SEVENTH ANNUAL
CATALOGUE

Throop Polytechnic Institute

Pasadena, California
1898=1899

SEVENTH ANNUAL CATALOGUE

....OF....

Throop Polytechnic Institute

...AND...

MANUAL TRAINING SCHOOL

PASADENA, CALIFORNIA

1898-1899

1898
Published by the Institute

CALENDAR

1898–1899

Meeting of Board of Trustees .. .. Tuesday, September 13, 1898
Entrance Examinations .. .. Monday and Tuesday, September 19, 20, 1898
Fall Term begins .. .. Wednesday, September 21, 1898
Thanksgiving Vacation .. .. Thursday and Friday, November 24, 25, 1898
Founder's Day .. .. Thursday, December 8, 1898
Meeting of Board of Trustees .. .. Tuesday, December 13, 1898
Fall Terms ends .. .. Friday, December 23, 1898

CHRISTMAS VACATION

Winter Terms begins .. .. Tuesday, January 3, 1899
Washington's Birthday .. .. Wednesday, February 22, 1899
Meeting of Board of Trustees .. .. Tuesday, March 14, 1899
Winter Terms ends .. .. Wednesday, March 22, 1899

SPRING VACATION

Spring Terms begins .. .. Wednesday March 29, 1899
Memorial Day .. .. Tuesday, May 30, 1899
Baccalaureate Sunday .. .. June 11, 1899
Annual Meeting Board of Trustees .. .. Tuesday, June 13, 1899
Graduating Exercises, Sloyd Grammar School, Wednesday morning, June 14, 1899
Commencement .. .. Wednesday evening, June 14, 1899
Alumni Reunion .. .. Thursday, June 15, 1899
Exhibition Day and End of Term .. .. Friday, June 16, 1899

FOUNDER

HON. AMOS G. THROOP

Born at De Ruyter, New York, July 22, 1811,
Died at Pasadena, Cal., March 22, 1894

BOARD OF TRUSTEES

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OFFICERS OF INSTRUCTION AND GOVERNMENT

1898-9

WALTER A. EDWARDS, President

German and Ancient Languages

A. B. and A. M., Knox College, Galesburg, Ill.; Instructor in Latin and Greek, High School, Peoria, Ill., 1883-6; Student Universities of Berlin and Tübingen, 1886–9; Principal High School, Decatur, Ill., 1889-90; Principal High School, Rockford, Ill., 1891-5; Instructor Latin and Greek, High School, Pasadena, Cal., 1895-6; Instructor History and Greek, Throop Polytechnic Institute, 1896-7.

356 W. California St.

ARTHUR L. HAMILTON

Mathematics; Registrar

Washington, Iowa, High School, 1878; Iowa State College, Ames, 1880-1; Principal Ainsworth, Iowa, High School, 1882-3; Law Student, 1884-5; Principal Garfield Grammar School, Pasadena, Cal., 1885-93; Instructor in Mathematics, Throop Polytechnic Institute, 1894-

836 N. Raymond Avenue

MRS. JENNIE COLEMAN

English and History

Instructor in Latin and English, High School, Rochester, N. Y., 1867-8; Principal Grammar School, Lakeport, Cal., 1884-6; Member County Board of Education, Lake Co., Cal., 1883-7; Vice-Principal High School, Pasadena, Cal., 1888-96; Instructor in English and History, Throop Polytechnic Institute, 1896-; Holder of California Life Diploma.

472 Benefit Court

WALLACE K. GAYLORD

Chemistry and Assaying; Librarian

S. B. Massachusetts Institute of Technology, 1893; Instructor in Chemistry and Mathematics, Throop Polytechnic Institute 1893-; Member the American Chemical Society; Member of the German Chemical Society.

146 Terrace Drive

BONNIE BUNNELLE

Principal Sloyd Grammar School

Student in Normal Training School under Prof. P. W. Search, Sidney, Ohio, 1888–91; Student Pueblo Industrial School; Pueblo, Colo., 1892–4; Instructor Public School, Pueblo, Colo., 1891–4; Principal Sloyd Grammar School, Throop Polytechnic Institute, 1894-

610 Summit Avenue

ARTHUR H. CHAMBERLAIN

Pedagogy and Sloyd

Graduated Cook County Normal School, 1892; Teacher in the Public Schools of Cook County, Ill., 1892-4; Principal W. Harvey Public Schools, 1893-4; Student at Throop Polytechnic Institute, 1895-6; Instructor Pedagogy and Sloyd, Throop Polytechnic Institute, 1896–

377 N. Los Robles Avenue

EDWARD W. CLAYPOLE

Geology and Biology; Curator of Museum

B. A. and D. Sc. of the University of London; Fellow of the Geological Societies of London, Edinburg, and America; Professor of Natural Science at Antioch College, Ohio, 1873-81; Palaeontologist to the Second Geological Survey of Pennsylvania, and Author of Report F2; Professor of Natural Science at Buchtel College, Akron, Ohio, 1883–98; Instructor Geology and Biology, Throop Polytechnic Institute, 1898-

HERBERT B. PERKINS

Mechanical Drawing and Higher Mathematics

S. B., Massachusetts Institute of Technology, 1874; Professor of Mathematics and Astronomy, Lawrence University, 1878–80; and 1882-86; Student of Mathematics, Physics and Astronomy, University and Polytechnikum, Munich, Germany, and University of Geneva, Switzerland, 1880-2; Student Mechanical Engineering, University of California, 1886-8; Professor of Modern Languages, University of Southern California, 1890-2; Instructor of Mechanical Drawing and Higher Mathematics, Throop Polytechnic Institute, 1892-

E. Colorado St.

FANNY F. STERRETT

Drawing, Painting, Clay Modeling, and Wood Carving

Portrait Artist five years, Springfield, Ohio; Student Chicago Art Institute, 1891-2; Graduated Normal Art Department, Pratt Institute, Brooklyn, N. Y., 1894; Instructor Drawing and Painting, Throop Polytechnic Institute, 1894-

CHARLES H. WRIGHT

Wood and Iron Shops

Graduated Manual Training Department, Washington University, St. Louis, 1885; Principal Haish Manual Training School, Denver University, 1885-7; Student Colorado School of Mines, 1889; Instructor Iron Shop, Throop Polytechnic Institute, 1894–

N. Marengo Avenue

LUCIEN H. GILMORE*

Physics and Electrical Engineering

A. B., Stanford University, 1894; Acting Assistant Department of Physics, Stanford University, 1894-5; Instructor in Physics and Electrical Engineering, Throop Polytechnic Institute, 1895-; Associate Member American Institute of Electrical Engineers.

*Absent for the session 1898-99.

MRS. GRACE E. DUTTON

Domestic Science

Graduated Pennsylvania State Normal School, 1885; Instructor in Public Schools of Twin Oaks, Pa., 1885-8; Graduate of Mrs. S. T. Rorer's Philadelphia School of Domestic Science, 1897; Instructor Cooking and Sewing, Throop Polytechnic Institute, 1897-

28 W. California St.

ROBERT E. FORD

Machine and Pattern Shops

B. E. E., Engineering College, University of Minnesota; With D. & D. Electric Manufacturing Co., Minneapolis, Minn., 1895; Consulting Steam and Electrical Engineer, Minneapolis, Minn., 1896-7; Instructor Machine and Pattern Shops, Throop Polytechnic Institute, 1897-

The Spalding

MARY A. MERWIN

Spanish

Student Valparaiso, Chile, and at M. A. Burnham Classical School, Northampton, Mass.; Instructor in Spanish, Classical School for Boys, Pasadena, Cal., 1893-94; Teacher Private Classes in Spanish, Pasadena, Cal., 1892-; Instructor in Spanish, Throop Polytechnic Institute, 1898–

South Pasadena

CHARLES F. HOLDER LL.D.

Non-resident Lecturer in Zoology

U. S. Naval Academy, 1866-71; Assistant Curator Zoology, American Museum of Natural History, New York, 1872-5; Fellow of the U. S. Academy of Sciences; Member of the Linnæan Society of New York: Member of the National Geographical Society, Washington, D. C.

EXECUTIVE COMMITTEE OF THE FACULTY

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Throop Polytechnic Institute

Historical

Throop Polytechnic Institute was founded by Hon. Amos G. Throop in 1891, and during the remainder of his life received his consecrated energy and hearty support, and at his death the greater part of the remaining accumulations of his life were bequeathed for its support. Articles of incorporation were filed September 23rd; the first Board of Trustees organized October 2nd. The doors of the Institute were opened to students November 2nd. It was established as an institution of learning that should furnish to students of both sexes and of all religious opinions, a liberal and practical education, which, while thoroughly Christian, should be absolutely non-sectarian in character. A clause of the charter provides that a majority of the Board of Trustees "shall not belong to any one religious denomination or sect, and the institution shall be maintained and administered as an undenominational and non-sectarian school."

During the first year the Wooster Block was used for school purposes. In 1892 it was determined to make manual and industrial education the characteristic feature of the school, and the building now known as Polytechnic Hall was erected. In the following year East Hall was built.

Location

Pasadena is generally acknowledged to be one of the most beautiful residence cities in California. It is situated within ten miles of the city of Los Angeles, at the head of the San Gabriel valley and at the base of the picturesque San Gabriel mountains. In beauty and healthfulness, in the culture of its homes, and in its high social and moral tone, Pasadena has no superior on the Pacific Coast. It is reached by the Santa Fe, Los Angeles Terminal, Southern Pacific, and Los Angeles and Pasadena Electric railways. The last named passes in front of each of the halls. Students living along these lines are enabled to make the daily trips to and from the Institute in seasonable hours and at reasonable rates.

Departments

The Institute comprises four departments, the Sloyd Grammar School, the Manual Training Academy, the Normal Department, and the College.

Libraries

The books belonging to the Institute are located with reference to convenience to students, special libraries being placed in the various department rooms. These contain works bearing on English Literature, Latin and Greek, History and Civics, Psychology and Methods, Physics and Electricity, Chemistry, Physiology, Botany, Bacteriology, and Zoölogy, etc., while a general assortment is found in the main library room in East Hall. Students also have access to many works from the private libraries of the various instructors, as also to the Pasadena Public Library, situated near the Institute. The library also receives regularly several periodicals which have been selected with considerable care so as to be of the greatest use to the students.

Polytechnic Hall

Most of the shops and laboratories of the Manual Training Department are located in Polytechnic Hall, which is a two-story brick structure with a frontage of 148 feet on Fair Oaks avenue and 80 feet on Chestnut street.

Wood Shop

The wood shop, which is located on the second floor, is provided with twenty work-benches, at each of which four students can work daily. The benches are provided with a drawer for each student, in which, under lock, are placed the planes, chisels and turning tools used by the student to whom that drawer is assigned. He is held responsible for these tools and is taught how to keep them in good condition for use.

Each bench has, besides, a set of tools which are used in common by four students.

At each student's right hand, on the bench, is a fourteen-inch lathe, while at the opposite end of the bench is placed his bench-stop and lightning grip wood-worker's vise. The shop is supplied with a large band-saw for cutting up stock, and also a fine fret-saw. It is thus equipped with all the appliances and tools necessary to do thorough work in joinery, turning, inlaying and scroll-sawing. A special pattern-maker's lathe and well equipped bench is provided for the use of the instructor.

Pattern Shop

The pattern shop adjoins the wood shop and its equipment is similar to that of the wood shop. In addition, it is provided with a moulding bench where the students may test their patterns and gain some knowledge of the principles of moulding.

Forging Shop

The forging room, situated on the first floor in the east wing of Polytechnic Hall, is equipped for twenty-three pupils.

The furnishing consists of five nests of Buffalo quadruple forges and three single forges. The fires are urged by a pressure blower, and the room is kept reasonably free from smoke by a 60-inch exhaust fan.

The anvils are furnished with all necessary tools, such as hammers, hardies, swages, fullers, flatters, tongs and squares. In addition to these tools for individual use, special sets of sledges, heading tools, set hammers, hot and cold cutting chisels, punches, calipers, taps and dies, drills, etc., are provided for general use. A hand blower, double emery grinder, combined hand and power drill, and four blacksmith vises complete the furnishing of the room.

Machine Shop

The machine shop is situated in a large room on the first floor.

The machines in this shop, including a 55-horsepower engine, are of the latest style. They were obtained through the generosity of citizens of Pasadena, at a cost of nearly ten thousand dollars.

The shop contains the following machines: A 24-inch x 6-foot Powell planer; a Hendy shaper, 15-inch stroke; a 24-inch Prentiss Bros. drill; a sigourney sensi-

tive drill; Brown & Sharpe's No. 1 universal milling machine; a two-wheel emery grinder; a grindstone; one 24-inch x 10-foot, one 16-inch x 8-foot and four 14-inch x 6-foot Reed lathes, one of which has a taper attachment; two Prentiss Bros. lathes; one Putnam & Sons lathe; and one Hendy-Norton lathe; all 14-inch x 6-foot, and two speed lathes. In the tool-room are an 8-inch x 32-inch Mosely & Company bench lathe, and a Barnes foot-power lathe.

The following is a partial list of tools in the tool-room: One 24-inch, one 16-inch and three 12-inch four-jawed independent chucks; three 12-inch, two 9-inch and one 6-inch three-jawed universal chucks; milling and gear cutters, end mills and attachments for a milling machine; a set of twist drills from ¼-inch to 1¼-inch by 32nds; from 1¼ to 2-inch by 16ths; a set of hand reamers from ¼-inch to 1¼-inch by 32nds; a set of Rose reamers from ¼-inch to 1¼-inch by 16ths; a a set of taps and dies from 7-64 to ¼-inch by 64ths, and taps from ¼ to 1-inch by 16ths; a full set of dogs and two sets of arbors. A revolving frame contains calipers, squares, etc.

A check system is used in giving out tools, the students in turn caring for the tool-room.

Sewing Room

The sewing and garment-making room is located on the first floor. It is equipped with four large tables furnished with a sufficient number of drawers to accommodate three classes of sixteen members each in garment-making. Seven

SEWING ROOM.

COOKING ROOM.

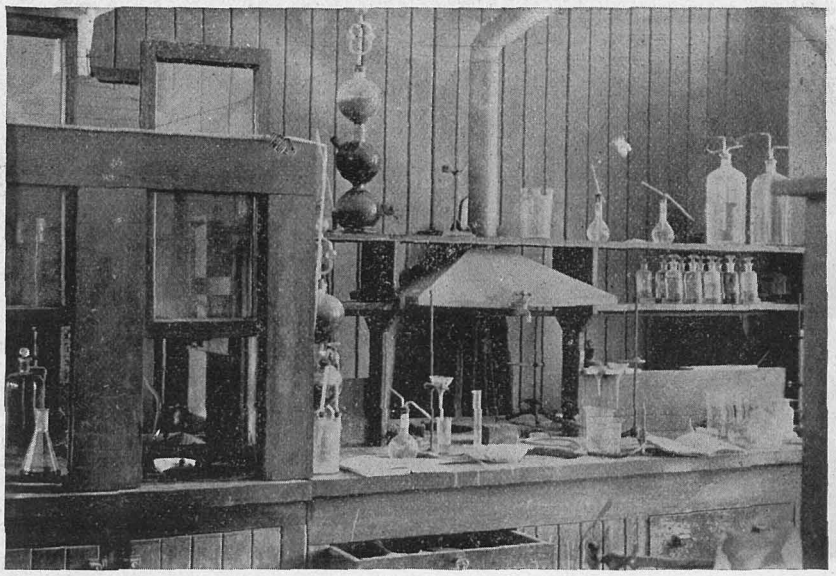
sewing-machines, a gas iron-heater, pressing-boards, together with necessary needles, scissors, thimbles, scales, tape-lines, etc., for use of individual students, complete the equipment of this department. Adjoining the main sewing room, a retiring room for fitting purposes is provided.

Cooking Room

The cooking room is located on the second floor and is supplied with tables, upon which are gas stoves. Each table is provided with drawers for the caps, aprons, sleeve-protectors, note-books, etc., of the four students assigned to work at that table. Other drawers contain cooking utensils, mixing and measuring dishes, stirring spoons, kitchen knives and forks, etc., while in cupboards beneath is a full assortment of stove and kitchen furnishings. At either end of the table, towels, lid-lifters, etc., are hung. A large dust-proof cupboard, containing meal and flour bins, dish closets, etc., a large water heater, a Lowe gas range, a large refrigerator, and a cupboard for furnishings, are also provided.

Mechanical and Architectural Drawing Room

This is an east room, situated on the second floor, and is well lighted. It is furnished with tables which have lockers for each student. This room is also provided with models and casts illustrating the five orders of architecture. A number of valuable imported models for work on machine design are in use.



STUDENTS' DESKS IN CHEMICAL LABORATORY.

Chemical Laboratory

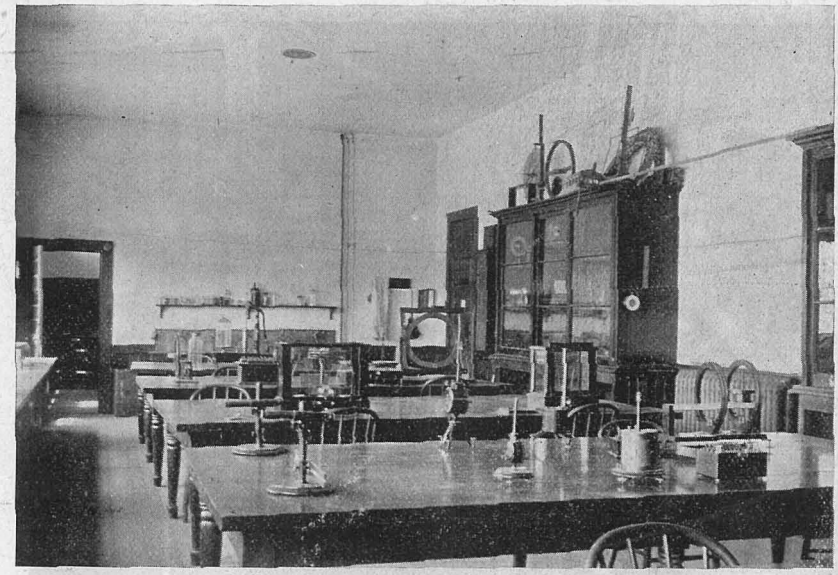
The department of Chemistry occupies three rooms on the second floor of Polytechnic Hall. They are all well furnished with the usual tables, shelves, closets, hoods, etc., for convenient experimental work, and are supplied with a large assortment of glassware, apparatus and chemicals.

The library of the department is kept in one of these rooms and contains standard works on general, analytical, theoretical and organic chemistry.

Among the special apparatus in use in the department may be mentioned the following: Steam heating and evaporating apparatus, water still, automatic gas generators, combustion furnace, apparatus for analysis of baking powders, apparatus for milk analysis, Lunge's nitrometer, analytical balance, Westphal specific gravity balance, mercurial barometer, spectroscope, etc., etc.

Physical and Engineering Laboratories

The department of Physics and Electrical Engineering occupies three rooms on the first floor of Polytechnic Hall. The Physical Laboratory is a large, well lighted room, fitted with gas, water and steam pipes, electric wires, tables, lockers, cases, etc. This room is used for the elementary work in physics and the more advanced work in physical and electrical measurements. In addition to much other apparatus for qualitative and quantitative experiments may be mentioned the following: Becker balance, micrometer calipers, aneroid and mercurial barometers, spectroscope, revolving mirror, compound microscope, Bunsen photometer, arc lamp for projection purposes, Deprez-D'Arsonval mirror galvano-

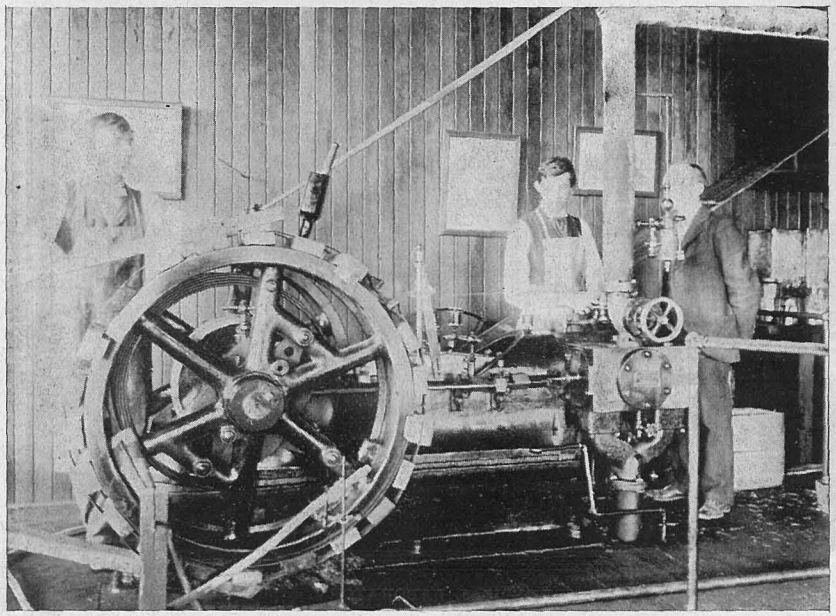


PHYSICAL LABORATORY.

meter, Thompson tripod galvanometer, Queen ballistic galvanometer, universal and ordinary tangent galvanometers, resistance boxes, Queen testing set, earth inductor, Queen quadrant electrometer, one-third microforad condenser, standard cells, slidemeter bridges, scales and telescopes, 6 x 12-inch induction coil suitable for Hertzian oscillation or X-ray work.

Adjacent to the laboratory is the lecture and recitation room. It contains the library for this department, to which have lately been added several of the latest works on physics and electrical engineering. Leading physical and electrical engineering journals and transactions of the American Institute of Electrical Engineers are also on file in the library.

Adjoining the lecture and recitation room on the north is the electrical testing laboratory. It is piped with gas and steam and has wires leading in from the 500-volt circuit of the Los Angeles and Pasadena Electric Railway. A recent acquisition to this laboratory is a six-horse power, high-speed, automatic steam-engine directly connected to a three kilowatt, multipolar generator, so arranged with commutator, and collecting rings as to give direct currents at voltages varying from 50 to 500, and one, two and three phase alternating currents. This engine and generator were designed and built in the machine shop of the Institute, especially for this department, and are fitted with all the accessories for experimental testing. Among other articles of equipment may be mentioned an Edison dynamo, Lundell motor, Crocker-Wheeler motor generator, storage batteries, banks of incandescent lamps, handsome serpentine distributing switchboard erected and fitted by class of '97, and such instruments as a Thompson steam engine indicator, Amsler planimeter, speed indicator, Prony brake, cradle



ENGINE TESTING—PRONY BRAKE.

dynamometer, Weston volt-meter and ammeter, Siemens electro-dynamometer, D'Arsonval wall galvanometer.

The electrical engineering students also have the advantage afforded by a 55-horse power McIntosh, Seymour & Co.'s engine for supplying power and testing; a 60-horse power horizontal multitubular boiler fitted with oil fuel apparatus, gauges, pumps, injectors, etc. These are in charge of an experienced steam engineer.

East Hall

This building stands on Chestnut street and Raymond avenue, and cost, finished and furnished, nearly forty thousand dollars.

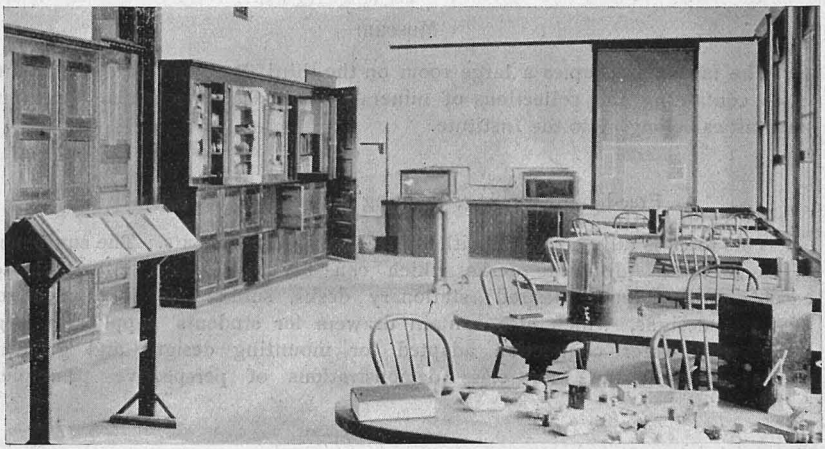
On the first floor are class-rooms for Latin and Greek, Mathematics, History, and the Sloyd Grammar School. A double office is located at the left of the main entrance, while at the rear are cloak and toilet-rooms for both ladies and gentlemen.

On the second floor are the assembly hall, the general library, cloak and toilet-rooms for ladies and gentlemen, and the quarters of the department of Biology.

On the third floor are located the rooms for free-hand drawing, photography and blue printing, the society hall and the museum.

Biological Laboratory

The biological apartments are located on the second floor. Facing the north is the 19x50 laboratory lighted by nine large windows, with seven V-shaped tables, a sink, an aquarium, a glass sided cage, and rack for biological periodicals. Against the south wall are built seventy-four lockers, and four cases for books and reagents.



BIOLOGICAL LABORATORY.

The laboratory is furnished with seventeen Bausch & Lomb compound microscopes, thirty dissecting Microscopes, thirty sets of dissecting and microscopic tools, a set of skeletons of typical vertebrates, two microtomes, two cameræ lucidæ, injecting aparatus, culture dishes, a dry and a steam sterilizer, and other aparatus used in bacteriological work. A universal Bausch & Lomb stand is equipped with the appliances for work in bacteriology and other advanced work. A gas pipe, to which Bunsen burners can be attached, is located at the end of each of the microscopic tables.

An adjoining room contains cases or instruments and material and an herbarium of about 4,000 species of plants ranging from the lowest algæ and fungi to he highest flowering plants. This apartment is also fitted up as the instructor's private work room.

South of the instructor's room is a large, well lighted class-room. In it are placed a case for the student's herbaria and a case for alcoholic specimens. The windows are furnished with close-fitting shutters, making it possible to quickly change the room into a dark chamber for the projection of microscopic objects by solar light. In the south side of the room is a bay window used for work in physiological botany.

Society Hall

The Pierian Society has recently occupied a large, well-lighted, attractive hall on the third floor. As a result of the labors of the society and the generosity of some of its friends, this hall has been handsomely carpeted, and it is hoped to complete the furnishing during the coming school year.

Museum

The museum occupies a large room on the third floor, and is furnished with cases containing the collections of minerals, geological specimens, shells and antiquities belonging to the Institute.

Free-hand Drawing, Painting and Designing Room

This room is fully equipped with all necessary appointments. The equipment is as follows: Adjustable desks, which can be transformed into tables or easels, at any angle desired; stationary desks, suitable for the execution of large designs, which also contain drawers for students' supplies; a large table with water connection adapted for mounting designs and grinding colors; Black boards for class demonstrations of perspective principles;

SLOYD ROOM.

a full line of wooden models, type solids, from which first lessons in perspective are given; a case of bric-a-brac and objects of still-life, furnishing material for sketches; a complete set of charts used in study of historic ornament and design; plaster casts of historic ornament, natural leaf forms, masks, heads and full length figures which serve as models in the rendering of light and shade in charcoal drawings.

Sloyd Room

The Sloyd department, located in the basement of East Hall, is equipped with twenty Sloyd working-benches, each of which is provided with a set of high grade cabinetmaker's tools. Charts, models, blackboards, and cases divided into compartments where students keep their work, material, drawing instruments, etc., are also provided.

Wood-Carving and Clay-Modeling Rooms

The department of Wood-carving and Clay-modeling occupies a room in the basement of the East Hall, fitted with work tables, lockers with tools for students' use and cases for exhibition of work. This room is furnished with a good selection of casts and charts showing the various styles of historic ornament. The Clay-modeling department is equipped with a fine selection of casts of ornament, and a complete set of anatomical charts, besides the usual lockers, stands, etc., for clay work.

SLOYD GRAMMAR SCHOOL

The urgent need of educational manual training in connection with the work ordinarily done in public schools inspired the establishment of a Sloyd department in the Institute. Pupils will be admitted to this department who have completed the usual third year of the public school. All pupils not bringing certificates from other schools will be required to pass an examination before being classified. The work, as arranged for this department, consists of two lines: the ordinary book work, and the manual work.

Schedule of Work

4TH GRADE.	Arithmetic—Fundamental Operations. English—Language Lessons from Hyde's Book I. Myths and Supplementary Reading. History and Geography - Elementary Work with Sand Modeling. Science—Elementary Works on Plants and Animals. Drawing—Clay Modeling. Brush Work. Water Color. Writing—Vertical. Sloyd—Card board, one term; Thin Wood, two terms.

5TH GRADE

Arithmetic—Review of Fundamental Operations. Factoring. Greatest Common Divisor. Least Common Multiple. Simple Work in Fractions.
English—Language Lessons in Hyde's Book I, completed. Æsop's Fables. Miss Harrison's In Story Land.
History and Geography—Eggleston's First Steps in United States History. Frye's Primary Geography with Sand Modeling.
Science—Elementary Work on Plants and Animals.
Drawing—Clay Modeling. Brush Work. Water Color.
Writing—Vertical.
Sloyd—Card Board, one term; Thin Wood, two terms.

6TH GRADE

Arithmetic—Fractions. Denominate Numbers. Regular Work in Wentworth's Grammar School Arithmetic.
English—Language Lessons in Hyde's Book II. Wonder Book. Ten Boys.
History and Geography—Montgomery's The Beginners' American History. Frye's Advanced Geography with Modeling in Putty.
Science—Elementary Work on Plants and Animals.
Drawing—Clay Modeling. Brush Work. Water Color.
Writing—Vertical.
Sloyd—Wood.

7TH GRADE

Arithmetic—Applications of Percentage and Supplementary Work. Wentworth's Grammar School Arithmetic completed.
English—Elements of Grammar and Analysis. Kingsley's Greek Heroes. Evangeline.
Geography—Geography Completed.
Elementary Science.
Drawing—Free-hand and Mechanical.
Writing—Vertical.
Sloyd—Wood.

8TH GRADE

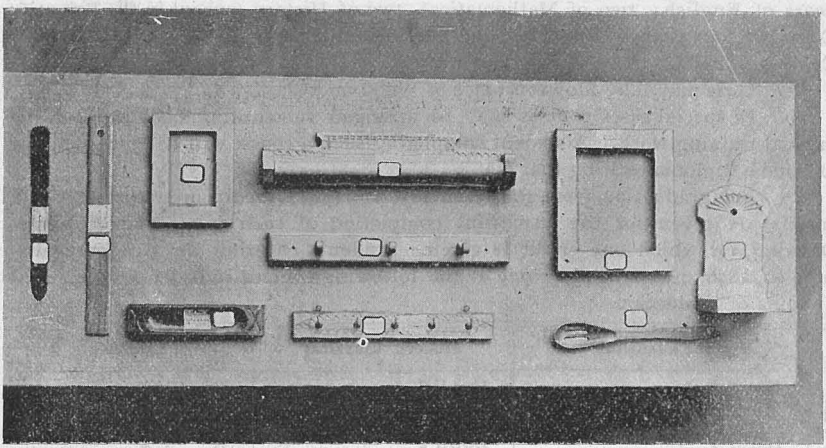
Arithmetic—Arithmetic Reviewed, using the Algebraic Equation and introducing Elementary Geometry.
English—Grammar Completed. Regular Work in Reed and Kellogg's Higher Lessons in English. Lady of the Lake. Six Selections from Sketch Book.
History—Fiske's United States History Completed.
Elementary Science.
Drawing—Free-hand and Mechanical.
Writing—Vertical.
Sloyd—Wood.

The course in English includes a thorough drill in writing, spelling and composition.

Fourth, fifth and sixth grades will spend forty-five minutes daily in the Sloyd-room, the seventh and eighth grades, ninety minutes.

Working drawings of all models precede their construction in wood. There are forty models arranged in four courses. The models follow a natural sequence, proceeding from simple to more complex forms and introducing tools and exercises at proper intervals.

Each student will need the following materials: a drawing-board, a T-square, triangles, set of drawing instruments, thumb tacks, drawing paper, pencils and erasers. The average cost of materials for the year will be about $4.00. Instruments, etc., will be used in the future work of the student.



SLOYD MODELS.

Academy

Requirements for Admission

Students holding a certificate of graduation from a California Grammar School, or any other school of equivalent grade, will be admitted to the Academy without examination. All other applicants will be subject to examination in Arithmetic, Grammar, English, Geography and United States History.

In Arithmetic the examination will be upon the following subjects:

Fundamental Operations, Factoring, Greatest Common Divisor, Least Common Multiple, Fractions, Denominate Numbers, Applications of Percentage, Involution, Evolution, Mensuration, and the Metric System.

In Grammar and English, upon Elements of English Grammar and the Analysis of the Sentence, Lady of the Lake, and Evangeline.

Each candidate for admission by examination will be required to write a short composition, in order to show his ability to compose, spell and punctuate, and to use capital letters properly.

Courses of Study

1. Roman numerals in following tables refer to subjects outlined on pages 23 to 37.

2. A subject once elected may not be dropped after two weeks from the time of choice, and must thereafter be pursued until successfully completed. In special cases for reasons satisfactory to the Executive Committee, this provision may be set aside.

3. If Latin, French or German be chosen it must be pursued for not less than two years to receive credits for the work. In the modern Classical Course two years of Spanish may be substituted for two years of Latin.

4. Each student must, in order to complete a course, take not less than two years of English; two of Mathematics; two of History (except in the Scientific Courses); four years of Drawing; and four years of Shop-work (except in Scientific Courses A and B).

5. Girls may take Sloyd in place of Wood and Clay.

6. In special cases courses may be arranged substituting book subjects for manual training work. A student completing such a course will be graduated and granted a diploma reciting that fact.

7. For graduation from the Academy, thirty-six credits are required. Two credits are given for the successful completion of each annual subject except Drawing, for which one credit is given. Students entering the Academy after June 20, 1896, must complete one of the following courses in order to receive the diploma of graduation.

	Ancient Classical	Modern Classical	Literary
First Year	English I Mathematics I Latin I Drawing I Shopwork	English I Mathematics I Latin I Drawing I Shopwork	English I Mathematics I German I or French I Drawing I Shopwork
Second Year	English II Mathematics II Latin II Drawing II Shopwork	English II Mathematics II Latin II Drawing II Shopwork	English II Mathematics II German II or French II Drawing II Shopwork
Third Year	Latin III Greek I History I Drawing III Shopwork	Physical Geography & Physiology French I or German I History I Drawing III Shopwork	English III French I or German I History I Drawing III Shopwork
Fourth Year	Latin IV Greek II History II Drawing IV Shopwork	Biology French II or German II History II Drawing IV Shopwork	Physics, Chemistry or Biology French II or German II History II Drawing IV Shopwork

	English—Scientific	Scientific—A	Scientific—B
First Year	English I Mathematics I Physical Geography & Physiology Drawing I Shopwork	English I Mathematics I Physical Geography & Physiology Drawing I Shopwork	English I Mathematics I Physical Geography & Physiology Drawing I Shopwork
Second Year	English II Mathematics II Zoölogy or Botany Drawing II Shopwork	English II Mathematics II Zoölogy or Botany Drawing II (F. H.) Shopwork	English II Mathematics II Zoölogy or Botany Drawing II (F. H.) Shopwork
Third Year	Latin I, German I or French I English III or Mathematics III Chemistry Drawing III Shopwork	Latin I or German I Geology Chemistry or Biology Drawing III Shopwork	German I Mathematics III Chemistry Drawing III Shopwork
Fourth Year	Latin II, French II or German II History II Physics Drawing IV Shopwork	Latin II or German II History II Biology or Chemistry Drawing IV or Adv. Science Shopwork or Adv. Science	German II History II Physics Drawing IV or Adv. Science Shopwork or Adv. Science

Normal Department

Admission to this department can be gained by persons holding teachers' certificates and by graduates of High or Normal Schools or Colleges, or by others giving satisfactory evidence of attainments necessary to secure a teacher's certificate in this state. At present, two courses are offered—Sloyd and Domestic Science. These courses are designed to fit persons to teach these subjects.

Sloyd

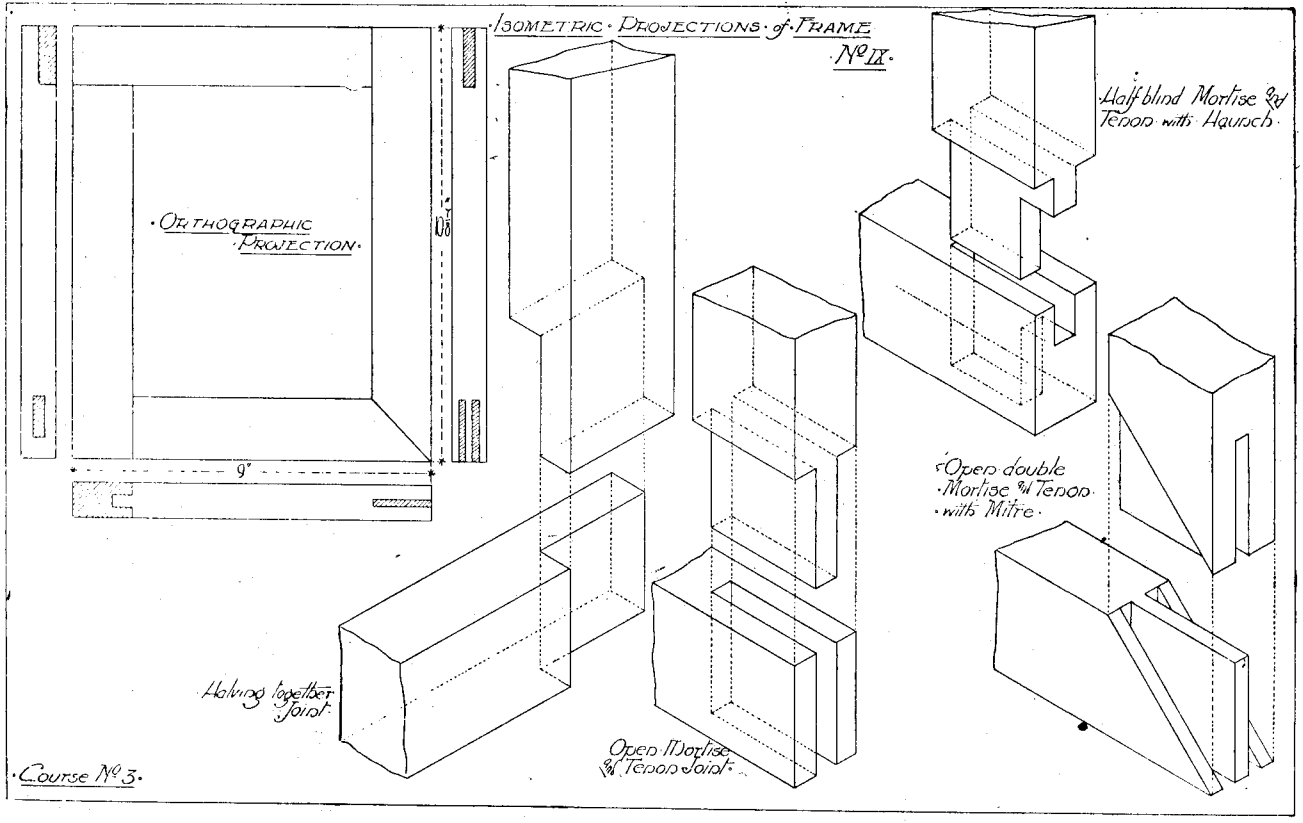
The Normal students have a room devoted exclusively to their work. It is well furnished, provided with all necessary apparatus, including a grind stone run by a motor. Books on Psychology, Pedagogy and Manual Training are also provided for reference.

Teaching of students' classes and grading of finished work (drawings and models), are requirements, also the writing of a thesis on some subject relating to educational Manual Training. Occasional lectures are delivered by prominent professors, physicians and others apropos of the work.

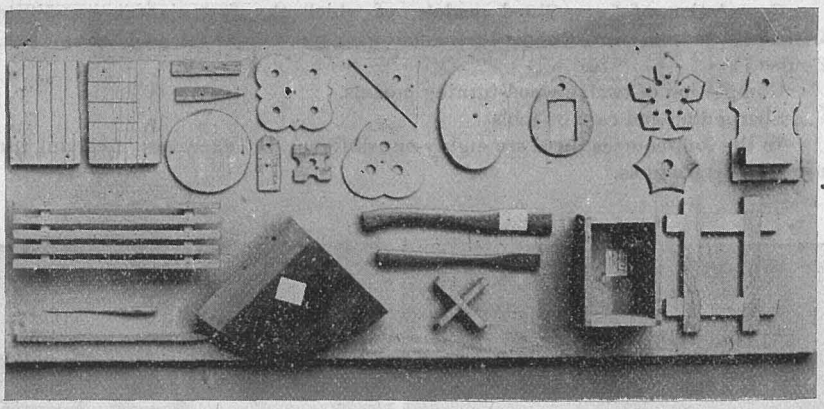
To complete the course requires at least one school year.

The work is as follows:

THEORY.—The Theoretical work includes general pyschology and pedagogy; also the mechanics, history, psychology and pedagogy of Sloyd. A comparative study of the various phases of manual training, and a study of woods, their physical and chemical properties, will also be taken up.



DRAWING BY SLOYD NORMAL STUDENT.



SLOYD MODELS.

The students in these classes are required to provide themselves with the following books:

James' Psychology (briefer course), $1.60.

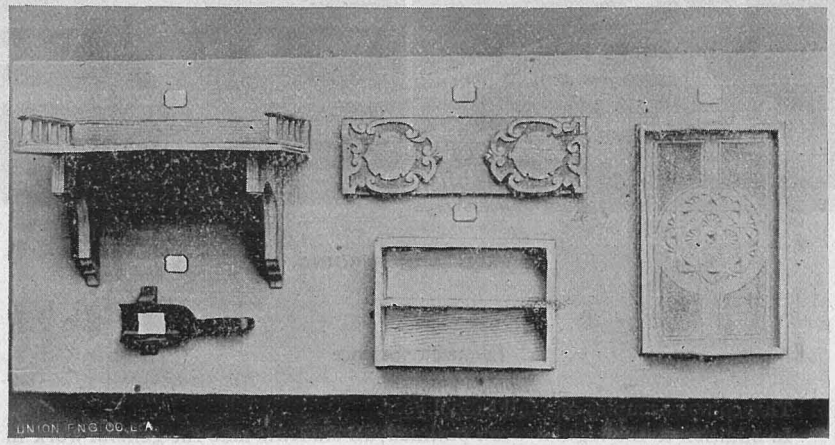
The Theory of Educational Sloyd, by Otto Salomon, $1.25.

Industrial Education, by Robert Seidel, $1.00.

Linear Drawing and Projection, by Ellis A. Davidson, $1.50.

Bench Work in Wood, by Goss, Practical Perspective, by Ellis A. Davidson are also recommended.

MANUAL WORK.—Drawing including (1) Geometrical constructions; (2) Principles of representation; (3) Representation in reduced size by the use of scales; (4) Orthographic and isometric projections; (5) Linear perspective; (6) Inking and tracing; (7) Blue-printing and mounting; (8) Free-hand drawing throughout the course.



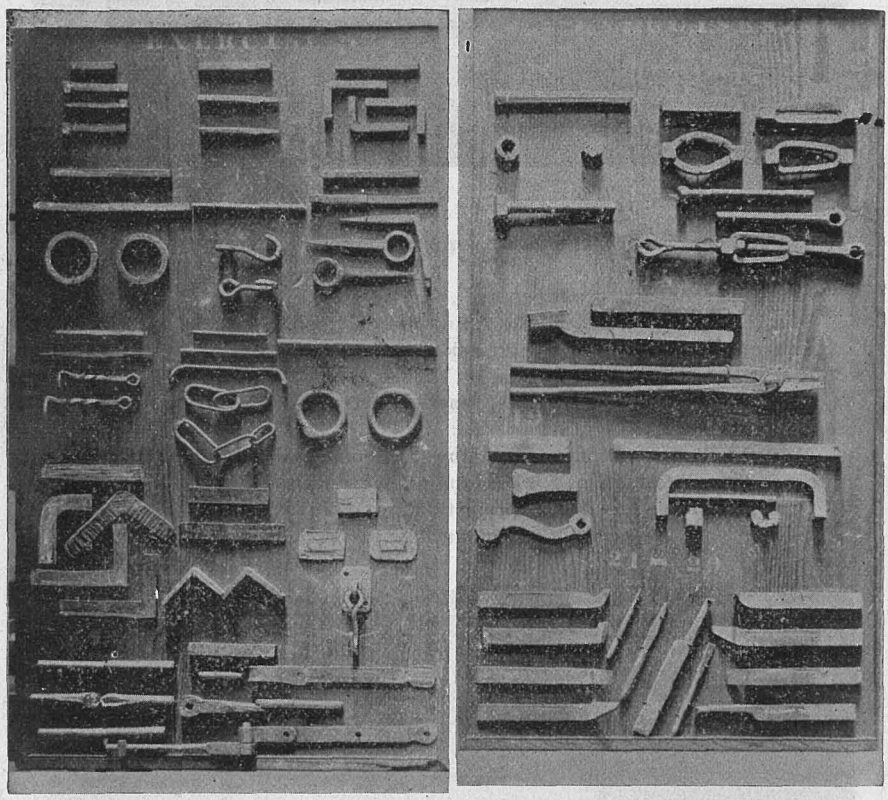
SLOYD MODELS.

Completion of forty Sloyd models, of which the first sixteen constitute Course I, the next nine, Course II, the following ten, Course III, and the last five, Course IV.

Completion of twelve wood-turning models.

Sharpening and care of tools.

In the four courses there are eighty-one different tool exercises, involving the use of forty-six tools.



EXERCISES IN FORGING.

Domestic Science

This course occupies one full school year.

In addition to the regular work outlined, all students take the general work in Pyschology and Pedagogy.

The teaching of children's classes is required in both sewing and cooking.

COOKING. - The work is as follows: Practical Cookery in all its branches and the art of teaching; Chemistry of Cooking; Physiology of Digestion; Therapeutics of Diet; House Sanitation; Chemistry of Fuels; Chemical Elements of the Body; Food Adulterations; Bacteria, and a study of the yeast plant.

Lectures will be given during the year on the Physiology of Digestion by prominent physicians and others.

Text books—Quiz-compend on Chemistry, by Doctor Henry Leffmann; Food, by Church; Youman's Household Science.

SEWING.—The art of teaching Sewing, Drafting, Cutting and Garment Making in the schools.

College

The requirements for admission to the college department are as follows:

(1) The completion of one of the Academy courses outlined on pages 18-19; or (2) the completion of a course in an accredited High School or an approved Preparatory School; or (3) passing an examination upon English I and II, and Mathematics I and II, and any eight of the following subjects, as outlined on pages 23 to 30: Physical Geography, Geology, Botany, Zoology I, Physics I, Chemistry I Latin I, Latin II, Latin III, Latin IV, German I, German II, French I, French II, Greek I, Greek II, History I, History II, Mathematics III, English III. Any applicant offering Latin, French or German must present at least two years of each.

The work in this department is entirely elective. Each student who is a candidate for a degree must choose a major subject which is the work of one professor, who shall prescribe the necessary or desirable collateral work. Such major and accessory work shall not constitute more than two-thirds of the work offered for a degree, and the amount subject to prescription by the professor shall not exceed one-third. The remainder of the work may be chosen from any of the subjects offered with the exception of Mathematics I and II and English I and II and Physical Geography. The degree B. A. will be granted to students having satisfactorily completed four years' work of at least three recitations or lecture-periods per day. Upon a basis of two credits for a year's work in each subject, twenty-four credits are required for graduation.

The Institute reserves the right not to organize classes in any given subject, unless at least eight students elect said subject.

Candidates for admission to college classes should make application as early as possible, indicating the subjects they purpose electing.

Subjects and Methods of Instruction

Mathematics

I. Elementary Algebra. Fundamental operations; special attention given to the reading of problems; to the subjects of factors, simultaneous equations, involution, evolution, theory of indices, surds, imaginary quantities and quadratic

equations. This is first year work. The text-book used is Hall and Knight's Elementary Algebra, edition of 1896.

II. Plane Geometry. The usual college preparatory work in the five books of Plane Geometry is the work of the second year. The work includes the original propositions and problems in the text-book, supplemented by other original work. The text-book used is Phillips and Fisher's Elements of Geometry.

III. (a) Higher Algebra. Indeterminate Equations of the first degree, Inequalities, Ratio, Proportion, Variation, Arithmetical, Geometrical and Harmonical series, Permutations and Combinations, Proof of Binomial Theorem for any index, Logarithmic Calculations, Convergency and Divergency of series, Undetermined Coefficients, Continued Fractions, Summation of Series, Theory of Equations with solution of Cubics and Biquadratics having commensurable roots. Text-book, Hall and Knight's Elementary Algebra, edition 1896.

(b) Solid Geometry. The course given in Phillips and Fisher's Elements of Geometry, books VI–IX, inclusive. This subject, supplemented by Higher Algebra, comprises the work of the third year in the regular course.

IV. (a) Trigonometry. The course comprises plane and spherical trigonometry. Problems from text-books proven in the field, also problems solved by the class.

(b) Plane surveying. Survey with chain alone; with compass and chain; leveling with "Y" level; making profiles of elevations and grades. Adjustment of transit and level. Plotting the field work, also field work done from plottings.

Higher surveying. Trigonometrical surveying. Running railroad preliminary lines; setting slope stakes; plotting cross-sections; calculating cut and fill, running grade lines for irrigating-ditches, or roads.

(c) Field Engineering. Theory and practice of laying out curves, side tracks, economic principles of railway location and construction. Carhart's Field Book will be used as a text-book.

Land surveying, plotting field work, using various methods of representing topography, calculation of areas by latitudes and departures, also by use of the planimeter. Carhart's Field Surveying the text-book.

V. (a) Analytic Geometry. This is studied chiefly in connection with its application to the study of the conic sections, and is followed by work in descriptive geometry and class work in which analytic and descriptive geometry are made mutually explanatory.

VI. (a) Differential and Integral Calculus. Differentiation of algebraic and transcendental functions. Liebnitz's Theorem. Expansion of functions. Maclaurin's and Taylor's Theorems. Functions of several independent variables. Applications to curves. Maxima and mimima of functions of one and of several independent variables. Various methods of integration with applications to the study of curves and certain volumes. Definite integrals. Osborne's text-book is chiefly used.

In connection with the work in the integral calculus, there will be given some work in the integration of differential equations used in mechanics and electricity.

(b) Study of the strength of materials used in masonry, carpentry and metallic structures. Stresses and strains in framed structures and arches. Stresses computed analytically and also by graphical methods in the drawing room and results compared.

Construction of roofs, highway bridge trusses and railroad bridge trusses. The books chiefly used will be those by Merriman and by Du Bois.

English

All regular students receive instruction in English during the first two years of their course and may continue the subject during four years. Frequent and varied written exercises are required. The aim of the department is to give the student such a thorough and practical knowledge of English as will enable him to express himself clearly, correctly and adequately in either professional or business life, and also to aid him in understanding and appreciating good literature.

The courses offered are as follows:

I. A critical study of Irving's Alhambra, Longfellow's Courtship of Miles Standish, Addison's De Coverly Papers, and Scott's Marmion.

II. Composition work continued throughout this year, and a standard rhetoric systematically studied. The critical readings will include Shakespeare's Merchant of Venice and Julius Cæsar; also, George Eliot's Silas Marner. In each case the reading will be accompanied by such historical research as may be needed to make the selection interesting and instructive to the pupils.

III. From Milton to Tennyson will be the basis for work during the first term of the year. The reading of these poems will be accompanied by studies in biography, history and mythology; written reproductions and criticisms will be frequently required. Oration and Argument will occupy the winter term. From this, pupils are expected to secure a knowledge of modes of reasoning and to gain a deeper insight into causes of political disturbances. The spring term will be devoted to the study of the development of American literature.

IV. In this year especial attention is paid to the history of English literature, and the practice of theme writing.

Ancient Languages

Latin

I. Collar and Daniels' Beginners' Book, through first and second terms. Special attention given to vocabularies; translation of the exercises from Latin into English and from English into Latin; conversations based upon the sentences and exercises translated will be held occasionally for memory-training.

Structure of Latin sentence and comparison with English sentence-structure. Paradigms will be mastered, not simply to be recited by rote, but that the pupil may be able to compare them and to see the laws which govern their formation.

Third Term, reading of easy Latin.

II. Introduction to Roman Literature. The readings comprise selections from Cæsar, with a generous amount of sight-reading.

Critical study of text with translation into idiomatic English. Prose composition; incidental study of history and geography throughout the year. Allen and Greenough's Grammar, and New Cæsar.

III. Cicero's Orations. Textual study, as in Cæsar, sight-reading and composition; historical allusions investigated; the system of Roman government;

powers of officers; customs and occupations of the people; geography involved in the text is made an incidental topic of study. Allen and Greenough's New Cicero.

IV. Vergil's Æneid. Structure of the poem, with the theory and practice of scansion of Latin poetry, especially of the hexameter; translation into idiomatic English; study of the superstitions and religious rites of antiquity, as well as of the myths and legends; minute word study and analysis. Allen and Greenough's text.

Greek

I. The alphabet, inflections and simple translations will be studied the first term. The second term will have similar work, with the study of vocabularies. Composition exercises and conversations will be used for memory-training. The third term will be spent on the first four chapters of the Anabasis. White's First Greek Book.

II. Anabasis completed. Careful translation into English; points of linguistic or historical interest studied; prose-composition will be a part of the work through the year, also sight-reading. Goodwin's grammar and text.

III. Homer's Iliad. Usual amount of college preparatory work. Seymour's or any late edition.

Modern Languages

German

I. Careful attention to correct pronunciation; thorough drill in forms, and in the common principles of syntax; constant practice in translation at sight and at hearing and in conversation. The text-books used are Joynes-Meissners German Grammar and Brandt's Reader.

II. Exercises throughout the year in conversation, translation at hearing, and composition. Reading of standard German prose and a play of Schiller.

III. Two of Schiller's or Lessing's plays; Hodges' Course in Scientific German; Harris' German Composition. Conversation and translation at hearing continued.

French

I. Special practice of pronunciation with phonetic study; regular and irregular verbs; Super's Preparatory French Reader; conversational exercises. Text-book, Keetel's Analytical and Practical French Grammar.

II. *Madame Thérèse* (ERKMANN-CHATRIAN); lectures on the rhetorical structure of French; study of French idioms (Keetel); *Les Trois Mousquetaires* (ALEXANDER DUMAS); lectures on the history of the French language; continued study of Keetel's Analytical and Practical French Grammar, and conversational exercises.

III. Keetel's Collegiate French Course; special study of French Syntax and idioms; *Quatre-vingt Treize* (VICTOR HUGO); lectures on comparative philology as related especially to the French and other languages of modern Europe.

N. B.—Written exercises from English into French will be required throughout each year.

Spanish

I. Spanish Method of De Tornos; Worman's First and Second Spanish Readers. The cost of the three books is $2.25. Special attention is given to grammar and conversation.

II. Knapp's Spanish Grammar; Selections from works of the best modern writers; Correspondence; Essays.

History

Three courses of history are offered and Course II is required of all before graduation.

I. Greek and Roman History. Careful study of the chief epochs of Greek and Roman History, with special reference to the development of the institutions and the growth and influence of the arts and literature of each. Four weeks at the beginning of the year are devoted to the history and civilization of ancient eastern nations. The text-book used is Myer's and Allen's Ancient History, but collateral reading will be assigned, especially in the literature of the period studied.

II. Mediæval and Modern History and Civics. This course will be required of all students before graduation. Particular attention is paid to institutional growth and the social life of the people. Some selected epoch and its influence on the history of the nineteenth century is made an especial study. The text-book used is Myer's Mediæval and Modern History. The pupil is expected to familiarize himself with Emerton's Middle Ages and collateral reading from other works selected by the instructor.

The last term will be devoted to civics. This course will consider the origin and trace the development of constitutional government in the United States and California, using original sources as far as possible. Pupils will be expected to prepare bibliographies and do collateral reading. Text-book is Fiske's Civil Government.

III. English History. A study of social and institutional development for the first half year followed by a similar study of French History for the remainder of the year. In each of these courses pupils receive instruction in the preparation of bibliographies of each epoch studied, and are expected to attain the same proficiency in this as in general work.

Physical Geography and Physiology

Physical Geography occupies one period daily during the first half of the year. Among other subjects it includes the relation of the Earth to the other bodies of the Solar System. The various agents that modify its surface, such as rivers, glaciers, waves, winds, currents and tides. The weather. The relations of the plants and animals, including man, to the world in which they live.

The course in Physiology will include sufficient dissection to enable the student to study the organs of the body in their natural position, to recognize the tissues under the microscope, and to understand the various Physiological processes carried on in the body. Hygiene is prominent throughout the course. Text-books, Tarr's Physical Geography, Martin's Human Body.

Geology

In Geology a knowledge of the principal minerals entering into the composi- of the Globe, the structure and nature of mineral veins in their bearing on the subject of mining, and some elementary acquaintance with the fossil relics of past life on the earth are the most important topics of study. Excursions to instructive places within reach serve to illustrate the lessons. Text-book, Tarr's Elementary Geology.

Botany

The work in this science will combine a neccesary amount of systematic botany in the collection and naming of plants with the study of the structure and functions of the different organs and the economic uses of plants to the animal kingdom. Text-books, Bergen's Botany, McDougal's Plant Physiology.

Zoology

The work of the first year will consist of the study of the various types of the Animal Kingdom, such as sponges, jelly-fish, sea-stars, worms, clams, crabs or cray-fish, insects and a vertebrate, comparative anatomy, embryology and histology will enter into the course of the second year. This will include the invertebrates as well as the vertebrates. No special text will be followed, but a number of books will be required and used in the laboratory for reference in different parts of the work.

Advanced Physiology

One year's work is offered in this subject. A year's preliminary work in Botany or Zoology is recommended but is not required. During this year the topics of the earlier course in this subject will be resumed and carried on to a more advanced stage. For obtaining the full benefit from this study students are advised to obtain some preliminary knowledge of Elementary Chemistry. The mechanism of the skeleton and the functions of the muscles, glands, skin,.etc., will be taken up in succession. As books for reference and study, Martin's Human Body, Thornton's Physiology, and Tower & Gorham's Dissection of the Cat, will be employed.

Special courses for mature students and those preparing for a medical course may be arranged for when advisable, in which more advanced work may be undertaken in either of the branches above referred to. Such work would be of a nature not adapted for classes but requiring individual and sustained effort.

Chemistry

I. (a) General Chemistry. The first half year's work consists of the study of the non-metallic elements and the essentials of chemical theory. Its principal aim is to develop the scientific method of observation and thought, to which the acquirement of the mere facts of chemistry is considered of secondary importance. The more important topics taken up are chemical change, elements and compounds, physics of gases, Avogadro's Law, atomic theory, stoichiometry. Much time is spent in the laboratory, and the experimental work is individual. Careful notes are required in this and in all the other laboratory courses in chemistry.

(b) The chemistry of the metals is studied in the second half year through the medium of qualitative analysis, supplemented by study of the principal facts of industrial and theoretical chemistry of the metals.

In both (a) and (b) the text-books are not followed explicitly, but frequent references to the library of the department are made, giving the student a broader view of the subjects treated.

Text-books (a) Elements of Chemistry, Freer; (b) Qualitative Chemical Analysis, A. A. Noyes.

In the Chemical Laboratory the chemicals and apparatus are furnished to the students at cost, and the total expense for the first year varies from five to seven dollars, exclusive of books.

II. More advanced work in Qualitative Analysis follows I (b) and is completed during the first term of the second year in chemistry. In the second and third terms Mineralogy and Organic Chemistry follow. Mineralogy is studied by aid of the collections of the Institute, and the work consists of descriptive mineralogy and crystallography followed by determinative mineralogy and blowpipe analysis. Text-books: Minerals and How to Study Them, E. S. Dana; Tables for the Determination of Common Minerals, W. O. Crosby: Determinative Mineralogy and Blowpipe Analysis, G. J. Brush.

Students who have finished Qualitative Analysis may then begin Assaying. The work in this subject comprises fire assay of lead, silver and gold ores by various processes. The laboratory work is accompanied by thorough study of the reactions involved, and the scientific foundations for the processes used. Those who have not had the preparation in General Chemistry and Qualitative Analysis requisite for an appreciation of this work will not be received.

The work in Organic Chemistry consists of a study of the various classes of carbon compounds by means of recitations and laboratory work.

The laboratory work comprises syntheses, class reactions, and elementary analysis. Text-book: Organic Chemistry, Bernthsen.

The expense of Course II is from five to eight dollars, exclusive of books and minerals.

III. In the third and succeeding years opportunities are offered for advanced work in organic, analytical and theoretical chemistry, and special arrangements of courses are made with each student.

Physics

I. General elementary course in physics. Instruction is given by means of laboratory work with discussion of experiments performed and study of references to some text or books in library. Experiments are performed by the student himself. They are not illustrations of some principle already learned, but lead the student to deduce the principles from the phenomena observed. Whenever possible quantitative experiments are employed. Careful notes are required in this and the following courses. The work is made as largely individual as possible so that the student may proceed as rapidly as his ability permits.

Open to those who have completed algebra and Plane geometry.

II. The principles of electricity and magnetism and physical measurements.

This course is intended for those who wish to continue their work in physics or pursue the work in electrical engineering. In electricity and magnetism a careful study is made of the general principles and theories, together with the simpler applications of mathematics. The work in physical measurements consists of a series of experiments in mechanics, heat, sound and light, selected with the view of supplementing Course I, of acquainting the student with the use and adjustment of physical instruments and familiarizing him with and enabling him to use with skill and precision the different methods for determining physical constants. A study is also made of the sources of error incidental to physical measurements and the means of eliminating them or correcting for them.

In electricity and magnetism the Stanford Manual and the Principles of Electricity and Magnetism, by Silvanus P. Thompson, are used. The experiments in physical measurements are selected from various manuals.

Open to those who have completed Course I, Trigonometry, and Chemistry I.

Electrical Engineering

I. Electrical measurements. This course includes such work as determination of horizontal component of earth's magnetism, measurement of resistance, measurement of current, determination of galvanometer constants, measurement of electro-motive force, measurement of capacity of condensers, study of magnetic qualities of iron, insulation tests, location of line faults, study of characteristic curves of dynamos and motors.

Instruction is given by work in laboratory, together with discussion of experimental work and reading references. Experiments are selected from various manuals.

Open to those who have completed Physics II and have completed or are taking Calculus.

II. Theory and use of steam engine indicator, cradle dynamometer and Prony brake; efficiency tests of dynamo and motors; photometry; study of alternating currents by analytical and graphical methods; design of dynamos, motors and transformers; study of general technical applications of electricity as telegraphy, telephony, electric lighting, electric distribution and transmission of power.

Instruction is given by means of laboratory work, recitations and lectures. In the latter part of the year the usual methods of instruction are supplemented by visits to the various electrical plants in Pasadena and Los Angeles and by talks from men engaged in commercial electrical work.

Open to those who have completed Electrical Engineering I and Differential and Integral Calculus.

The laboratory fee in any of the above courses need not exceed $1.50.

Shop Work

Wood-Work

I. This course consists of work in joinery, turning and cabinet work. It has been the desire to arrange a course which would be valuable, considering it from

both an educational and industrial standpoint. The exercises have been designed so that there would be a gradual growth in the difficulty of construction, and at the same time the presenting of practical, useful and æsthetic elements. Such a series of exercises would naturally call forth a gradual development in the ability of the student and also cultivate a sense for beauty and proportion.

The work is given to the student by means of blue-prints taken from working-drawings. From these he constructs his models. These drawings are made with the greatest care and accuracy. Helpful notes in reference to the work accompany each drawing. This method acquaints the student with the practical use of accurate working-drawings. After the models have been made he then makes his own working-drawings from them.

The course in joinery is composed of eighteen progressive exercises, involving the construction of sixteen different joints, the drawing of analytical and free-hand curves, and the use of fifty different tools and machines.

The student is allowed to display his individuality in the exercises in inlaying and cabinet-work. These exercises are made from his own drawings and after his own designs, which are submitted to the instructor before the work is begun.

The course in turning consists of fifteen progressive exercises given in the following order: Center-work, face-plate-work, chucked-work, and long-work.

The above problems in wood-work are taken in the order of joinery, inlaying, turning and cabinet-work. This work is calculated to be finished by the average student in one school year, working one and one-half hours daily.

The expense connected with this work need not exceed three dollars for the entire year, and may be considerably less than that sum.

For students who have completed the Sloyd course a special course in wood-work is offered, on the completion of which they will receive full wood-shop credit.

INLAID TABLE—MADE IN WOOD SHOP.

This course consists of selected exercises in joinery and turning, and a finished piece in inlaying. The training includes advanced chuck and face-plate-work. This course occupies two terms.

Forging

II. Forge. Mechanism and care of forge; preparation of forge for fire; building and managing fire.

Tools. Instruction in the care and use of tools.

Processes. The processes involved in the year's work are: Drawing, bending, upsetting, different kinds of welding, punching, drilling, fullering, swaging, cutting cold, chipping, cutting hot, splitting, twisting, filing, brazing, hardening, tempering, and ornamental iron work.

Tempering. Hardening in water and oil, tempering or drawing, temperatures and colors used, and processes in tempering tools for wood and iron work.

Ornamental Iron Work. At the close of the year each student will be required to design and make some special piece involving the various elements of forging mastered.

The average cost of material used in this department is $2.00 a year.

Pattern-Making and Machine-Shop Practice

III. The entire year is spent in two courses of exercises, one in pattern-making and the other in machine-work. These courses are arranged to embody the different principles of pattern and machine-work, and students are not allowed to do any finished pieces until these exercises are completed.

The course in pattern-making brings out the principles of drawing, allowing for finish and shrinkage, split-patterns, and rib-work, segment-work, simple and complex core-work, etc. Some work in molding is required, and a suitable bench and tools are provided.

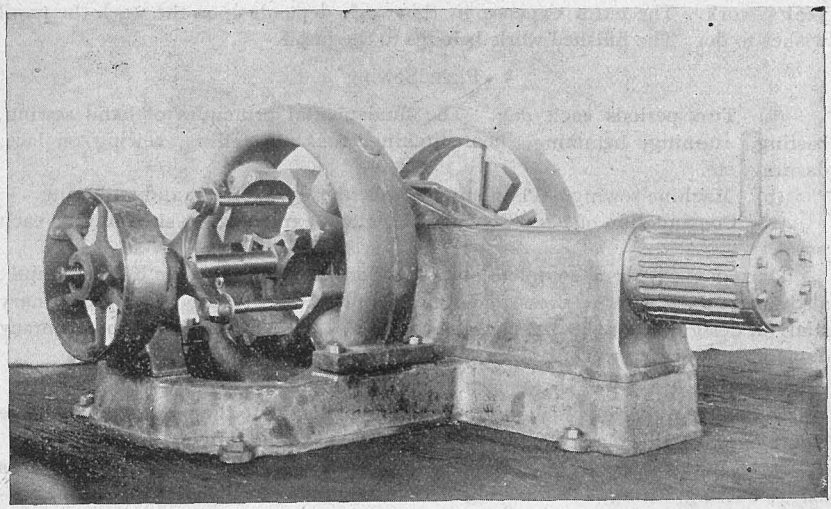
In the machine shop the student begins with bench and vise work, including chipping, filing, polishing, and brass finishing.

The course in machine-work includes also work on lathes, such as plain turning, right and left and inside thread cutting, turning tapers, hand-tool work, and all kinds of chuck-work. Also each student does some work on the planer, shaper, milling-machine, and drill-presses. Special attention is given to accuracy of measurements, finish of work, and care of machines and tools.

IV. During the fourth year each student is expected to ake, or assist in making a complete set of patterns for some piece of machinery, and to do the machine work on the castings.

The work this year includes a six horse-power high-speed automatic engine, direct-connected to a three kilowatt multipolar dynamo, built for the department of electrical engineering. It is furnished with appliances for experimental engine and dynamo testing and is so designed that either continuous or alternating currents of various voltages may be generated. The design is intended to embody the best modern practice in high-speed direct-connected power plant construction.

There have also been completed this year, a two horse-power gas engine, a one horse-power gas engine with propeller and fittings for a power-launch, an 18-inch printer's paper-cutter, a 9-inch by 3-foot engine-lathe, a 12-inch wood-lathe, a 5-foot wind-mill for pumping, a telescope mounting, besides several attachments for machines already in use, and a number of special tools and pieces of apparatus for use in the various departments.



DIRECT CONNECTED ENGINE AND GENERATOR BUILT IN MACHINE SHOP (A FEW WEEKS BEFORE COMPLETION).

Text-books are not used.

Subjects required in preparation are wood-work, forging, and elementary geometry.

The cost of material during the third year is about $2.50. Expense for the fourth year depends upon the work chosen by the student.

Modeling

(a) This work precedes that of wood carving, and is of great value as a means of comprehending and realizing good form and proportion.

The year's work includes the modeling of fruits, flowers and sprays of foliage from nature and casts; different styles of historic ornament from casts and photographs. If deemed advisable students may model from the mask and head, in the round, the first year. All work is individual. Each student is advanced as rapidly as his ability permits. Instruction is given in the making of plaster casts. No extra expense is attached to the work in clay unless pupils wish to preserve their work in plaster.

Wood Carving

(b) This work aims to give the pupil practical application to the principles gained in the study of drawing and modeling. The year's work includes preliminary exercises for the care and use of tools, horizontal and vertical decoration, plane and curved surface carving, incising and stamping, low relief in historic styles.

Instruction and practice are given in design, including elements of ornament, scroll patterns, surface decoration, borders, panels, and the application of these principles in designing and ornamenting pieces of furniture.

Students are required to make the working-drawings as well as the designs for the decoration of all work.

Students may elect to do more advanced work than that outlined in the required year's work. The extra expense in this work depends upon the work the pupil wishes to do. The finished work belongs to the pupil.

Plain Sewing

(a) Two periods each day. The fundamental principles of hand sewing, basting, running, hemming, hem-stitching, tucking, felling, sewing on lace, darning, etc.

(b) Machine sewing. Plain stitching, hemming, tucking, and gathering.

(c) Continuation of Plain Sewing. Practical experience in shopping by each pupil.

During the year a complete suit of underwear must be made by each pupil; also a shirt waist, a cotton dress, and a wrapper or dressing sack. Some preliminary study in designing for the dressmaking course will be done. Neatness and accuracy demanded in all the work.

Dressmaking

Time: Two periods each day. Pupils must complete the plain sewing course before entering this class, the work of which includes the following:

(a) Taking measures for drafting; drafting tight-fitting basque with bias darts; cutting, fitting, and finishing waists for themselves; trimming and draping the same; putting on collars and revers; drafting sleeves, cutting and making them; cutting gored and circular skirts, lining, interlining, and hanging them.

(b) Choice of materials, cost, amount, harmony of colors; appropriateness of dress to individual; practical experience in shopping.

(c) Matching stripes, plaids, and figured goods; fitting stout figures.

(d) During the year a gown, a house jacket and a waist are required from each pupil.

Cooking

(a) The fundamental principles of cookery and practice in the preparation of vegetables, soups, meats, cereals, biscuits, eggs; cost of materials; care of kitchen; serving a simple dinner.

(b) Instruction in the preparation of more complicated dishes; bread, fish, oysters, poultry, etc.; setting and serving a table.

(c) Entrees, salads, desserts, pastry, cake and creams; jellies, canning of fruits and vegetables.

(d) Menus; marketing; giving of entire breakfasts, luncheons and dinners.

(e) In connection with cookery, instruction will be given in the classification and composition of foods; the action of water upon starch and albumen; tea, coffee and alcohol, their food value and effects upon the system; the yeast plant; fermentation—lactic, vinous and acetic; baking powders, soda and cream of tartar.

Other subjects treated will be the development of odors and flavors of foods; food for the sick; food adulterations; the cheapest and most wholesome foods; physiology of digestion, and a general plan of household work.

Special lectures on Chemistry of Cookery, and on Bacteriology.

Throughout the year dietaries and nutrition will be kept constantly in mind, the object being as much to study the scientific principles of foods as to prepare palatable viands.

Books required: Mrs. Rorer's cook-book, blank books for chemistry notes.

Average cost of material in cooking, $3.00 a term.

A class in cooking will also be organized for gentlemen for a three-months' course.

Drawing, Designing and Painting

Freehand

Original Design (brush work) by Student 11 years of age.

I. Principles of perspective as applied in the drawing of simple typeforms, beginning with cube, cylinder, sphere, etc., followed by objects based on type solids.

Parallel and angular perspective, convergence of lines vanishing points and foreshortening are demonstrated on blackboard by the most simple and practical methods.

Perspective drawings of wood and iron shop exercises.

Outline, shade, shadow and artistic rendering of line are developed in the execution of drawings of rooms, houses and machinery.

Drawings of scrolls, and their original adaptation in prescribed borders, spandrels, and geometric fields.

Original designs for ornamental iron work and wood carving.

II. Perspective as applied in the drawing of groups of objects; relative proportion and study of values; light and shade; the artistic grouping of objects of still-life.

Drawings of the same are made in pencil, pen and ink, sepia and charcoal. Small sketchy effects, in which impressions of light and shade are jotted down, are the outgrowth of the pencil and pen and ink work. Charcoal studies are executed on a larger scale, requiring careful study of details.

Original adaptation of historic ornament in designs for tiles, book-covers and wall paper. Designing from natural plant forms, conventionalizing flowers, etc. Color is first introduced by flat washes of water color to these designs.

III. Painting in water colors from groups of still-life, using full palette of color in portrayal of fruit and flowers.

Study of the history of art, and leading styles of ornament.

Pupils must pass a written examination on history of art, illustrating the same with memory sketches.

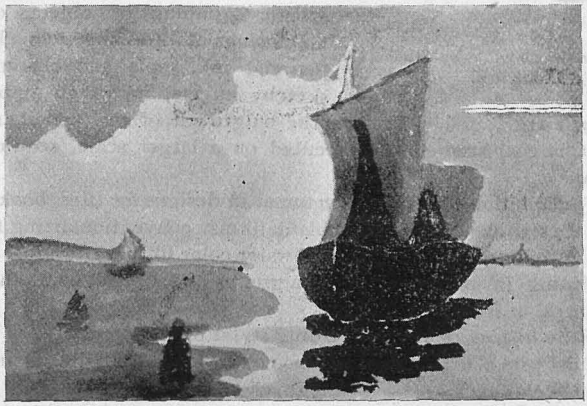
WATER COLOR BY A STUDENT IN THE ACADEMY.

IV. Drawing of mask and head from plaster casts in pencil, pen and ink, and charcoal.

Poster designing, drawing full length figure from cast, "Greek Slave," "Venus de Milo," etc.

Sketching from life and costumed model.

Study of composition, followed by pen and ink illustrations of characters and scenes from English literature.



BRUSH WORK BY A SLOYD NORMAL STUDENT.

V. Special course for students in Normal Department. An abbreviated course adapted to the requirements of public school work, introducing latest method of teaching children to handle brush prior to pencil.

Model drawing, perspective sketching, study of historic ornament, and original designing.

Mechanical

It is designed to make the course in mechanical drawing auxiliary to other work at the Institute. Those who are intending to pursue special lines of work will have such work as seems best adapted to their needs. Those who desire it, for instance, can take a course which shall involve much study of the laws of perspective, using one of the best treatises in English—Ware's Modern Perspective. Again, others may take work especially adapted to the needs of civil, mechanical, or electrical engineers.

When work, not in the regular courses, is taken by the students, it will be credited as regular course work should the student desire to enter the regular course at some subsequent time, provided that in quality and quantity it is a fair substitute for regular course work. At all times endeavor will be made to adapt the work to the needs and ability of the individual student.

Drawing instruments, paper, pencils, etc., are furnished by the student.

I. Selection and use of drawing instruments; fundamental principles of orthographic projection with applications in making working-drawings of articles constructed in the wood-shop, illustrating different constructions used in carpentering and cabinet-making. Rectangular and circular forms are chiefly used in these models and other forms involving more difficulty are gradually introduced. Tracing and blue-printing of working-drawings. For those who do not take the course in wood-work, models and copies are provided.

II. Shop-drawings of iron, brass and wood-work; development of prismoidal, pyramidal and conical surfaces, and projections of the intersections of various surfaces with each other; isometric and cavalier projections; simple constructions of shades and shadows; fundamental principles of perspective; simple constructions of shades and shadows in perspective; methods of coloring drawings.

III. Drawings of plans, elevations and sections of machines; drawings of patterns to be made in the pattern-shop; drawings in perspective of furniture, rooms and buildings from actual measurements by the methods practically used by architects and designers; drawings of architectural detail; drawing of involute and epicycloidal gearing from models and with odontographs; topographical drawing; laying out railway curves, profiles, etc.

IV. Drawings of machines with practice in design, using the principles laid down by Unwin, Reauleaux and others; drawings of the architectural orders; methods of artistic rendering used by architects, applied to drawings of buildings; perspective of curved forms with their shades and shadows; elements of graphic arithmetic, composition and resolution of forces, studied graphically with diagrams of stresses for roof and bridge trusses.

Scholarships

Through the generosity of some of the citizens of Pasadena a number of free scholarships have been founded for the benefit of worthy and needy students. The trustees have, in addition to those who are now enjoying these scholarships, a list of worthy applicants, and any persons desirous of extending the influence of the school in this way may obtain full information from the Secretary.

General Information

The Institute is included in the list of schools accredited by the State University. The Leland Stanford Jr. University also accepts the certificates of the Institute and similar privileges are accorded to its graduates in other institutions.

Applicants for admission to any department of the Institute will be required to furnish satisfactory evidence of good moral character and of honorable dismissal from the schools with which they were last connected.

Discipline

It is taken for granted that students enter the Institute with serious purposes and that they will cheerfully conform to such regulations as may be made by the Faculty. The moral tone of the school is exceptionally good, and cases requiring severe discipline seldom occur. It is the aim of the Faculty to maintain in the Institute a high standard of integrity and strict regard for truth; and the attempt of any student to present as his own the work of another, or to pass an examination or test by improper means, is considered a most serious offense, rendering the offender liable to immediate dismissal. Any conduct harmful to the moral standing of the school will, after due admonition, render a student liable to dismissal.

Athletics

Encouragement is given to athletics, and the athletic organizations are under the immediate care of a committee of the Faculty. Membership in these organizations is subject to forfeiture for failure in any regular line of school work.

Literary Societies

Three literary societies, the Pierian, open to students of both sexes, the Gnome Club, for young men, and the Omega Zeta Pi, for young women, are maintained by the students of the Institute with the coöperation of the Faculty, and are doing good work; they afford an opportunity for training in debating, essay writing, declamation, extempore speaking, parliamentary practice, etc.

The POLYTECHNIC, a monthly paper devoted to the interests of the school, is maintained by the students.

Finances

A tuition fee of $35.00 per term admits to membership in any or all classes for which the pupil is prepared, except to the Sloyd Grammar School, in which

the tuition fee is $30.00 per term. A considerable reduction is made for two or more students from the same family. There are no extra charges for work in any of the departments. A deposit of $5 is required of every student to cover breakage, injury or other loss in libraries, laboratories, shops and studios, as well as to cover the actual cost of material used. Any unused part of the deposit is returned to the pupil at the end of the year. If the actual expense in any case exceeds $5, an additional deposit must be made.

Term bills will be payable strictly in advance, and students must submit the Secretary's receipt for the same to each instructor whose classes he may seek to enter.

Board

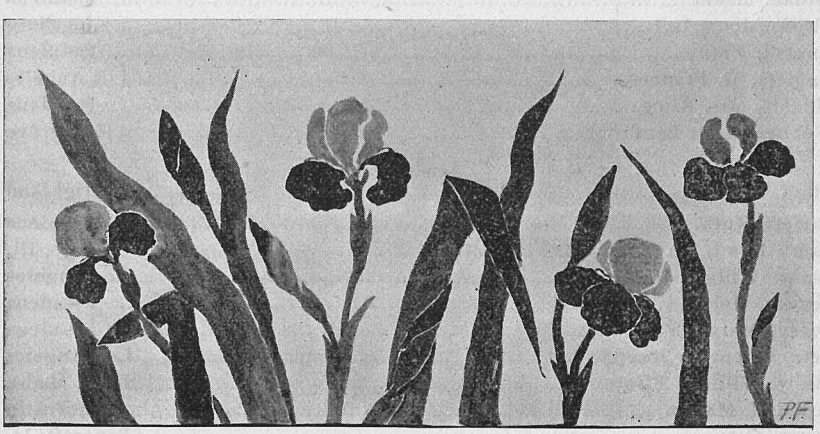
Good board can be obtained at from $4.50 to $6 per week. Any change in boarding place must be immediately reported at the office.

At the request of parents the Institute will assume responsibility for the care and oversight of students who board in homes approved by the officers of the Institute.

For further information address the President or the Secretary,

THROOP POLYTECHNIC INSTITUTE

PASADENA, CALIFORNIA.



REPRODUCED FROM STUDENT'S ORIGINAL DESIGN IN BRUSH WORK.

List of Students

1897-8

College

Blackman, Roy Beebe.....Los Angeles
Coleman, Sarah Ferris.....Pasadena
Ferguson, Louis B.....Cedar Rapids, Iowa
Gaylord, Horace Amidon.....Pasadena

ERRATUM

College

Hill, Lamont Edwin.....Bethany, New York

Sloyd Normal

Barker, Katherine K.....Santa Barbara
Bates, Mrs. Katherine.....Santa Barbara
Elleau, Jeannette M.....Pasadena
Elleau, Pauline M.....Pasadena
Faithfull, Claude Agustus.....Los Angeles
Hannah, Lillian.....Ontario
Hunt, Genie A.....St. Albans, Vt.
Jordan, Mabel.....Pasadena
Olson, Albert L.....Kingsburg
Russell, Emma.....Pasadena
Sanders, M. Frances.....Los Angeles
Shields, Mrs. Alice.....Pasadena
Webber, Marie Bambrick.....Highgrove

Academy

Allen, Echo.....Highland
Barrett, Ruth.....Pasadena
Baur, Eva L.....Chicago, Ill.
Bayly, William Shorrock.....Los Angeles
Becker, John.....Pasadena
Beery, Mary.....South Pasadena
Betz, Valentine Joseph.....Los Angeles
Bixby, William Flint.....Sierra Madre
Bowland, Marion.....Tustin
Bruer, Otto.....Bancroft, Ia.
Burnham, Ralph French.....Orange
Burtt, Dodge.....Pasadena
Caldwell, Charles Morris.....Oil City, Pa.
Clark, Adeline Orilla.....Pasadena
Colby, Fanny.....Los Angeles
Cowan, Sadie.....Pasadena
Dalrymple, Lila Medge.....Pasadena

Davidson, Leonard Ernest.....Pasadena
Davidson, Wilmer Carl.....Pasadena
Dedual, Andrew George.....Pasadena
Derby, William Sperry.....Orange

Eaton, Claude I.....Garden Grove
Erskine, Alfred M.....Racine, Wis.

Farris, Edwin Louis Jr.....Pasadena
Ferris, Jeff Wilson.....Los Angeles
Folsom, Harry G.....Los Angeles
Fordyce, Mabel.....Pasadena

Gale, Oliver Marble.....Waukesha
Gardner, Howard.....Orange
Gaylord, Horace Amidon.....Pasadena
Gaylord, James Mason.....Pasadena
Giddings, Lawson Henry.....Pasadena
Gilbert, Horace Ray.....Pasadena
Glass, William M.....Pasadena
Gray, Henry William.....Pasadena
Green, Paul Duane.....Pasadena
Greer, William List.....Pasadena
Griffith, Leigh Marriam.....Pasadena
Guenther, Arthur George.....Orange

Hallett, Homan Danforth.....Pasadena
Hansen, Waldemar G.....Pasadena
Hasse, Carl Edward.....Soldiers' Home
Hayes, William T.....Monrovia
Heald, Oscar Leslie.....Altadena
Heath, Frank Coleman.....San Diego
Helmke, Jacob.....Pasadena
Henszey, Margaretta Moore.....Germantown, Pa.
Hill, Harry Hutchinson.....South Pasadena
Holcomb, Delaney.....North Pasadena

Jerauld, Edwin Whipple.....Murietta
Jewett, Pauline.....Lamanda
Jones, Allen.....Pasadena
Jones, Philip.....Pasadena

Langford, Mabel Celia.....Pasadena
Lapp, Clemens Elmer.....Salina, Kans.
Lemmon, Horace Hall.....Pasadena

MacMillan, John.....Los Angeles
McKelvey, Muir Mapes.....Cucamonga
Menner, Lottie.....Pasadena
Merritt, Louis Napoleon.....Pasadena
Miller, James Evans.....Los Angeles
Monroe, Grace Ella.....Pasadena

Nevin, Lowrie Baird.....Los Angeles

O'Harra, Lewis.....Los Angeles
Olson, Albert L.....Kingsburg

ERRATUM

College

Hill, Lamont Edwin.....Bethany, New York

O'Melveny, Harvey Edward.....Los Angeles
Packard, Ulysses Grant.....Pasadena
Parker, George Millard.....Tucson, Ariz.
Parker, Grace Miles.....Tucson, Ariz.
Patten, Mary Charlotte.....Palatine, Ill.
Poage, Leland Starke.....Pasadena
Poindexter, Charles R.....Los Angeles
Poole, Charles R.....Long Beach
Posey, John Van Gieson.....Los Angeles
Raleigh, Carl Vernon.....Los Angeles
Richards, Bessie Everett.....Pasadena
Richert, Cornelia Edna.....Los Angeles
Ripley, Lilla May.....Honolulu, S. I.
Rowan, Bruce.....Los Angeles
Rowan, Frederic Scheaffer.....Los Angeles
Saunders, Florence I. B.....Pasadena
Sawyer, Clarence.....Los Angeles
Schutte, Fritz.....Toluca
Scott, Archie.....Duarte
Simpson, Harold Grant.....Pasadena
Smith, W. Sidney.....South Pasadena
Springer, Maude Irwin.....Edwardsville, Ill.
Sterrett, Roger Jordan.....San Jose
Strong, Robert Marquis.....Pasadena
Vannier, Charles Frederick.....Sierra Madre
Van Zandt, Jerome G.....Chicago, Ill.
Vose, Alden H.....Los Angeles
Walker, James G.....San Francisco
West, Frederick C.....Chicago, Ill.
Williams, James T.....Orange
Wood, Clifford Harvey.....Pasadena
Wright, Rachel Edna.....Pasadena

Sloyd Grammar School

Adams, Morgan O.....Pasadena
Allen, Paul Joseph.....Pasadena
Banbury, Wm. Mohr.....Pasadena
Bates, Harold Charles.....Santa Barbara
Bates, Robert Wentworth.....Santa Barbara
Bates, Stacy Collins.....Santa Barbara
Billings, Leon.....Pasadena
Boothe, Stephen Sterling.....Los Angeles
Borchard, Frank Albert.....El Rio
Brigden, T. Dwight.....Pasadena
Brigden, Elizabeth Louisa.....Pasadena
Brodie, William Neal.....Santa Monica
Burnham, Roderick Deane.....Highland Park
Callander, Will C.....San Dimas

Carter, Ned Peck.....Los Angeles
Clark, Leslie Cooper.....Pasadena
Clark, Mary Ethel.....Pasadena
Daggett, Maud.....Pasadena
Davis, Paul M.....Banning
Douglass, Benjamin Kaime.....Los Angeles
Douglass, Francis Archibald.....Los Angeles
Deming, Clarence Lee.....Oil City, Pa.
Earley, Jessie.....Pasadena
Frazier, Frank F.....Los Angeles
Gaylord, John Clarence.....Pasadena
Gaylord, Ruth Louise.....Pasadena
Gray, Lizzie.....Pasadena
Greer, Ray.....Covina
Hagen, Walter Abs.....Los Angeles
Hallett, Hazel.....Pasadena
Hechtman, Henry Albert.....Los Angeles
Hechtman, Judson Oscar.....Los Angeles
Henszey, Thomas McK.....Germantown, Pa.
Hoover, Ernest Frank.....Arlington, Ia.
Howe, Eliot C.....Pasadena
Huff, Roswell P.....Pasadena
Huff, William Foster.....Pasadena
Hughes, William Ashton.....Los Angeles
Ivers, Harold Adelbert.....Los Angeles
Klusmann, William.....Chino
Mallory, Conroy B. Jr.....South Pasadena
McCauley, Alma Louise.....Pasadena
McCauley, Mary Blanche.....Pasadena
McDermid, Katherine.....Pasadena
Morgan, Harry Dukes.....Los Angeles
Peck, Gladys A.....Pasadena
Peck, Sidney J.....Pasadena
Phillips, Virginia.....Pasadena
Posey, Oliver W.....Los Angeles
Peabody, Thomas Arthur.....Fostorio, O.
Quigley, John Frederic.....Nellie
Reed, James Benford.....Pasadena
Richardson, Stanly Miller.....Santa Monica
Rowan, Benjamin.....Los Angeles
Rowan, Paul.....Los Angeles
Rowan, Phillip D.....Los Angeles
Schwed, David.....Los Angeles
Sherman, W. Lancey.....Pasadena
Singleton, Ed Lundy.....Randsburg
Smiley, Walter Carl.....Pasadena
Stebbins, Thomas H.....Los Angeles
Taylor, Glenn Arthur.....Covina

Thomas, Jessie Prudence ..... Pasadena
Thomas, R. Ray ..... Pasadena
Toland, James Winford ..... Pasadena
Turner, Ray Silvester ..... Atlanta, Ill.

Ward, Nellie Alexander ..... Pasadena
Warner, Joseph Roy ..... Pasadena
Welsh, Clyde M. ..... Los Angeles
Welsh, William Oscar ..... Waukesha, Wis.

Special Students

Bolt, Blanche ..... Pasadena
Bowler, Mrs. E. F. ..... Pasadena
Boynton, Edmund C ..... Los Angeles

Daggett, Helen ..... Pasadena
Daggett, Ruth ..... Pasadena
Dobbins, H. L. ..... Pasadena

Edwards, Mrs. Lena H. ..... Pasadena
Eliot, Edward L. ..... Pasadena
Evans, Elizabeth P. ..... Pasadena
Ewing, Lucy ..... Pasadena

Fife, Lyda ..... Pasadena
Fraser, Mrs. I. M. ..... Pasadena

Glick, Naomi ..... Pasadena
Greble, Margaret ..... Pasadena

Howell, George Franklin ..... Philadelphia, Pa.
Hubbard, Elizabeth ..... Pasadena

Jardine, Mrs. John E. ..... Pasadena

Lienau, Walter R. ..... South Pasadena

Macomber, Mrs. Harry ..... Pasadena

Rowland, Virginia ..... Pasadena

Sabin, Jessie ..... Pasadena
Sheldon, Nina ..... Pasadena
Stevenson, F. Josephine ..... Pasadena
Stickney, Susan H. ..... Pasadena
Story, Ada ..... Pasadena

Whitmore, Mrs. R. L. ..... Pasadena

Summary

	Male	Female	Total
College	8	4	12
Sloyd Normal	2	11	13
Academy	74	23	97
Sloyd Grammar School	56	14	70
Special Students	4	22	26
Totals	144	74	218
Duplicates	2	0	2
Different Names	142	74	216

List of Graduates

1895

Sloyd Normal Course

Daniels, Esther C., (Mrs. Taylor)..... Corona
Gower, Hattie F..... Los Angeles
Harris, Carolyn..... Los Angeles
Miller, Charles E..... Los Angeles
Simcoe, Benjamin F..... San Diego

Academy

Allen, Robert S..... Pasadena
Carlton, Don W..... Los Angeles
Doty, George F..... Pasadena
Ferguson, Clarence..... Los Angeles

1896

College

Haynes, Dian M..... Pasadena
Doty, George F..... Pasadena

Sloyd Normal Course

Burkhead, Ada H..... Los Angeles
Chamberlain, Arthur H..... Pasadena
Johnson, Annette..... Los Angeles
Keyes, Helen B..... Holyoke, Mass.
Mathews, Amanda..... City of Mexico
McLaren, Jennie..... Pasadena
Riggins, Ara..... San Bernardino

Academy

Arnold, Ralph..... Pasadena
Conger, Lulu N..... Pasadena
Gray, Roy W..... Pasadena
Morrison, Margaret L..... Compton
Menner, Ivy..... Pasadena
Snyder, Blanchard N..... Anaheim
Winslow, Edward F..... Independence, Iowa

1897

College

Grinnell, Joseph..... Pasadena

Sloyd Normal Course

Batchelder, Lizzie..... Los Angeles
Blanchard, Ada F..... Los Angeles
Cleveland, Ada C..... Pasadena
Cook, Mary A..... Pomona
Coombs, Sarah C..... Visalia
Fisher, Pearl B..... Pasadena
Holbrook, Lucy M..... Worcester, Mass.
Mellish, Ida M..... Pasadena
Smith, Mary M..... Los Angeles
Wright, Charles H..... Pasadena

Academy

Baker, Calvin.....Pasadena
Baker, Ruth Ellen.....Pasadena
Barker, James Edmund.....Pasadena
Blick, Kate Fay.....Pasadena
Conger, Lyda Drowne.....Pasadena
Conger, Ray Everett.....Pasadena
Farnsworth, John Arthur, Jr.....Los Angeles
Jewett, Frank Baldwin.....Lamanda
Johnston, Blanche.....Pasadena
McQuilling, William.....Pasadena
Polkinhorn, Edwin J.....Los Angeles
Reed, John O.....Deer Lodge, Mont
Russell, Emma.....Pasadena
Stimson, Charles W.....Seattle, Wash.
Vose, Richard A.....Los Angeles

1898

College

Blackman, Roy Beebe.....Los Angeles
Jewett, Frank Baldwin.....Lamanda

Sloyd Normal Course

Elleau, Jeannette Marcelle.....Pasadena
Elleau, Pauline Margaret.....Pasadena
Faithfull, Claude A.....Los Angeles
Hannah, Lillian.....Ontario
Hunt, Genie A.....St. Albans, Vermont
Jordan, Mabel.....Pasadena
Olson, Albert L.....Kingsburg
Russell, Emma.....Pasadena
Sanders, M. Frances.....Los Angeles
Shields, Mrs. Alice.....Pasadena
Webber, Marie Bambrick.....East Riverside

Academy

Beery, Mary Ellen.....South Pasadena
Folsom, Harry G.....Los Angeles
Gaylord, Horace Amidon.....Pasadena
Gaylord, James Mason.....Pasadena
Menner, Lottie Ethel.....Pasadena
Monroe, Grace Ella.....Pasadena
O son, Albert L.....Kingsburg
Poindexter, Charles Lawrence.....Los Angeles
Sterrett, Roger Jordan.....San Jose
Wright, Rachel Edna.....Pasadena

Officers of the Alumni Association

President, Robert S. Allen, '95. Vice-President, Kate F. Blick, '97.
Secretary, Ivy Menner, '96. Treasurer, Ruth Baker, '97.
Historian, Dian M. Haynes, '96.

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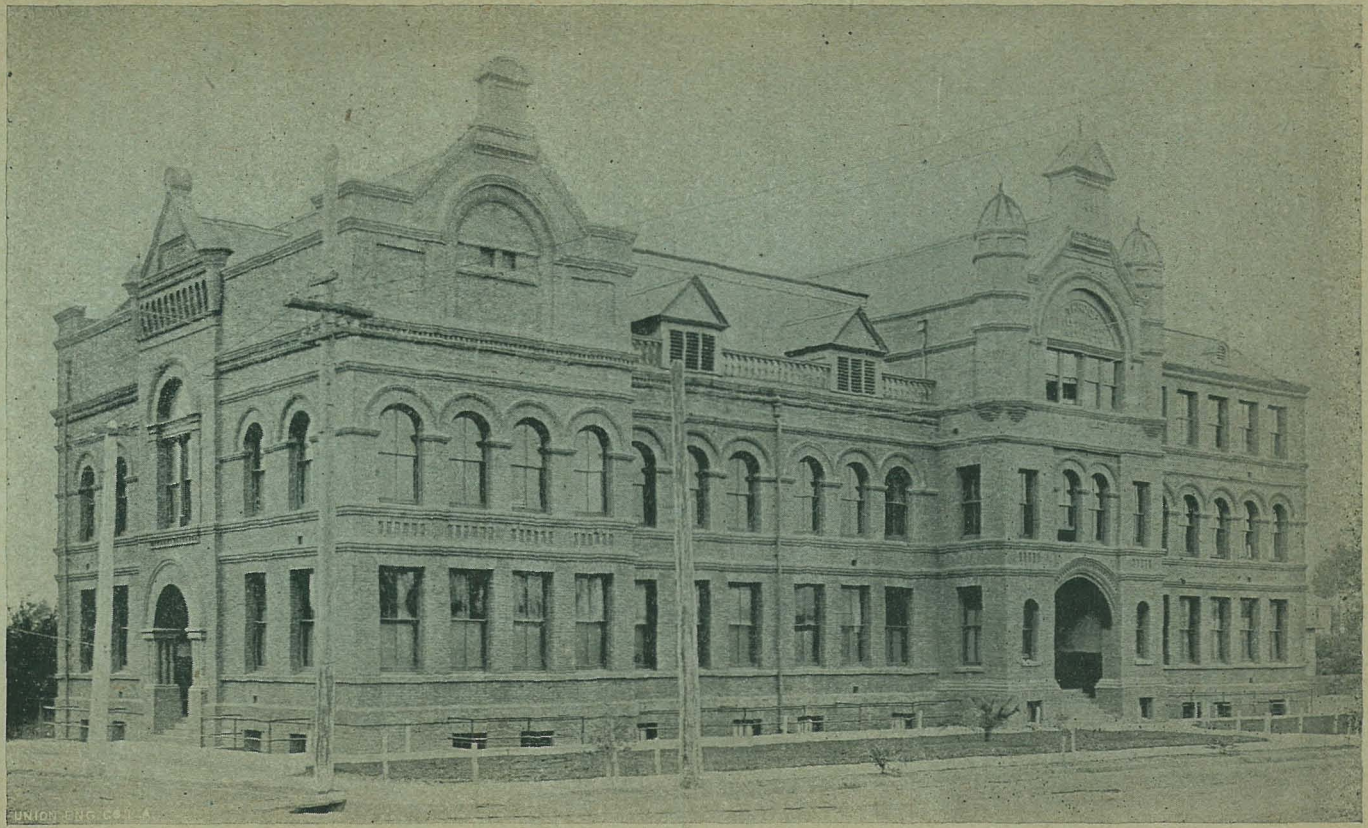

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