRY H. A. BEACH, M.D., *Demonstrator of Anatomy.*
WILLIAM H. BAKER, M.D., *Instructor in Gynæcology.*
WILLIAM B. HILLS, M.D., *Instructor in Chemistry.*

OTHER INSTRUCTORS.

GEORGE F. H. MARKOE, *Instructor in Materia Medica.*
FRANK W. DRAPER, M.D., *Lecturer on Forensic Medicine.*
CHARLES F. FOLSOM, M.D., *Lecturer on Hygiene and Mental Diseases.*
HENRY P. QUINCY, M.D., *Assistant in Histology.*
THOMAS WATERMAN, M.D., *Assistant in Anatomy.*
EDWARD N. WHITTIER, M.D., *Assistant in Clinical Medicine.*
ELBRIDGE G. CUTLER, M.D., *Assistant in Pathological Anatomy.*
W. STURGIS BIGELOW, M.D., *Assistant in Surgery.*
GEORGE M. GARLAND, M.D., *Assistant in Physiology.*
WILLIAM F. WHITNEY, M.D., *Curator of the Anatomical Museum.*
MAURICE H. RICHARDSON, M.D., *Assistant in Anatomy.*

The following gentlemen will give special clinical instruction : —

FRANCIS B. GREENOUGH, M.D., and EDWARD WIGGLESWORTH, M.D., *in Syphilis.*
J. ORNE GREEN, M.D., and CLARENCE J. BLAKE, M.D., *in Otology.*
JOSEPH P. OLIVER, M.D., and THOMAS M. ROTCH, M.D., *in Diseases of Children.*
SAMUEL G. WEBBER, M.D., and JAMES J. PUTNAM, M.D., *in Diseases of the Nervous System.*

STUDENTS.

Course for Graduates.

Durell, Thomas Moulton, M.D.,	*Somerville.*
Gibson, Arthur Allen, M.D. (*Univ. of Vt.*),	*Chester, Vt.*
Lovejoy, Charles Averill, A.B., M.D.,	*Lynn.*
Rives, William Cabell, A.B. (*Oxford Univ.*), M.D. (*Univ. of City of New York*),	*Newport, R.I.*
Wilson, Arthur H. M.D.,	*S. Boston.*

Fourth Class.

Terry, Herbert, S.B. (*Cornell Univ.*),	*Fairhaven.*
Walton, George Lincoln, A.B.,	*West Newton.*

Third Class.

Adams, George Edwin,	*Lowell.*
Bill, George Edwin, A.B. (*Tufts Coll.*),	*Waltham.*
Blanchard, Benjamin Seaver,	*Boston.*
Bridgman, George Herbert, A.B. (*Dart. Coll.*),	*Keene, N.H.*
Briggs, Edward Cornelius, D.M.D.,	*Boston.*
Brown, William Francis, A.B. (*Boston Coll.*),	*Boston.*
Bullard, James Hovey, A.B.,	*Holliston.*
Burr, Buchanan,	*Astoria, N.Y.*
Cates, Abraham Barker, A.M. (*Colby Univ.*),	*Vassalboro', Me.*
Clarke, Samuel Bartlett,	*Salem.*
Cunningham, William Frost,	*Charlestown.*
Currier, Charles Gilman, A.B.,	*Boston.*
Cushing, Hayward Warren, A.B.,	*Boston.*
Cutter, Edward Jones, A.B.,	*Nashua, N.H.*
Dewey, Charles Ayrault, A.B. (*Univ. of Rochester*),	*Rochester, N.Y.*
Doggett, Frederic Fobes, A.B.,	*Quincy.*
Elliot, Edward Pearson, A.B.,	*Somerville.*
Ellis, Fred Warren,	*Monson.*
Faulkner, Harry Winthrop,	*Billerica.*
Fisk, Samuel Augustus, A.B. (*Yale Coll.*),	*Northampton.*
Goddard, Thatcher,	*Boston.*
Gregg, John Areole,	*Somerville.*
Hammond, Charles Bartlett, A.B. (*Dart. Coll.*),	*Nashua, N.H.*
Harrington, Frank Bishop, A.B. (*Tufts Coll.*),	*Salem.*
Hodges, William Donnison, A.B.,	*Nahant.*
Jackson, William Benjamin,	*Lowell.*
Jarvis, William Furness,	*Boston.*

Jefferson, Herbert Perry,	*Lowell.*
Kingman, Rufus Anderson,	*Boston.*
Kittredge, Joseph,	*N. Andover.*
Litchfield, William Harvey,	*Hull.*
McIntyre, James Clarke.	*Boston.*
Millet, Charles Sumner,	*E. Bridgewater.*
Morton, Nathaniel Bowditch,	*Boston.*
Pierce, Matthew Vassar, A.B.,	*Boston.*
Pomroy, Herbert Jason,	*Providence, R.I.*
Ryder, Godfrey, Jr., A.B.,	*Medford.*
Sherman, Thomas Foster, A.B.,	*Boston.*
Simmons, Moyses Rogers,	*Hanover.*
Squires, Harry Sanford,	*Troy, N.Y.*
Stickney, George Augustus,	*Haverhill.*
Swift, William Nye, A.B.,	*New Bedford.*
Temple, William Franklin, Jr., A.B. (*Dart. Coll.*),	*Boston.*
Terrell, Frederick, A.B. (*Ind. Asbury Univ.*),	*San Antonio, Texas.*
Thurlow, John Howard,	*Boston.*
Titcomb, George Eugene,	*Exeter, N.H.*
Tower, Charles Bates,	*Cambridge.*
Twitchell, George Pierce,	*Keene, N.H.*
Underhill, Caleb Brooks,	*Somerville.*
Wakefield, Alley Talbot, A.B.,	*Cambridge.*
Walker, James Wise, A.B.,	*Boston.*
Warren, Edward Winslow, A.B.,	*Boston.*
West, Edward Graeff, A.B.,	*Exeter, N.H.*
Weston, Charles Galen,	*Revere.*
White, Herbert Warren,	*Randolph.*
Whitman, Royal,	*Boston.*
Whitney, Herbert Baker, A.B.,	*Leominster.*
Witherlee, Charles Bryant, A.B.,	*Castine, Me.*
Withington, Charles Francis, A.B.,	*Boston.*
Woodman, Walter, A.B.,	*Cambridge.*

Second Class.

Adams, Henry Fiske,	*Peterboro', N.H.*
Atwood, Frank Sumner,	*Salem.*
Bartlett, Frederic Russell,	*Worcester.*
Beckwith, Fred Jason, A.B. (*Yale Coll.*),	*New London, Conn.*
Bloom, Isadore Nathan, A.B. (*Yale Coll.*),	*Louisville, Ky.*
Bradford, Corey Carpenter, A.B. (*Brown Univ.*),	*W. Woodstock, Conn.*
Bradley, Charles How,	*Haverhill.*
Brainerd, John Bliss,	*St. Albans, Vt.*

Browne, William Tyler, PH.B. (*Yale Coll.*),	*Lisbon, Conn.*
Buck, Howard Mendenhall, A.B.,	*Boston.*
Burdick, Allen,	*St. Albans, Vt.*
Church, Moses Davis,	*Valley Falls, R.I.*
Clarke, Maurice Dwight, A.B. (*Amherst Coll.*),	*E. Cambridge.*
Cobb, Charles Henry,	*Boston.*
Coe, Henry Clark, A.B. (*Yale Coll.*),	*Boston.*
Coggeshall, Henry Tisdale,	*Newport, R.I.*
Colt, Henry, Jr., A.B. (*Williams Coll.*),	*Pittsfield.*
Cushman, George Thomas,	*Boston.*
Denny, Charles Frederic,	*Somerville.*
Deroin, Francis Xavier,	*S. Ely, Canada.*
Doble, Ernest Edgar,	*W. Quincy.*
Donovan, Benedict,	*Boston.*
Dow, George William, A.B. (*Brown Univ.*),	*Lawrence.*
Dunbar, Franklin Asaph, A.B.,	*Cambridge.*
Ellicott, Edward Somerville, A.B.,	*Boston.*
Faunce, Robert Harris,	*Sandwich.*
Galligan, Edward Francis,	*Taunton.*
Gay, Frederick Lewis,	*Boston.*
Gerould, Joseph Bowditch, B.S. (*Dart. Coll.*),	*Keene, N.H.*
Godding, Clarence Miles, A.B. (*Brown Univ.*),	*Providence, R.I.*
Goodell, George Zina,	*Salem.*
Gould, Charles Asahel,	*Newtonville.*
Hall, Josiah Newhall, B.S. (*Mass. Agr. Coll.*),	*Revere.*
Harrington, Charles, 2d, A.B.,	*Salem.*
Harrower, David, Jr.,	*Place Dale, R.I.*
Hayes, Edward Stephen,	*Leavenworth, Kansas.*
Hayward, Walter Sumner, A.B. (*Brown Univ.*),	*Brockton.*
Hewins, Parke Woodbury, A.B.,	*Taunton.*
Holden, William Daniel,	*Haverhill.*
Holyoke, Frank,	*W. Medford.*
Homans, John, 2d, A.B.,	*Boston.*
Howe, James Sullivan,	*Bolton.*
Huse, Charles Archelaus, A.B. (*Brown Univ.*),	*Worcester.*
Jarvis, Leonard, B.S. (*Dart. Coll.*),	*Claremont, N.H.*
Jewett, Milo Augustus,	*Milwaukee, Wis.*
Johnson, Herbert Shattuck, A.B. (*Amherst Coll.*),	*Lowell.*
Kibbey, William Beckford,	*Washington, D.C.*
King, James Henry, A.B. (*Univ. of Vt.*),	*Benson, Vt.*
Knapp, Philip Coombs, Jr., A.B.,	*Boston.*
Lombard, Warren Plimpton, A.B.,	*W. Newton.*
Lyons, Herbert Henry, A.B. (*Bost. Coll.*),	*Milford.*

MacKaye, Henry Goodwin,	*Boston.*
Manton, Walter Porter,	*Boston.*
McDonough, Thomas Patrick,	*Milford.*
McMichael, Willis Brooks, A.B. (*Boston Univ.*),	*Boston.*
Mead, Julian Augustus, A.B.,	*W. Acton.*
Metcalf, Simeon McCausland,	*Somerville.*
Millerick, Daniel Edward, A.B. (*Holy Cross Coll.*),	*Boston.*
Nelson, Samuel Newell, A.B.,	*Milford.*
Newell, Otis Kimball,	*Boston.*
Palmer, Lewis Merritt, A.M. (*Bates Coll.*),	*Litchfield, Me.*
Perkins, Henry Phelps, Jr.,	*Lowell.*
Potter, William Henry, A.B.,	*Boston.*
Prior, Charles Edwin, A.B.,	*Melrose.*
Russell, Eben George,	*E. Deering, Me.*
Sawin, Charles Dexter, B.S. (*Mass. Inst. Tech.*),	*Boston.*
Shepard, George Clarence, A.B.,	*Boston.*
Sherman, Frank Morton,	*Watertown.*
Squibb, Edward Hamilton, S.B.,	*Brooklyn, N.Y.*
Stearns, Charles Goddard, A.B. (*Amherst Coll.*),	*Boston.*
Sturgis, Russell, 3d, A.B.,	*Boston.*
Taylor, Frederic Weston, A.B.,	*Cambridge.*
Vickery, Herman Frank, A.B.,	*Weymouth.*
Wetherbee, Roswell,	*Acton.*
White, Charles Warren, Jr.,	*Boston.*
Whiteside, George Henry Whittaker,	*Lowell.*
Wilcox, Reynold Webb, A.B. (*Yale Coll.*),	*Madison, Conn.*
Wood, Henry Austin, A.B.,	*Upton.*
Woodward, Lemuel Fox, S.B.,	*Worcester.*

First Class.

Adams, Edward Payson,	*Castine, Me.*
Aiken, William Henry, A.B.,	*Somerville.*
Aldrich, Albert Clinton, A.B.,	*Somerville.*
Alger, Horace Chapin, A.B.,	*N. Cambridge.*
Allen, Bradford, S.B. (*Amherst Coll.*),	*E. Bridgewater.*
Allen, Gardner Weld, A.B.,	*Cambridge.*
Applegate, William A.,	*Yellow Springs, O.*
Atkins, Edgar Chester,	*Marlboro'.*
Baird, Reed McColloch,	*Wheeling, W.Va.*
Baker, David Erastus, S.B. (*Bost. Univ.*),	*Franklin.*
Bell, Robert,	*Boston.*
Boutwell, Henry Winslow,	*Medford.*

Bowen, John Templeton, A.B.,	*Boston.*
Briard, William Henry Lighthill,	*Cambridge.*
Briggs, Frederic Melancthon, A.B.,	*Boston.*
Broderick, Thomas Joseph,	*Cambridge.*
Burgess, Arthur Joseph,	*Cambridge.*
Burr, Charles Henry, S.B.,	*Cambridge.*
Chamberlayne, Henry Dudley,	*Cambridge.*
Chandler, Frederick Alpheus,	*Addison, Me.*
Clark, Joseph Eddy,	*Boston.*
Cole, Ralph Marcus,	*Middletown, Conn.*
Conant, William Merritt, A.B.,	*Bridgewater.*
Crosby, John Abbott, S.B. (*Olivet Coll., Mich.*),	*N. Buffalo, Mich.*
Curran, Charles James,	*Holyoke.*
Delano, Samuel, A.B.,	*W. Medford.*
Devine, William Henry,	*Boston.*
Doubleday, Edwin Thompson,	*Boston.*
Drake, Henry Scudder, A.B. (*Brown Univ.*),	*Middleboro'.*
Dunn, Charles Stein,	*Dover, N.H.*
Fales, Willard Henry, A.B. (*Tufts Coll.*),	*Boston.*
Foster, Warren Wooden,	*E. Killingly, Conn.*
Fowler, Arthur Burnham,	*Salem.*
Galloupe, Charles William, 2d, A.B.,	*Lynn.*
Gavin, George Freeborn,	*Dublin, Ireland.*
Goss, Ossian Wilbur,	*Lake Village, N.H.*
Griffin, Arthur George,	*Litchfield, N.H.*
Haven, George,	*Portsmouth, N.H.*
Heustis, James Walter,	*Boston.*
Hibbard, Nathaniel, A.B. (*Brown Univ.*),	*Vergennes, Vt.*
Hodgdon, Andrew Hall, A.B.,	*Arlington.*
Holden, Charles Sumner,	*Leesburg, Fla.*
Holmes, William Dennison,	*Boston.*
Hubbard, Rufus Peabody,	*Wells, Me.*
Jackson, Alton Atwell,	*E. Jefferson, Me.*
Johnson, Frank Mackie, S.B. (*Amherst Coll.*),	*Norwich, Conn.*
Jordan, Herbert Stanton,	*Brownfield, Me.*
Kennedy, Fred William,	*Lawrence.*
Kimball, George Morrill, A.B. (*Yale Coll.*),	*Concord, N.H.*
Kimball, Samuel Ayer, A.B. (*Yale Coll.*),	*Bath, Me.*
Kimpton, Edwin Sewell,	*E. Somerville.*
Kinnier, Dennis Francis,	*Randolph.*
Lawler, Thomas Joseph,	*Boston.*
Lincoln, Arthur Talbot, S.B. (*Amherst Coll.*),	*Dennysville, Me.*
MacConnell, James William,	*Boston.*

MacKenzie, Freeman Alexander,	*Boston.*
Martin, Francis Coffin, A.B.,	*Boston.*
Mason, Atherton Perry, A.B.,	*Fitchburg.*
McCarthy, Daniel George,	*Boston.*
McComsey, William Rex,	*Jamaica Plain.*
McLauthlin, Herbert Weston, A.B. (*Amherst Coll.*),	*Kingston.*
McOwen, William Henry,	*Lowell.*
Miller, George Norton, A.B.,	*New York, N.Y.*
Mitchell, John Singleton,	*Boston.*
Morrill, Fred Hiram,	*Nashua, N.H.*
Morris, John Gavin, A.B.,	*Boston.*
Morrison, William Frank,	*Bristol, R.I.*
Murphy, Joseph Briggs,	*Taunton.*
Newhall, Herbert William, A.B.,	*Lynn.*
Nickerson, Asa Harden,	*Providence, R.I.*
Norwood, Ephraim Wood, A.M. (*Colby Univ.*),	*Brimfield.*
Otis, Henry Sharwood,	*Exeter, N.H.*
Otterson, William David,	*Nashua, N.H.*
Perry, Frederick Gardiner, A.B.,	*Boston.*
Phelan, Thomas Francis, A.B. (*Holy Cross Coll.*),	*Worcester.*
Powers, Edward Everett,	*Florence, Italy.*
Richards, George Edward, A.B.,	*Cambridge.*
Richardson, Dana Putnam,	*Leominster.*
Ripley, Alfred Lawrence, A.B. (*Yale Coll.*),	*Andover.*
Ross, Charles Elliot Amsden,	*Waltham.*
Shea, Andrew Francis,	*Cambridge.*
Sinclair, Charles Frederic, D.B.,	*Boston.*
Smith, Asbury Gilbert,	*Stoneham.*
Smith, Willard Everett, A.B.,	*Newtonville.*
Soulé, Edward Lincoln,	*Boston.*
Sparhawk, Clement Willis,	*Cambridge.*
Stevens, William Caldwell, A.B. (*Amherst Coll.*),	*Worcester.*
Sullivan, James Francis,	*Lowell.*
Swan, Roscoe Wesley, S.B. (*Mass. Agr. Coll.*),	*Framingham.*
Sweeny, Henry Lee,	*Hanover.*
Thompson, George Eben, S.B. (*Dart. Coll.*),	*Dover, N.H.*
Tremaine, William Allen,	*Waterbury, Conn.*
Trumbull, John, A.B. (*Yale Coll.*),	*Valparaiso, Chili.*
Tuckerman, Frederick, S.B. (*Boston Univ.*),	*Boston.*
Walsh, Frank Winfield,	*Boston.*
Weil, Frank Edward,	*N. Andover.*
Welch, Stephen Albro, A.B. (*Brown Univ.*),	*Warren, R.I.*
Wells, James Lee, A.B. (*Brown Univ.*),	*Hopkinton, R.I.*

Wetherell, Arthur Bryant,	*Southampton.*
White, Leonard Darling,	*Uxbridge.*
Whitridge, Roland Barker,	*Boston.*
Wilson, John Harpin,	*Dubuque, Iowa.*
Wolff, John Eliot, A.B.,	*Boston.*
Woodbury, George Franklin,	*Sutton.*
Wyman, Morrill,	*Cambridge.*

SUMMARY.

Graduates' Course	5
Fourth Class	2
Third Class	60
Second Class	79
First Class	105
Total	251

THE MEDICAL SCHOOL.

REQUISITES FOR ADMISSION.

All candidates for admission, excepting those who have passed an examination for admission to Harvard College, must present a degree in Letters or Science from a recognized college or scientific school, or pass an examination, on the Monday preceding the last Wednesday in June or September, at 10 A.M., in the following subjects: —

1. LATIN. The translation of easy Latin. French or German will be accepted, however, as a substitute for Latin.

2. PHYSICS. Candidates will be required to show such a knowledge of this subject as may be obtained from Balfour Stewart's elementary works on Physics.

The examinations will be conducted in writing; and, in judging the work of the candidate, the spelling, grammar, and construction will be considered.

Graduates in medicine will not be required to pass this examination on joining the school.

No student becomes a member of the school until he has registered his name with the Secretary of the Faculty.

DIVISION OF STUDIES.

First year. — Anatomy, Physiology, and General Chemistry.*

Second year. — Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, and Clinical Surgery.

Third year. — Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

METHODS OF INSTRUCTION.

The following methods of instruction are adopted in the several departments: —

Anatomy. — Lectures; various practical exercises, including abundant dissection, under the direction of the Demonstrator; recitations from text-books; histology.

* Any student who shall have previously passed in the Undergraduate Department or Scientific School of Harvard University an examination in General Chemistry (including qualitative analysis) will be exempt from examination in this branch, and may pursue the study of Medical Chemistry during his first year. The latter privilege will be granted to students from other colleges and scientific schools who have received instruction in general chemistry equivalent in character and amount to that of the first year, on passing a satisfactory examination at the September examination, provided that satisfactory evidence of such previous study be sent to the Secretary of the Faculty one month before the date of this examination.

Physiology. — Lectures, recitations, conferences, and practical demonstrations in the Laboratory. To students of the second and third classes, opportunities are given for original investigations in the Laboratory.

Chemistry is taught mainly by practical work in the Laboratory, the student having his own desk and apparatus. General Chemistry and qualitative analysis are taught during the first year. Besides the laboratory-work, there is a lecture and a recitation every week. In the second year, medical chemistry is taught by lectures and exercises in the laboratory.

Pathological Anatomy is taught by lectures, recitations, and practical instruction in pathological histology. The collection of the Warren Anatomical Museum is used to illustrate the lectures; and many morbid specimens are shown in a fresh state. Students also receive practical instruction in the method of making autopsies, and are admitted to those made at both hospitals. Special classes in pathological histology, including the diagnosis of tumors, are formed for those who are provided with a microscope. Such students are required to prepare the various objects. The school possesses a number of microscopes for the use of those students whose means will not permit the purchase of an instrument.

Materia Medica and Therapeutics. — Materia Medica is taught by lectures and practical demonstrations. Therapeutics, or the physiological action of drugs and their application to disease, is taught in the third year, by lectures, recitations, and hospital exercises.

The Theory and Practice of Medicine. — Lectures, recitations, and hospital visits.

Clinical Medicine. — Daily instruction is given in this department by hospital visits and other exercises. Students are furnished with cases for personal examination, and are called upon to report them before the class, where they are criticised. These examinations are held both in the wards and in the amphitheatre. Another exercise, known as the "Clinical Conference," affords an opportunity for more thorough preparation of cases, more time being allowed for their study. The full written report of a case is read by the student who has examined it. It is afterwards criticised by the class, by the Professor of Clinical Medicine, and other teachers in the school. In addition to this, a regular course of supplementary instruction is given in Auscultation and Percussion, and in Laryngoscopy, which affords students an abundant opportunity for acquiring a thoroughly practical knowledge of these methods of exploration.

Surgery. — Lectures and recitations. There are also courses on Surgical Anatomy, Minor Surgery, Surgical Histology, Bandaging, and Opera-

tive Surgery. In the latter, students of the third class are supplied with material for repeating the usual surgical operations.

Instruction in Clinical Surgery is given at the Massachusetts General Hospital and City Hospital, throughout the year, as follows: —

First Half-Year. — Clinical Lectures on cases, per week, 2; Surgical Visits in the hospital wards, per week, 2; public operating days, per week, 2. Total number of exercises per week, 7.

Second Half-Year. — Clinical Lectures on cases, per week, 1; Surgical Visits in the hospital wards, per week, 3; public operating days, per week, 3. Total number of exercises per week, 7.

The Professor of Clinical Surgery holds an exercise twice a week, in winter, at the City Hospital. On one day, a clinical lecture is given over surgical cases brought into the operating theatre, illustrated by explorations and operations. On the other day, a bedside clinic is held in the wards. A third exercise is held each week in winter, in the form of a surgical conference, at which third-year students make a full written report of a surgical case, which is then criticised by their fellow-students and by the Professor. Every candidate for a degree is required to report a clinical case in surgery.

Obstetrics. — Lectures and recitations. Students are instructed in the usual operations on the manikin, and will have opportunities to take charge of cases of obstetrics in their third year. A course of operative obstetrics, with practical illustrations on the cadaver, is given.

Diseases of Women and Children. — Lectures and Clinical Instruction.

Ophthalmology. — A complete course is delivered upon the diseases of the eye, including clinical instruction and the use of the ophthalmoscope.

Dermatology is taught by lectures and clinical illustrations. The special out-patient department at the Massachusetts General Hospital furnishes ample opportunities for illustration.

Syphilis. — Recitations and clinical instruction.

Otology. — Lectures and clinical iustruction.

Laryngology. — Lectures and Demonstrations.

Diseases of the Nervous System. — Lectures and Demonstrations.

Hygiene. — Lectures.

Forensic Medicine. — Lectures.

TEXT-BOOKS.

The following works are recommended as text-books, and for collateral reading: —

Text-Books.	*Collateral Reading.*

Anatomy.

Gray, Wilson, Leidy, Turner.	Quain (edition of 1876).
Hodges's Practical Dissections.	Holden's Osteology.
Holden's Manual.	Stricker's Manual of Histology.
Holden's Landmarks.	Frey's Histology.
	Frey's Microscopic Technology.
	Tyson's Cell Doctrine.

Physiology.

Dalton's Human Physiology.	Pavy on Food and Dietetics.
Foster's Text-book of Physiology.	Fick, Compendium der Physiologie.
Huxley's Elementary Lessons in Physiology.	Fick, Medicinische Physik.
	Sanderson's Hand-book for the Physiological Laboratory.
	Flint's Physiology of Man.
	Carpenter's Principles of Human Physiology.

General Chemistry.

Bloxam's Chemistry, Inorganic and Organic.	Miller's Elements of Chemistry.
Clowes's Elementary Treatise on Practical and Qualitative Inorganic Analysis.	

Medical Chemistry.

Neubauer and Vogel, Analysis of the Urine.	Ralfe, Outlines of Physiological Chemistry.
Tyson's Guide to the Practical Examination of the Urine.	Gorup-Besanez, Physiologische Chemie.
Reese's Manual of Toxicology.	Taylor on Poisons.
	Tardieu, Étude médico-légale et clinique sur l'Empoisonnement.

Materia Medica.

National Dispensatory, Stillé and Maisch.	United States Dispensatory.

Pathological Anatomy.

Wagner's Manual of General Pathology.
Orth's Compend of Diagnosis in Pathological Anatomy.
Virchow's Cellular Pathology.
Rindfleisch's Pathological Histology.
Jones and Sieveking's Pathological Anatomy (Payne's edition).
Wilks's Pathological Anatomy (Moxon's edition).

Therapeutics.

H. C. Wood's Therapeutics.
Mann's Prescription Writing.
Chamber's Manual of Diet.
Stillé's Therapeutics and Materia Medica.
Bartholow's Materia Medica and Therapeutics.
Ringer's Therapeutics.

Obstetrics.

Playfair's System of Midwifery.
Schroeder's Manual of Midwifery.
Cazeaux's Midwifery.
Winckel's Diseases of Childbed.
Barker's Puerperal Diseases.
Barnes's Obstetric Operations.

Theory and Practice.

Flint's Practice of Medicine.
Roberts's Hand-book of Theory and Practice of Medicine.
Niemeyer's Text-book of Practical Medicine.
Jaccoud, Traité de Pathologie Interne.
Bennett's Clinical Lectures on the Principles and Practice of Medicine.
Bristowe's Theory and Practice of Medicine.
Flint's Clinical Medicine.

SURGERY.

Bryant's Practice of Surgery.
Billroth's Surgical Pathology.
Heath's Minor Surgery and Bandaging.
Guérin, Éléments de Chirurgie Opératoire.
Holme's System of Surgery.
Cooper's Surgical Dictionary (1872).
Holden's Landmarks, Medical and Surgical.
Braune's Atlas of Topographical Anatomy, translated by Bellamy.

COURSES OF INSTRUCTION FOR 1879–80.

ANATOMY.

Descriptive Anatomy. *Four times a week till May.* Professor Holmes.

Practical Anatomy, with Exercises in Dissection. *Ten times a week from November till May.* Dr. Beach.

Regional Anatomy. *Twice a week for three weeks.* Professor Cheever.

Laboratory Exercises in Histology. *Twice a week till May.* Dr. Dwight.

PHYSIOLOGY.

Systematic and Experimental Physiology. *Four times a week.* Professor Bowditch.

Laboratory Exercises in Experimental Physiology. *Twice a week for five weeks.* Dr. G. M. Garland.

CHEMISTRY.

General and Analytical Chemistry. *Twice a week, with an additional weekly exercise during the first ten weeks.* Dr. Hills.

Medical and Toxicological Chemistry. *Twice a week.* Professor Wood. Practical Exercises in the Laboratory for General Chemistry. *Daily.* Dr. Hills.

Practical Exercises in the Laboratory for Medical Chemistry. *Daily.* Professor Wood.

MATERIA MEDICA AND THERAPEUTICS.

Materia Medica, with Practical Demonstrations. *Once a week.* Mr. Markoe.

Therapeutics. *Three times a week.* Professor Edes.

PATHOLOGY AND PATHOLOGICAL ANATOMY.

General Pathology and Pathological Anatomy. *Twice a week.* Professor Fitz.

Special Pathological Anatomy, with Demonstrations. *Twice a week.* Professor Fitz.

Laboratory Exercises in Pathological Histology. *Twice a week till April.* Professor Fitz and Dr. Cutler.

Practical Instruction in Performing Autopsies. *Throughout the year.* Professor Fitz and Dr. Cutler.

SURGERY.

Surgery and Clinical Surgery. *Twice a week till March.* Professor Bigelow.

Clinical Surgery. *Twice a week till April.* Professor Cheever.

Clinical Surgery. *Once a week during the second half-year.* Dr. Porter.

Operative Surgery. *Fifteen practical exercises.* Dr. Porter.

Recitations in Surgical Pathology. *Once a week during the first half-year.* Dr. Warren.

Recitations in Surgery. *Once a week during the second half-year.* Dr. Warren.

Laboratory Exercises in Surgical Histology. *Twice a week after March.* Drs. Warren and Bigelow.

The Application of Bandages and Apparatus. *Once a week during the second half-year.* Dr. Warren.

Surgical visits are made at the Massachusetts General Hospital, by Professor Bigelow and Drs. Hodges, Porter, Warren, and Beach. — At the City Hospital, by Professor Cheever and Drs. Homans, Thorndike, Ingalls, Fifield, and Gay. — The Surgical Cases at the Eye and Ear Infirmary and at the Boston Dispensary are shown by the surgeons in charge.

OPHTHALMOLOGY.

Diseases of the Eye. *Once a week.* Professor Williams.

Clinical Ophthalmology. *Once a week till January and after March.* Professor Williams.

DERMATOLOGY.

Diseases of the Skin. *Once a week.* Professor White.

Clinical Dermatology. *Once a week.* Professor White.

SYPHILIS.

Practical Diagnosis and Treatment of Syphilis. *Once a week during the first half-year.* Dr. Greenough.

Practical Diagnosis and Treatment of Syphilis. *Once a week during the second half-year.* Dr. Wigglesworth.

OTOLOGY.

Practical Diagnosis and Treatment of Diseases of the Ear. *Once a week from January till April.* Dr. Green.

Anatomy, Physiology, and Diseases of the Ear. *Twice a week for three months.* Dr. Blake.

SPECIAL PATHOLOGY AND THERAPEUTICS.

Theory and Practice of Physic. *Five times a week.* Professor Minot.

Clinical Medicine. *Three times a week, with an additional weekly exercise during the first half-year.* Professor Ellis.

Practical Instruction in Auscultation and Percussion. *Six times a week during the first half-year.*

Practical Diagnosis and Treatment of Diseases of the Larynx. *Six times a week, first half-year.* Dr. Knight.

Diseases of Women. *Twice a week.* Dr. Baker.

Practical Diagnosis and Treatment of Diseases of Children. *Once a week, first half-year.* Dr. Oliver.

Practical Diagnosis and Treatment of Diseases of Children. *Once a week, second half-year.* Dr. Rotch.

Practical Diagnosis and Treatment of Diseases of the Nervous System. *Once a week till February.* Dr. Webber.

Practical Diagnosis and Treatment of Diseases of the Nervous System. *Once a week.* Dr. J. J. Putnam.

Mental Diseases. *Eight lectures.* Dr. Folsom.

Hygiene. *Eight lectures.* Dr. Folsom.

Forensic Medicine, with Demonstrations. *Twelve exercises.* Dr. Draper.

Medical visits are made at the Massachusetts General Hospital, by Professors Ellis and Minot and by Drs. Shattuck, Abbot, Shaw, and Tarbell. — At the City Hospital, by Professor Edes and Drs. Blake, Lyman, Stedman, Arnold, Curtis, Draper, Doe, and Mason. — At the Danvers Asylum for the Insane, by Dr. May. — The Medical Cases at the Boston Dispensary are shown by the physicians in charge.

OBSTETRICS.

Theory and Practice of Obstetrics. *Twice a week.* Professor Reynolds.

Recitations in the Theory and Practice of Obstetrics. *Once a week.* Dr. Richardson.

Operative Obstetrics. *Twelve practical exercises.* Dr. Richardson.

Practical Instruction in Clinical Obstetrics. *Throughout the year.* Dr. Richardson.

CLINICAL ADVANTAGES.

The Medical Department of the University is established in Boston, in order to secure those advantages for Clinical Instruction and for the study of Practical Anatomy which are found only in large cities.

There are Hospital visits or operations daily.

The Massachusetts General Hospital. — During the past year, 1,950 patients were treated in the wards, and 18,744 in the out-patient departments. Patients are received from all parts of the United States and the Provinces, and are visited by the students with the attending physicians and surgeons. The opportunities for becoming acquainted with general surgery are very great. Operations are numerous, and are performed in the amphitheatre, which is provided with seats for 400 persons. Clinics in the following special branches have been established in connection with the out-patient department: Dermatology, Laryngology, Diseases of the Nervous System.

The Hospital is adjacent to the Medical College, and its wards are open to the students on four days in the week.

The City Hospital. — During the past year, 4,631 cases were treated in its wards, and 10,419 in its various out-patient departments. The Medical wards always contain many cases of acute diseases, and changes are taking place constantly. The opportunities for seeing fractures, injuries, and traumatic cases of all kinds are excellent, since, on an average, 800 street accidents are yearly treated. Surgical operations are performed in the amphitheatre. These include general surgical and also ophthalmic operations. Diseases of the eye, the ear, and the skin are largely treated in the out-patient department. Clinical instruction is given by the physicians and surgeons twice a week.

In these two Hospitals, the facilities for witnessing Operative Surgery are unsurpassed. Twice a week in the first half-year, and three times a week in the second half-year, operations are performed in the presence of the class. The number of these operations is large, reaching nearly two thousand a year. The variety is great, embracing every surgical disease and injury, including the surgical operations on the eye and ear.

The Massachusetts Charitable Eye and Ear Infirmary. — The eight thousand patients annually treated at this institution present every variety of disease of the ear and eye, and supply a large number of operations.

The Marine Hospital at Chelsea receives from the shipping of the port a large number of patients, who furnish examples of the diseases of foreign countries, and of distant parts of the United States. Many cases of venereal disease, in its various forms, are treated annually.

The Boston Dispensary. — Thirty-nine thousand eight hundred and fifty-four patients were treated at this Public Charity, during the past year. Students have excellent opportunities to see minor surgery, and many of the diseases of children, and to practise auscultation.

Hospital Appointments. — Twenty or more students are selected annually for House Officers of the various Hospitals. Appointments to the Boston Lying-in Hospital are for a term of four months.

EXAMINATIONS.

The regular examinations are held in the following order: —

At the end of the first year: Anatomy, Physiology, and General Chemistry.*

At the end of the second year: Medical Chemistry, Materia Medica, and Pathological Anatomy.

At the end of the third year: Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

The regular examinations are held at the end of each year in June; and a week before the opening of the School in September, on the studies of the preceding year.†

No student shall be allowed to anticipate the examinations in the regular course of studies of his year, except by special permission of the Faculty. No student shall be allowed to present himself for examination in any branch, without notifying the Dean, by letter, that he intends to do so, one month before the time when the examination is to be held.

The examinations are conducted mainly in writing. No student will receive his degree until he has passed a satisfactory examination in all the above-mentioned subjects, and presented a certificate from the Demonstrator of Anatomy that he has satisfactorily dissected the three parts of the body. Those who fail in any subject may present themselves in that subject again, at the next regular examination. The regular examinations for the year 1879–80 will begin June 14th and September 27th.

The following is the order of the examinations held in June: —

June 14th. Monday, Surgery and Clinical Surgery; Tuesday, Theory and Practice; Wednesday, Clinical Medicine; Thursday, Therapeutics; Friday, Obstetrics; Saturday, Pathological Anatomy; Monday, 21st, Medical Chemistry; Tuesday, Materia Medica; Wednesday, Anatomy; Thursday, General Chemistry; Saturday, Physiology.

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* See foot-note on page 12.

† The June examination is for those only who are members of the School at the time, and for those entitled to apply for the degree.

The examinations for admission are held at the Medical School, in June and September, on the Monday preceding the last Wednesday in those months, at 10 A.M.

DIVISION OF STUDENTS.

Students are divided into three classes, according to their time of study and proficiency.

Students may be admitted to advanced standing in the regular course; but all who apply for admission into the second or third class must pass an examination at the beginning of the year in the branches already pursued by the class to which they seek admission, and furnish a satisfactory * certificate of time spent in medical studies. No student shall advance with his class, or be admitted to advanced standing, until he has passed the required examination in the studies of the previous year, or a majority of them; nor shall he become a member of the third class until he has passed all the examinations of the first, in addition to a majority of those of the second year.

Students who do not intend to offer themselves for a degree will, however, be received for any portion of the course.

Any student may obtain, without an examination, a certificate of his period of connection with the School.

REQUIREMENTS FOR A DEGREE.

Every candidate must be twenty-one years of age, and of good moral character; must give evidence of having studied medicine three full years; have spent at least one continuous year at this School; have presented a satisfactory thesis; and have passed the required examinations.

Theses of conspicuous merit are mentioned with honor, or read at the University Commencement.

The degree of Master of Arts is open to graduates of the School who are also Bachelors of Arts of Harvard College, and to Bachelors of Arts of other colleges who shall be recommended by the Faculty of Harvard College. Candidates must pursue an approved course of study in Medicine for at least one year after taking the degree of Doctor of Medicine.

LIBRARIES.

The library at the Medical College is open to the student, on the deposit of five dollars, to be refunded to him when he may desire, after returning all books.

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* Certificates from teachers who practise any peculiar or exclusive system of medicine are not accepted.

The College Library at Cambridge is open to the students of the Medical School.

The Boston Public Library, which contains a large collection of medical books, may also be used by students recommended by the Dean.

BOYLSTON MEDICAL SOCIETY.

This Society, composed of medical students, meets at stated intervals, for the discussion of medical topics, and is presided over by a physician selected by the members. Prizes, in money or books, are awarded annually to the writers of essays judged worthy of such distinction by a committee of physicians selected for that purpose by the Society.

FEES AND EXPENSES.

For matriculation, five dollars ; for a year, two hundred dollars, (if in two payments, at the first, one hundred and twenty dollars ; at the second eighty dollars) ; for a half-year alone, one hundred and twenty dollars ; for graduation, thirty dollars. Of students who do not pay in advance, a bond for $300, executed by two sufficient bondsmen, one of whom must be a citizen of Massachusetts, is required. A copy of such bond will be sent, on application, to the Secretary of the Faculty. To students depositing these bonds, term-bills will be presented at the end of the first term, to be paid within two weeks ; and also one week or more before Commencement, to be paid on or before the beginning of the next academic year. Such students shall be held responsible for the payment of fees until they shall have notified the Dean of their intention to withdraw from the School, and have subsequently received their bond from the Treasurer. No degree can be conferred till all dues to the School are discharged. The student's general expenses may be reduced, in accordance with his means, to the standard which prevails in other cities. The janitor of the Medical College will always have a list of boarding-houses in the vicinity of the College building, varying in their rates of charges from five to ten dollars a week.

PECUNIARY AID.

Four yearly scholarships have been established, of the value of $200 each, open to meritorious students who have been at the School for one or two years. Only those needing assistance are expected to apply ; and from such those holding the highest rank will have the preference.

Two assistants in the Chemical Laboratory are appointed annually from such deserving students as need aid. Students holding this position are exempt from the payment of the fee for tuition during their term of service.

COURSE OF STUDY FOR GRADUATES.

For the purpose of affording to those who are already graduates in medicine additional facilities for pursuing clinical, laboratory, and other studies, for which they had not previously found leisure, in such subjects as may specially interest them, and as a substitute in part for the opportunities heretofore sought for in Europe, the Faculty have established a post-graduate course, of which the following is a programme. The fee in each branch is for a single half-year.

Histology. — The various methods of examining the different tissues are employed, and opportunities for original research are offered. Fee, twenty dollars.

Physiology. — Opportunities for original investigation in the Physiological Laboratory. Fee, thirty dollars.

Medical Chemistry. — Practical instruction in the Chemical Laboratory, in the analysis of the urine and other animal fluids in health and disease, and of poisons; examination of blood-stains and other objects connected with medico-legal investigations, with the application of the microscope to these processes. General analysis, also, if desired. Laboratory-fee, thirty dollars.

Pathological Anatomy. — Practical instruction in Pathological Histology and the examination of specimens in the Microscopical Laboratory; and opportunity for witnessing and making autopsies. Fee, twenty dollars.

Surgery. — A practical course of operative surgery, and instruction in the application of bandages and apparatus. Fee, twenty-five dollars.

Laryngology is practically taught, and diseases of the larynx demonstrated by the aid of the oxyhydrogen light. Fee, twenty dollars.

Ophthalmology. — Clinical instruction, lectures on diseases of the eye, and demonstrations of the methods of performing operations. Exercises in the use of the ophthalmoscope. Fee, twenty-five dollars.

Otology. — Lectures and clinical instruction on diseases of the ear. Fee, fifteen dollars.

Dermatology. — Clinical instruction in diseases of the skin, illustrated by patients in this department of the Massachusetts General Hospital. Lectures. Fee, twenty-five dollars.

Syphilis. — Clinical instruction at the Boston Dispensary, and at the City Hospital (second half-year). Fee, fifteen dollars.

Diseases of the Nervous System. — Practical illustrations of the application of various forms of electricity. Lectures. Fee, fifteen dollars.

Gynaecology. — Clinical instruction in diseases of women. Fee, ten dollars.

Obstetrics. — Cases supplied. A course of operative obstetrics. Fee, twenty dollars.

Those pursuing this course may elect the studies to which they will give their attention, and allot the time they will devote to each. They will be exempt, unless at their option, from examinations, and may obtain a certificate of attendance on this course of advanced study. On payment of the full fee for the course, they will have the privilege of attending any of the other exercises of the Medical School, the use of its laboratories and library, and all other rights accorded by the University.

Graduates of other medical schools may obtain the degree of M.D. at this University, after a year's study in the graduates' course. The required examinations may be passed in such order as is desired, but only at the stated seasons.

The fee for a year is	$200
" for a half-year	120

For any of the special courses, such fees as are above specified.

For further information or catalogues, address Dr. R. H. Fitz, *Secretary*, 18 Arlington Street, Boston, Mass.

☞ The Medical College is on North Grove Street, Boston.

EXAMINATION PAPERS.

(*June Examination*, 1879.)

First Year's Studies.

ANATOMY — Professor Holmes.

Describe: —

1. The tissues entering into the structure of an articulation.
2. The process of ossification.
3. The radius.
4. The os calcis.
5. The articulations of the pelvis.
6. The ankle-joint.
7. The trapezius.
8. The rectus abdominis.
9. The pectinæus.
10. The facial artery.
11. The axillary artery.
12. The internal iliac artery.
13. The third pair of cerebral nerves.
14. The spinal accessory nerve.
15. The great splanchnic nerve.
16. The coats of the eye.
17. The pancreas.
18. The glands of the intestine.
19. The inguinal canal.
20. The uterus.

PHYSIOLOGY. — Professor Bowditch.

1. What causes the sensation of hunger?

2. What nutriments are contained in a ham sandwich, and how are they digested and absorbed?

3. Why is the mouth naturally closed in deglutition?

4. What is the weight of the blood compared to that of the whole body, and how is this weight determined?

5. How does the elasticity of the arteries affect the flow of the blood?

6. Describe the coloring matters of the blood and of the bile, with their relation to each other.

7. What causes the impulse of the heart, and where is it most distinctly felt?

8. How does an examination of the excretions show the amount of nitrogenous and non-nitrogenous substances undergoing decomposition in the body?

9. What proof is there of the existence of muscular as distinct from nervous irritability?

10. What is the origin of animal fat?

11. Describe the innervation of the larynx.

12. How may the heat-production of the body be increased?

13. Describe the mechanism of the pancreatic secretion.

14. How may the reflex irritability of the spinal cord be diminished?

15. If after looking intently at a red object for some time the eyes be turned upon a green object, the color of the latter appears more saturated than pure spectral green under ordinary circumstances. How is this explained in accordance with the Young-Helmholtz theory of vision?

16. What three motor nerves are brought into action in mastication?

17. What is the effect of section of the sciatic nerve on the size of the blood-vessels of the leg?

18. Why is the air of a crowded room unfitted for respiration?

19. What are the functions of the tubercula quadrigemina?

20. Describe the formation of the allantois.

GENERAL CHEMISTRY. — Instructor Hills.

[In addition to the following questions, a written report of the analysis of a solution containing inorganic substances was required.]

1. Define an acid; a base; a basic salt. Give examples.

2. What is the symbol of a substance whose vapor density is 59.75, and whose percentage composition is, —

$$C = 10.04, \quad H = 0.83, \quad Cl = 89.13?$$

3. Write the reactions by which hydrogen, carbon dioxide, chlorine, nitrogen monoxide, and nitric acid may be made.

4. Explain the bleaching action of chlorine; of sulphur dioxide.

5. Manufacture, properties, and uses of phosphorus? Compare common and red phosphorus?

6. Describe the process of electroplating.

7. Composition, mode of preparation, properties, and uses of hydrochloric acid, silver nitrate, and corrosive sublimate?

8. Chloroform, ether, glycerine?

9. Define glucosides. Mention the more important ones.

10. General chemistry of the alkaloids?

11. Why acidify before testing for chromium, in the Iron Group, with $Pb\overline{A}_2$? Why use $H\overline{A}$?

12. Why add NH_4HO and NH_4Cl, before testing for Mg with Na_2HPO_4?

13. Why add NH_4HO, before testing for Ca with $(NH_4)_2C_2O_4$?

14. How detect $H_2\overline{O}$ and $H_2\overline{T}$ in the presence of each other?

Second Year's Studies.

MEDICAL CHEMISTRY. — Professor Wood.

[In addition to the following questions, a written report of the analysis of a specimen of urine, and of a mixed organic and inorganic poison, was required.]

1. What variations in the amount of urine occur in the various renal diseases?

2. Under what conditions may we find a large relative excess of indican? Describe the formation of indican in the body.

3. Character of the urine in acute peritonitis?

4. Method of estimating the amount of sugar? Precautions necessary in performing Trommer's test for sugar?

5. What inferences may be drawn from the following urines? Give your reasons for them:

(*a*) Highly colored. Acid. Sp. Gr. = 1030. Amount of urine = 1020 cub. cent.

Uph. = n. $\overset{+}{\underset{}{U}}$. = much +. Cl. = n. E. P. = n.

Ind. = n. $\overline{U}$. = much +. Sf. = n. A. P. = sl. +.

Alb. = slight trace.

Bile and sugar absent.

Sediment = much uric acid, numerous hyaline casts, many of which have some renal epithelium, and blood adherent; considerable blood and renal epithelium.

(*b*) Pale. Acid. Sp. Gr. = 1015. Amount of urine = 1350 cub. cent.

Uph. = —. $\overset{+}{\underset{}{U}}$. = —. Cl. = n. E. P. = —.

Ind. = sl. —. $\overline{U}$. = +. Sf. = n. A. P. = n.

Alb. = 1 %.

Bile and sugar absent.

Total urea = 22.6 grms., Cl. = 6 grms., P_2O_5 = 1.2 grms., Album. = 14.2 grms.

Sediment = numerous hyaline, granular (coarse and fine), fatty and epithelial casts, considerable fatty renal epithelium, little pus, blood and bladder epithelium.

6. What different appearances may red blood globules present in the urinary sediment?

7. How detect the presence of $Ca\overline{O}$, $MgNH_4PO_4$, $H_2\overline{U}$ and cystine in urinary sediments and calculi?

8. What inorganic poisons, on being heated, volatilize without charring? How distinguish between them?

9. What are the duties of the physician, when called to a case of poisoning?

10. Given a white powder — How determine, by ready tests, whether it consists of $H_2\overline{O}$, As_2O_3, $KSbO\overline{T}$, $HgCl_2$, Hg_2Cl_2, sulphate of morphia, or sulphate of strychnia?

11. Symptoms caused by arsenical wall-paper?

12. Principal points of difference between cases of poisoning by arsenic, antimony, and digitalis?

MATERIA MEDICA. — Instructor Markoe.

I. Define and describe: 1. Essential oil. 2. Resin. 3. Gum. 4. Gum resin. 5. Balsam. 6. Oleo-resin: (*a*) natural; (*b*) artificial. Give two examples of drugs belonging to each of the classes named.

II. Define, give the botanical and geographical sources, active principles, important preparations, and doses of Conium fruit.

III. Myrrh.

IV. Opium.

V. Gentian.

VI. Rhubarb.

VII. Cinchona.

VIII. 1. Name five important vegetable astringents. 2. Give the characteristic properties, uses, and doses of (*a*) Tannic acid; (*b*) Gallic acid.

IX. Give the source and dose of, 1. Aconitia. 2. Atropia. 3. Santonin. 4. Strychnia. 5. Caffein. 6. Elaterium. 7. Citric acid. 8. Guarana. 9. Salicin. 10. Pilocarpina.

X. Name the dose of, 1. Fluid extract of ergot. 2. Tincture of veratrum viride. 3. Corrosive chloride of mercury. 4. Sulphate of iron. 5. Tincture of the chloride of iron. 6. Fowler's Solution of Arsenic. 7. Extract of belladonna. 8. Ipecac. (*a*) expectorant; (*b*) emetic. 9. Resin of podophyllum. 10. Camphor.

The doses to be given in the metric system only.

PATHOLOGICAL ANATOMY. — Professor Fitz.

1. What is meant by colloid degeneration?

2. The essential differences between the inflammation of a mucous membrane and of a serous membrane.

3. In what way does the organization of a thrombus take place?

4. The main resemblances and differences between sarcoma and cancer?

5. The characteristics of acute inflammation of the brain.

6. The appearances of sclerosis of the spinal cord, and their cause.

7. The alterations in chronic endaortitis and their relation to each other.

8. The appearances of diphtheritic endocarditis.

9. The causes and appearances of pulmonary atelectasis.

10. The appearances in the lung most frequently mistaken for tubercle.

11. The causes of abscess of the lung.

12. The appearances of tubercular ulcers of the intestine.

13. The relation of dysentery to anatomical changes in the intestine.

14. The causes of a diminished density of the spleen.

15. The method of determining the origin of jaundice.

16. The significance of a lobulated liver, and the cause of this deformity.

17. The changes in the kidney resulting from chronic mitral stenosis.

18. The possible changes in calculous nephritis.

19. The appearances of diphtheritic endometritis.

20. The conditions which may be confounded with interstitial pregnancy, and the means of making a differential diagnosis.

Third Year's Studies.

THERAPEUTICS. — Professor Edes.

1. Antipyretic action of aconite, digitalis, salicylate of soda, quinia, and cold baths.

2. Belladonna and jaborandi, their physiology and therapeutics.

3. Chloral, bromide of potassium, and strychnia; their action on the spinal cord and nerves, their therapeutic applications.

4. Mercury and iodine.

5. Write (in metric system) four prescriptions for cathartics, of at least two ingredients each (vehicle not included), indicate the kind of cases in which each is to be used.

OBSTETRICS. — Professor Reynolds.

1. Describe accurately the anatomical relations of the peritoneum to the vagina, and those of the vagina to the cervix uteri.

2. At what point in a normal pelvic canal is the bony resistance to a body, driven through that canal, greatest? [*Or:* In a normal pelvis, through what points does that plane of the pelvic canal which has the smallest average diameter pass?]

3. In a primipara, three months advanced, how has pregnancy altered the resistance of the uterine neck, its position, and its direction?

4. In a presentation of the vertex, with good flexion of the head; first position; anterior variety ("left occipito-cotyloid"): at or near what point of the mother's pelvis will the posterior ear be felt? Which ear will be posterior?

5. Give the position of the caput succedaneum in each of the following instances: (*a*) presentation of vertex, head well flexed; (*b*) the same presentation, flexion so far lost that the frontal end of the vertex descends lower in the pelvis than the occipital end, and is itself rotated to the arch; (*c*) presentation of the face; (*d*) presentation of the brow; (*e*) presentation of the pelvic extremity (the analogous swelling). The presenting part is, in each case, in first (*i.e.*, in any variety of left) position.

6. Give the differential diagnosis between true puerperal eclampsia and a hysteric convulsion, occurring in a pregnant woman.

7. What is meant by "concealed accidental hæmorrhage"? Give the indications for treating this accident, and state how they are to be carried out.

8. Give the details of the operation of bimanual version. What choice has the *accoucheur* as to the new presentation, and what facts guide him in deciding that point?

9. Describe in detail the method of effecting delivery by decapitation, using at the appropriate moments both the decapitating hook and the decapitating knife. State the indications for this operation.

10. Describe the position, size, shape, structure, and importance of the female perineum. Give the different degrees of laceration which may occur during labor, and the results to which want of integrity of this body may lead.

SURGERY. — Professor Bigelow.

1. Enumerate the symptoms, and give the treatment of secondary syphilis.
2. Ulcers of the tongue, differential diagnosis and treatment.
3. Retention of urine, its causes and treatment.
4. Fractures of the elbow.
5. Relation of cancer to epithelial disease.
6. Hydrocele, differential diagnosis.
7. Ligatures of the subclavian artery.
8. In what cases is tracheotomy most likely to succeed, and in wh[illegible] [not?
9. Treatment of burns.
10. Dislocations of hip.

CLINICAL SURGERY. — Professor Cheever.

[In addition to the following questions, the clinical report of a surgical case is required, to be presented on or before June 1.]

[One hour and a half is assigned for answering the following questions.]

Case I. — A moderately healthy laboring man, of temperate habits, and forty-five years of age, while unloading flour from a wagon, received the whole weight of a barrel, which slipped, upon his left leg, two inches above the ankle. There resulted a lacerated wound over the tibia, two inches long, and a compound and somewhat comminuted fracture of that bone. The fibula also was broken, but not comminuted; but this fracture also

communicated with the air through the opening above mentioned. The muscles were considerably lacerated. A venous hæmorrhage, which could be controlled, came from the wound. The anterior and posterior tibial arteries both pulsated. The foot was warm; and sensation was but little impaired.

a. What would you advise?

b. What would be the risks after amputation?

c. What would be the dangers without amputation?

d. If not amputated, how would you treat it?

e. If not amputated, how long would it probably take to get well?

Case II. — A girl of ten years, sick and emaciated, was brought to the Hospital with nearly two feet of the small intestine lying out on the skin of the abdomen. The bowel had been out two hours, but was not strangulated. It was congested, and glued together with lymph. The opening into the peritoneal cavity was two inches to the right of the navel, and was rounded, with red, thin edges, and would admit a finger, easily. There was no history or appearance of an accident, a stab, or a violent rupture.

There was an old sinus discharging near the posterior, superior spine of the ilium. There was an angular curvature of the spine. The girl was dull in intellect, and could give no history. On these data, please answer:

a. Treatment?

b. Diagnosis?

c. Prognosis?

THEORY AND PRACTICE. — Professor Minot.

1. What indications for diagnosis may be obtained from the position or attitude of a patient?

2. Mention some of the ways in which the color of the skin is altered by internal disease.

3. What are the symptoms and the diagnosis of locomotor ataxia?

4. What is the treatment of acute rheumatism, and of its cardiac complications?

5. What are the symptoms and the diagnosis of gastric ulcer?

6. Give some account of chlorosis.

7. What are the symptoms and the treatment of cholera infantum?

8. What are some of the principal symptoms of uraemia?

9. Of what diseases or conditions is uterine hemorrhage indicative?

10. Give the diagnosis of cancer of the liver.

CLINICAL MEDICINE. — Professor Ellis.

Give the differential diagnosis, the prognosis, and the treatment of as many of these cases as the time will allow, discussing them in the order in which they are arranged. Assume that symptoms not mentioned are wanting; but as omissions, intentional or not, may occur, state them, if essential. Success will depend more upon the quality than the quantity of the work. The intelligent discussion of the cases will have more weight than a hasty and inconclusive though correct diagnosis.

Case 1.— A nervous, feeble boy, æt. six, with a doubtful family history, and poor appetite, began, a month before he was seen, to grow peevish, to cling to his mother in an unusual way, and complained occasionally of headache, though he went to school every day. After these symptoms had lasted a fortnight, he started for school, but returned crying with pain in the forehead, which, in three days, became so severe as to confine him to his bed. This continued incessant until three or four days before death, when his mind began to grow dull. In the mean time it had been noticed that the right arm was weak, and that he used the right side less than the other, particularly during the last week. Vomited once only, at the end of the first week. Finally became drowsy, the mind wandered, and he was unconscious much of the time. Slight spasmodic action, followed by marked convulsions, in the last two days. Respiration irregular towards the close; at times 40. Pulse rose from 66 immediately after a convulsion to 90, and increased in frequency until it reached 140. Temperature 102⅘. Bowels opened by medicine daily. Urine dark-colored; near the close involuntary. Lost some flesh. Eyes rolled wildly. Right pupil more dilated than left, but both dilated and uninfluenced by light.

Case 2. — A very active, intelligent and healthy man, twenty-nine years old, after working all summer many hours daily upon some invention was attacked, while walking in the street, in November, with vertigo, which lasted a few minutes only, but recurred in December, still more severely in the latter part of March, and almost daily from that time till May 1st. No unconsciousness. Has also had a strange sensation in the back of his neck, which, though not precisely a pain, made him feel that he should "go all to pieces." This was generally preceded by an irrepressible flood of tears, in which the face assumed the expression of grief, though there was no emotion nor depression of spirits. Such was perhaps excited by talking some time or by fatigue. Always feels better after such a crisis, which lasts ten or fifteen minutes. Disagreeable sounds in the ears also with the vertigo. Eye-sight perfect. No change in motion or sensation. Mind clear and active except in the attacks described. Sleep sound. Appetite, though not as good as usual, sufficiently so. Urine normal, though diminished at first. Pulse usually about 90, but as low as 60 in the ill turns. Is up and dressed and has gained flesh.

Case 3. — A clerk, thirty-four years old, who had been well, with the exception of vague trouble about the heart when a child, was attacked, six weeks before he was seen, with a chill and pain in the head. From that time the chills and fever recurred irregularly once a week, once every two or three days, but never more than once a day. Early in the illness, a tender spot was noticed in the elbow joint, and later another under the angle of the lower jaw. Perspiration excessive at times. Some palpitation

during the last week, when a murmur was noticed in the cardiac region, but the rapidity of the pulsation prevented its localization. At this time a little pain in the left side of the chest. Marked dyspnœa during this week, but not before. No proper appetite, but has taken nourishment freely. Two examinations of the urine showed a s. g. of 1008 and 1015 and some casts. Quantity, three to four pints in twenty-four hours. Pulse not far from 90, till the last week, when it rose to 100 and 120. Temperature 102 to 103, rising to 104 in a chill. Rapid loss of flesh within the last week. Sat up till this time. The dyspnœa increased to such an extent that life was in danger, when, suddenly, the pulse ceased in the left wrist, and he was relieved. On examination at the last visit, there was marked dulness over the middle lobe and the antero-inferior part of the lower, but the patient lay so inclined towards the right, that a complete examination was impossible, and he was too weak to be moved. Fine crepitus and bronchial respiration over the same region. Respiration about 50. No cough. No morbid cardiac sound, but pulsation very feeble. Slight swelling of feet and hands.

Case 4.—A remarkably healthy, energetic woman, forty-nine years old, who had never been ill before, took by mistake last August a mouthful of diluted aqua ammoniæ (one drachm to four ounces), which was followed by a burning sensation in the stomach. In September and October noticed distress in the upper part of the sternal region, perhaps a few minutes, perhaps an hour or two after eating or taking even water. In about six weeks she began to vomit irregularly, food taken through the day being at times retained till midnight, though this was exceptional. But about Christmas time she vomited almost every day; then had several attacks in which larger quantities of fluid were rejected than had been taken, these lasting perhaps a week, separated by intervals of two to four weeks. Very great acidity, so that the vomitus scented the room. Neither vomiting nor distress when she had used milk or milk and lime water alone. Vomitus of a light green or whitish color with masses like starch, and a few streaks of blood at one time. Tongue very red and denuded of epithelium, from October to January, but when seen, on April 13th, only slightly reddened. Appetite good. Thirst great. Bowels constipated, but relieved by medicine. Urine normal. Is able to go down stairs and ride out. Has gained much recently, when not vomiting. Has lost fifty pounds of flesh. No fever. Pulse 80; not very strong. Looks bright. Lips red. Nothing found on examination.

PAPERS USED AT THE EXAMINATION FOR ADMISSION, JUNE, 1878.

LATIN.

TRANSLATE: —

Quamquam hæc omnia, Quirites, ita sunt a me administrata, ut deorum immortalium nutu atque consilio et gesta et provisa esse videantur; idque cum coniectura consequi possumus, quod vix videtur humani consili tantarum rerum gubernatio esse potuisse, tum vero ita praesentes his temporibus opem et auxilium nobis tulerunt, ut eos paene oculis videre possemus: nam ut illa omittam, visas nocturno tempore ab occidente faces ardoremque caeli, ut fulminum iactus, ut terrae motus relinquam, ut omittam cetera, quae tam multa nobis consulibus facta sunt, ut haec, quae nunc fiunt, canere di immortales viderentur, hoc certe, quod sum dicturus, neque praetermittendum neque relinquendum est.

Quamobrem, Quirites, quoniam ad omnia pulvinaria supplicatio decreta est, celebratote illos dies cum coniugibus ac liberis vestris. Nam multi saepe honores dis immortalibus iusti habiti sunt ac debiti, sed profecto iustiores numquam: erepti enim estis ex crudelissimo ac miserrimo interitu, erepti sine caede, sine sanguine, sine exercitu, sine dimicatione; togati me uno togato duce et imperatore vicistis.

OR: —

Tali modo re gesta recentibus proelii vestigiis ingressus Caesar, cum victos tanta calamitate existimaret hostes nuntio accepto locum castrorum relicturos, quae non longius ab ea caede abesse plus minus octo milibus dicebantur, tametsi flumine impeditum transitum videbat, tamen exercitu traducto progreditur. At Bellovaci reliquaeque civitates repente ex fuga paucis atque his vulneratis receptis, qui silvarum beneficio casum evitaverant, omnibus adversis, cognita calamitate, interfecto Correo, amisso equitatu et fortissimis peditibus, cum adventare Romanos existimarent, concilio repente cantu tubarum convocato conclamant, legati obsidesque ad Caesarem mittantur.

Brundisini Pompeianorum militum iniuriis atque ipsius Pompei contumeliis permoti Caesaris rebus favebant. Itaque cognita Pompei profectione concursantibus illis atque in ea re occupatis vulgo ex tectis significabant. Per quos re cognita Caesar scalas parari militesque armari iubet, ne quam rei gerendae facultatem dimittat. Pompeius sub noctem naves solvit. Qui erant in muro custodiae causa collocati, eo signo, quod convenerat, revocantur notisque itineribus ad naves decurrunt. Milites positis scalis muros ascendunt, sed moniti a Brundisinis, ut vallum caecum fossasque caveant, subsistunt et longo itinere ab his circumducti ad portum perveniunt duasque naves cum militibus, quae ad moles Caesaris adhaeserant, scaphis lintribusque reprehendunt, reprehensas excipiunt.

OR: —

Extemplo Libyae magnas it Fama per urbes:
Fama, malum, qua non aliud velocius ullum;
Mobilitate viget, virisque adquirit eundo;
Parva metu primo; mox sese attollit in auras.

Ingrediturque solo, et caput inter nubila condit.
Illam Terra parens, ira irritata deorum,
Extremam, ut perhibent, Coeo Enceladoque sororem
Progenuit, pedibus celerem et pernicibus alis;
Monstrum horrendum, ingens, cui, quot sunt corpore plumae,
Tot vigiles oculi subter, mirabile dictu,
Tot linguae, totidem ora sonant, tot subrigit auris.
Nocte volat caeli medio terraeque per umbram,
Stridens, nec dulci declinat lumina somno;
Luce sedet custos aut summi culmine tecti,
Turribus aut altis, et magnas territat urbes
Tam ficti pravique tenax, quam nuntia veri.

Or:—

Hic viridem Aeneas frondenti ex ilice metam
Constituit signum nautis pater, unde reverti
Scirent et longos ubi circumflectere cursus.
Tum loca sorte legunt, ipsique in puppibus auro
Ductores longe effulgent ostroque decori;
Cetera populea velatur fronde iuventus
Nudatosque humeros oleo perfusa nitescit.
Considunt transtris, intentaque bracchia remis;
Intenti exspectant signum, exsultantiaque haurit
Corda pavor pulsans laudumque arrecta cupido.
Inde, ubi clara dedit sonitum tuba, finibus omnes,
Haud mora, prosiluere suis; ferit aethera clamor
Nauticus, adductis spumant freta versa lacertis.
Infindunt pariter sulcos, totumque dehiscit
Convolsum remis rostrisque tridentibus aequor.

FRENCH.

Le petit garçon d'un meunier s'approcha trop près d'un ruisseau et tomba dans l'eau. Le maréchal, qui demeurait de l'autre côté du ruisseau, le vit, s'élança dans l'eau, retira l'enfant et le porta à son père.

Un an plus tard, le feu prit pendant la nuit dans la maison du maréchal. La maison était déjà en flammes, avant que le maréchal le sût. Il se sauva avec sa femme et ses enfants. Seulement, dans le trouble, on oublia d'enlever la plus petite des filles.

L'enfant se mit à crier du milieu des flammes, mais personne n'avait le courage de s'y exposer. Tout à coup le meunier paraît, s'élance dans les flammes, rapporte heureusement l'enfant et le remet au maréchal en lui disant: Dieu soit loué de ce qu'il m'a donné l'occasion de vous témoigner ma reconnaissance; vous avez retiré mon fils de l'eau; moi, avec le secours de Dieu, j'ai arraché votre fille aux flammes.

Maitre corbeau, sur un arbre perché,
Tenait en son bec un fromage.
Maître renard, par l'odeur alléché,
Lui tint à peu prés ce langage:
Hé! bonjour, monsieur du corbeau!
Que vous êtes joli! que vous me semblez beau!
Sans mentir, si votre ramage
Se rapporte à votre plumage,

Vous êtes la phénix des hôtes de ces bois.
A ces mots, le corbeau ne se sent pas de joie ;
Et pour montrer sa belle voix,
Il ouvre un large bec, laisse tomber sa proie.
Le renard s'en saisit, et dit : Mon bon monsieur,
Apprenez que tout flatteur
Vit aux dépens de celui qui l'écoute :
Cette leçon vaut bien un fromage, sans doute.
Le corbeau, honteux et confus,
Jura, mais un peu tard, qu'on ne l'y prendrait plus.

GERMAN.

TRANSLATE INTO ENGLISH :—

1. Es war einmal ein Müller, der war arm, aber er hatte eine schöne Tochter. Nun traf es sich, daß er mit dem Könige zu sprechen kam, und um sich ein Ansehen zu geben, sagte er zu ihm: „ich habe eine Tochter, die kann Stroh zu Gold spinnen." Der König sprach zum Müller: „das ist eine Kunst die mir wohl gefällt; wenn deine Tochter so geschickt ist, wie du sagst, so bring sie morgen in mein Schloß, da will ich sie auf die Probe stellen." Als das Mädchen kam, führte er es in eine Kammer, die ganz voll Stroh lag, gab ihr Rad und Haspel und sprach: „jetzt mach' dich an die Arbeit, und wenn du diese Nacht durch bis morgen früh dieses Stroh nicht zu Gold versponnen hast, so mußt du sterben." Darauf schloß er die Kammer selbst zu, und sie blieb allein darin.

2. Es war einmal ein kleiner Knabe, der hatte sich erkältet ; er war ausgegangen und hatte nasse Füsse bekommen. Niemand konnte begreifen, woher er sie erhalten hatte, denn es war ganz trockenes Wetter. Nun entkleidete ihn seine Mutter, brachte ihn zu Bette und ließ die Theemaschine herein bringen, um ihm eine gute Tasse Fliederthee zu bereiten, denn der Thee erwärmt. Zu gleicher Zeit kam auch der alte, freundliche Mann zur Thüre herein, der ganz oben im Hause wohnte und allein lebte ; denn er hatte weder Frau noch Kinder, liebte aber die Kinder und wußte so viele Märchen und Geschichten zu erzählen, daß es eine Lust war.

PHYSICS.

1. Mention three of the most universal forces of nature. What are their effects ?
2. Define the centre of gravity of a body. Describe a simple practical way of finding it.
3. In what way is the pressure exerted by a liquid connected with the density of the liquid ?
4. What is the principle of the conservation of energy ?
5. Why does sound travel faster in warm than in cold air ?
6. What is the general law of expansion of bodies under the action of heat ? Give a familiar example of an exception to this law.
7. What is meant by conduction and convection of heat ?
8. Explain total internal reflection. What is the critical angle of a medium ?
9. Explain the dispersion of light by a prism. Give the seven principal colors of the spectrum in the order of refrangibility.
10. What is the object of a galvanometer ? Give the construction and mode of action of a single-needle galvanometer.