

EIGHTH ANNUAL
CATALOGUE

Throop Polytechnic Institute...



PASADENA, CALIFORNIA
1899-1900

Eighth Annual Catalogue

...OF...

Throop Polytechnic Institute

..AND..

Manual Training School

PASADENA, CALIFORNIA

1899 - 1900

1899

Published by the Institute

Calendar

1899-1900

Meeting of Board of Trustees	-	-	Tuesday, September 12, 1899
Entrance Examinations	-	Monday and Tuesday, September 18, 19, 1899	
Fall Term begins	-	-	Wednesday, September 20, 1899
Thanksgiving Vacation, Thursday and Friday, November 30, December 1, 1899			
Meeting of Board of Trustees	-	-	Tuesday, December 12, 1899
Founder's Day	-	-	Thursday, December 14, 1899
Fall Term ends	-	-	Friday, December 22, 1899

Christmas Vacation

Winter Term begins	-	-	Wednesday, January 3, 1900
Washington's Birthday	-	-	Thursday, February 22, 1900
Meeting of Board of Trustees	-	-	Tuesday, March 13, 1900
Winter Term ends	-	-	Wednesday, March 21, 1900

Spring Vacation

Spring Term begins	-	-	Wednesday, March 28, 1900
Memorial Day	-	-	Wednesday, May 30, 1900
Baccalaureate Sunday	-	-	June 10, 1900
Graduating Exercises, Sloyd Grammar School,	-	-	Tuesday, June 12, 1900
Annual Meeting Board of Trustees	-	-	Tuesday, June 12, 1900
Alumni Reunion	-	-	Tuesday evening, June 12, 1900
Commencement	-	-	Thursday evening, June 14, 1900
Exhibition Day and End of Term	-	-	Friday, June 15, 1900

Founder

HON. AMOS G. THROOP

Born at De Ruyter, New York, July 22, 1811

Died at Pasadena, Cal., March 22, 1894

Board of Trustees

E. E. SPALDING, A. M.	-	-	Pasadena,	-	-	Term expires	1900
MRS. CLARA B. BAKER BURDETTE	"	-	-	-	-	"	1900
— — — — —	"	-	-	-	-	"	1900
JOHN W. HUGUS	-	-	"	-	-	"	1901
WILLIAM STANTON	-	-	"	-	-	"	1901
HIRAM W. WADSWORTH	-	-	"	-	-	"	1901
EVERETT L. CONGER, D. D.	-	"	-	-	-	"	1902
MRS. LOUISE T. W. CONGER	-	"	-	-	-	"	1902
CYRUS M. DAVIS	-	-	"	-	-	"	1902
CHARLES D. DAGGETT	-	-	"	-	-	"	1903
H. M. HAMILTON	-	-	"	-	-	"	1903
A. R. METCALFE	-	-	"	-	-	"	1903
PERRY M. GREEN	-	-	"	-	-	"	1904
NORMAN BRIDGE, M. D.	-	"	-	-	-	"	1904
THOS. C. HOAG	-	-	"	-	-	"	1904

Officers of the Board

NORMAN BRIDGE, President	C. D. DAGGETT, Vice-President
P. M. GREEN, Treasurer	DAVID HEAP, Secretary and Business Agent
THOS. C. HOAG, Auditor	Residence, 286 N. Raymond Ave.

Executive Committee of the Board

NORMAN BRIDGE, <i>ex-officio</i>	E. L. CONGER	C. D. DAGGETT
THOS. C. HOAG	H. W. WADSWORTH	

Officers of Instruction and Government

1899-1900

WALTER A. EDWARDS, President

Professor of Ancient Languages and German

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; Instructor in Ancient Languages and German, 1897-9; Professor of Ancient Languages and German, 1899-

356 W. California St.

HERBERT B. PERKINS

Professor of Mathematics and Instructor in Mechanical Drawing

S. B., Massachusetts Institute of Technology, 1874; Professor of Mathematics and Astronomy, Lawrence University, 1878-80, and 1882-86; Muncie 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 in Mechanical Drawing and Higher Mathematics, Throop Polytechnic Institute, 1892-9; Professor of Mathematics, 1899-

E. Colorado St.

WALLACE K. GAYLORD

Professor of Chemistry; Registrar

S. B., Massachusetts Institute of Technology, 1893; Instructor in Chemistry and Mathematics, Throop Polytechnic Institute, 1893-9; Professor of Chemistry, 1899-; Member American Chemical Society; Member German Chemical Society.

304 Cypress Ave.

LUCIEN H. GILMORE

Professor of 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, 1895-9; post-graduate student, University of Chicago, 1898-9; Professor of Physics and Electrical Engineering, Throop Polytechnic Institute, 1899-

ARTHUR H. CHAMBERLAIN

Professor of Pedagogy and Instructor in 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; Graduated Normal Department Throop Polytechnic Institute, 1896; Instructor Pedagogy and Sloyd, Throop Polytechnic Institute, 1896-9; Professor of Pedagogy, 1899-; Member American Manual Training Association.

377 N. Los Robles Ave.

MRS. JENNIE COLEMAN

Professor of English and History; Librarian

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, 1896-9; Professor of English and History, 1899-; Holder of California Life Diploma.

472 Benefit Court.

EDWARD W. CLAYPOLE

Professor of Geology and Biology; Curator of Museum

B. A. and D. Sc. of the University of London; Fellow of the Geological Societies of London, Edinburgh, 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, 1898-9; Professor of Geology and Biology, 1899-

125 N. Marengo Ave.

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-

308 Lincoln Ave.

FANNY F. STERRETT

Instructor in 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-

55 S. Marengo Ave.

CHARLES H. WRIGHT

Instructor in Wood and Iron Shops

Graduated Manual Training Department, Washington University, St. Louis, 1885; Principal Haish Manual Training School, Denver University, 1885-7; Student Mechanical Engineering, Ohio State University and Colorado School of Mines, 1887-9; Instructor Iron Shop, Throop Polytechnic Institute, 1894-

N. Marengo Ave.

MRS. GRACE E. DUTTON

Instructor in 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 Domestic Science, Throop Polytechnic Institute, 1897-

ROBERT E. FORD

Instructor in 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-

80 N. Euclid Ave.

MARY A. MERWIN

Instructor in Spanish

Student Valparaíso, Chile, and at M. A. Burnham Classical School, Northampton, Mass.; Instructor in Spanish, Classical School for Boys, Pasadena, Cal., 1893-4; Teacher Private Classes in Spanish, Pasadena, Cal., 1892-; Instructor in Spanish, Throop Polytechnic Institute, 1898-

South Pasadena.

ELIZABETH GRAHAM

Assistant in Sloyd Grammar School

Student Curry Institute, Pittsburg, Pa.; Instructor Public Schools, Niles and Cleveland, Ohio, 1877-88; Principal Miles Park Building, Cleveland, 1888-93; in charge of Primary Department Southwest Institute, San Diego, Cal., 1896-99.

Instructor in Gymnastics

CHARLES F. HOLDER, LL. D.

Non-resident Lecturer in Zoology

U. S. Naval Academy, 1866-71; Assistant Curator Zoölogy, 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

W. A. EDWARDS, Chairman
BONNIE BUNNELLE
A. H. CHAMBERLAIN

E. W. CLAYPOLE
MRS. JENNIE COLEMAN
W. K. GAYLORD

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 maintenance. Articles of incorporation were filed September 23d; the first Board of Trustees was organized October 2d. The doors of the Institute were opened to students November 2d. It was established to 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

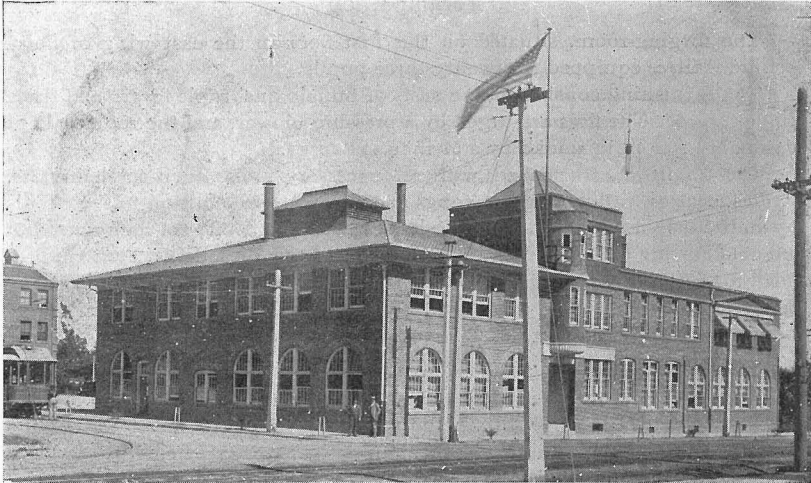
Pasadena is generally acknowledged to be one of the most beautiful residence cities in California. It is situated within ten miles of the city of Los Angeles, at the head of the San Gabriel valley and at the base of the picturesque San Gabriel mountains. In beauty and healthfulness, in the culture of its homes, and in its high social and moral tone, Pasadena has no superior on the Pacific Coast. It is reached by the Santa Fé, 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, 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, a fine fret-saw and a sand-papering machine for polishing large surfaces. 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. In addition, it is provided with a molding bench where the students may test their patterns and gain some knowledge of the principles of molding.

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-horse-power engine, are of the latest style. They were obtained through the generosity of citizens of Pasadena, at a cost of nearly ten thousand dollars.

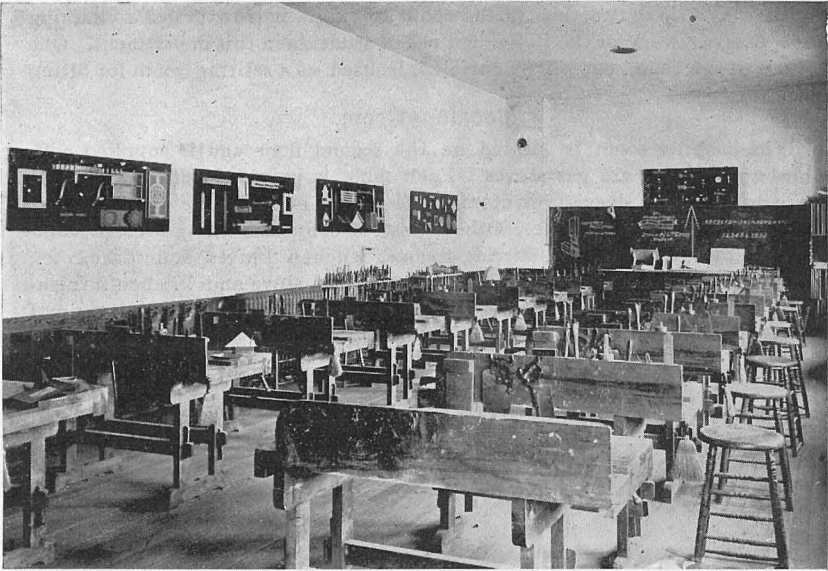
The shop contains the following machines: A 24-inch x 6-foot Powell planer; a Hendy shaper, 15-inch stroke; a 24-inch Prentiss Bros. drill; a Sigourney sensitive drill; a Brown & Sharpe No. 1 universal milling machine; a two-wheel emery grinder; a grindstone; one 24-inch x 10-foot, one 16-inch x 8-foot 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 $\frac{1}{8}$ -inch to $1\frac{1}{4}$ -inch by 32nds; from $1\frac{1}{4}$ to 2-inch by 16ths; a set of hand reamers from $\frac{1}{8}$ -inch to $1\frac{1}{4}$ -inch by 32nds; a set of Rose reamers from $\frac{1}{8}$ -inch to $1\frac{1}{4}$ -inch by 16ths; a set of taps and dies from 7-64 to $\frac{1}{4}$ -inch by 64ths, and taps from $\frac{1}{8}$ 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.

Sloyd Department

The Sloyd department occupies two adjacent, well lighted rooms on the first floor of Polytechnic Hall. One of these rooms is devoted to the work of the grammar grade pupils; the other is used exclusively by normal students. They are well equipped with Sloyd working-benches, each provided with a set of high grade cabinet-makers' tools. Charts, models, blackboards, cases for finished and unfinished work and compartments for drawing materials, etc., are provided. A grindstone, run by motor, is placed in each room, together with all necessary appliances for thorough work.



SLOYD ROOM FOR GRAMMAR GRADES

The library of the normal department comprises works on psychology, pedagogy, history of education and manual training subjects.

Sewing-Room

The sewing and garment-making room is located on the first floor. It is equipped with large tables, six sewing machines, a gas iron-heater and press-



SEWING-ROOM

ing-boards. Along two sides of the room are high, narrow tables containing large, deep drawers for the individual use of students in this department. One portion of the room, cut off by curtains, is used as a retiring room for fitting purposes.

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 two 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, etc., are hung. A large dust-proof cupboard, containing meal and flour bins, dish closets, etc., a large water-



COOKING-ROOM

heater, a gas range, a large refrigerator, and cupboards 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.

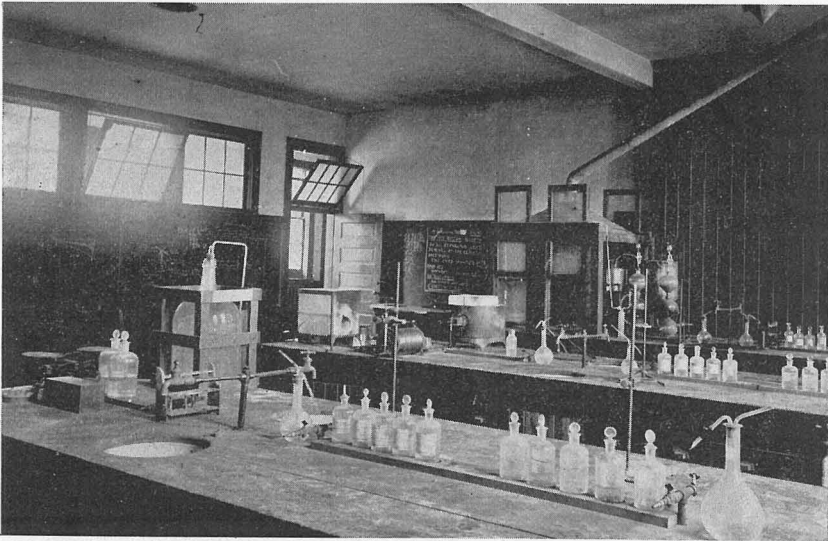
Chemical Laboratory

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 in general, analytical

and organic chemistry, and assaying, 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, and assaying.

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, assaying furnaces with Hoskins' burner, apparatus for analysis of baking powders, apparatus for milk analysis, analytical and assay balances, Westphal specific gravity balance, mercurial barometer, spectroscope, etc., etc.



CHEMICAL LABORATORY

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, on the right is the physical laboratory, 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.

Physical and Engineering Laboratories

The department of Physics and Electrical Engineering occupies two rooms in East Hall. The Physical Laboratory is a large, well lighted room, fitted with gas and water pipes, electric wires, tables, lockers, cases, etc. This room is used for the elementary work in physics.

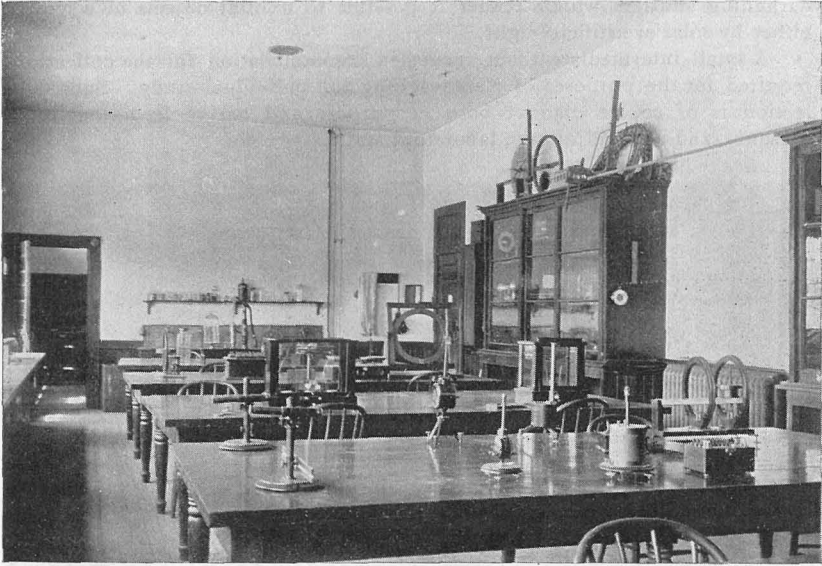
On the basement floor of the East Hall is the Engineering Laboratory, a



EAST HALL

large room with cement floor, three heavy piers of brick and cement, work benches and cases. It is piped for gas and water and steam, and is wired for electric light and power. Here are found the facilities for precise work in advanced physics and electricity, in the solid foundations and freedom from outside disturbances.

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 galvanometer, Thompson tripod galvanometer, Queen ballistic galvanometer, universal and ordinary tangent galvano-



PHYSICAL LABORATORY

meters, resistance boxes, Queen testing set, earth inductor, Queen quadrant electrometer, one-third microfarad condenser, standard cells, slidemeter bridges, scales and telescopes, 6 x 12-inch induction coil suitable for Hertzian oscillation or X-ray work. Among the pieces of apparatus added this year are several condensers, a tangent reflecting galvanometer with known constants, a sensitive Ampere's Apparatus, a Standard Ohm, a Daniell standard cell and several test coils and resistance racks for use in the electrical engineering work.

The laboratory also 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.

Biological Laboratory

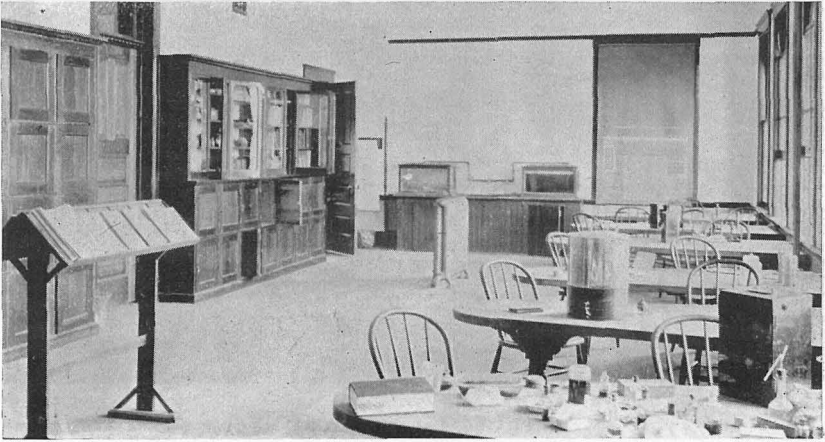
The Biological department is on the second floor. Facing the north is the laboratory (50x19) lighted by nine large windows, with tables and lockers for the use of students, an aquarium, book-cases and shelves, with other accommodations necessary for the work of the department in the different fields of natural science. Each table is supplied with its own gas burner.

The laboratory is furnished with seventeen compound microscopes by Bausch and Lomb, thirty dissecting microscopes, skeletons of the typical vertebrates, a microtome, camera lucida, steam and dry sterilizing ovens, an incubator and other appliances required in the higher grades of work.

Adjoining the laboratory is a large class-room, well lighted and fitted with

darkening shutters which render it possible to exhibit objects on a screen either by solar or artificial light.

A small intermediate room furnishes accommodation for the collection required for the purposes of class teaching and individual study. Such collection is of course distinct both in purpose and nature from that of a museum, and must adjoin the laboratory and class-room.



BIOLOGICAL LABORATORY

Museum

The museum occupies a large room on the third floor and contains the collections in the departments of Mineralogy, Geology, Botany, Zoölogy and Archæology.

Society Hall

The various literary and art clubs of the Institute share in the use of a large hall on the third floor. This hall has recently been attractively carpeted and furnished, and is provided with electric lights.

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; a large table with water connection adapted for mounting designs and grinding colors; blackboards for class demonstrations of perspective principles; 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.

Wood-Carving and Clay-Modeling Rooms

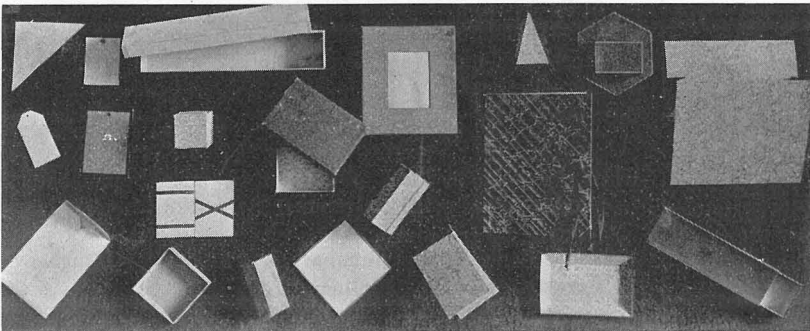
The departments of Wood-carving and Clay-modeling occupy rooms in the basement of East Hall, fitted with work tables, lockers with tools for students' use and cases for exhibition of work. These rooms are furnished with a good selection of casts and charts showing the various styles of historic ornament and a complete set of anatomical charts.

Gymnasium

A large, well lighted room in the basement is occupied by the classes in gymnastics. It is provided with dumb-bells, Indian clubs, chest-machines, horizontal bar, and other gymnastic apparatus.

Sloyd Grammar School

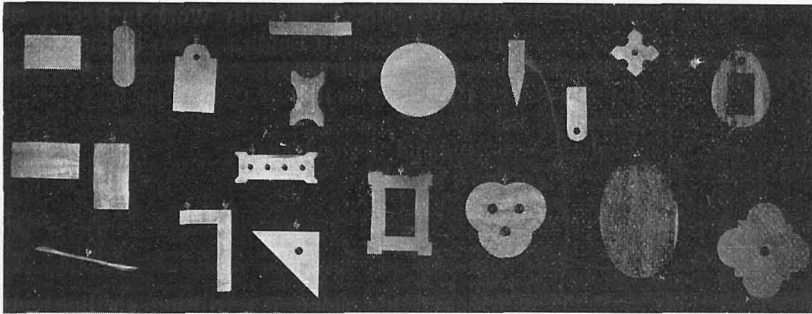
The urgent need of educational manual training in connection with the work ordinarily done in public schools inspired the establishment of a Sloyd department in the Institute. Pupils are admitted to this department who have completed the usual third year of the public school. All pupils not bringing certificates from other schools are 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.



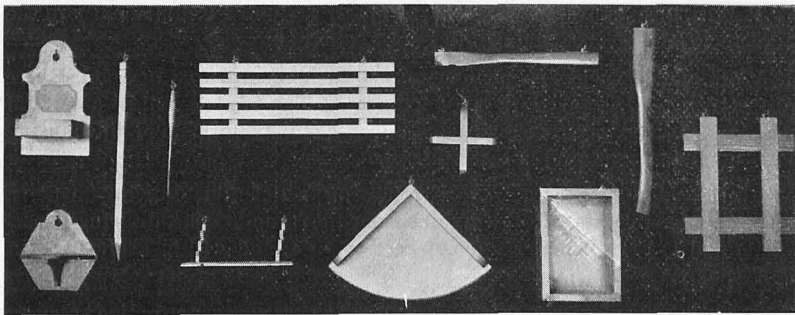
CARDBOARD SLOYD MODELS

Schedule of Work

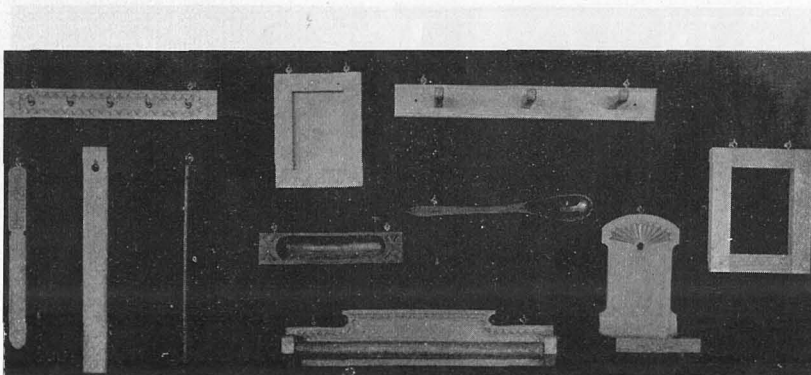
4TH GRADE	{ Arithmetic—Fundamental Operations. English—Language Lessons from Hyde's Book I. Myths, Æsop's Fables, and Supplementary Reading. History and Geography—Elementary Work with Sand-modeling. Science—Elementary Work on Plants and Animals. Drawing—Clay-modeling. Brush Work. Water Color. Writing—Vertical. Sloyd—Card board, First half year; Thin Wood, Second half year.
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. Miss Harrison's In Story Land. Ten Boys. 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, First half year; Thin Wood, Second half year.
6TH GRADE	{ Arithmetic—Fractions. Denominate Numbers. Regular Work in Wentworth's Grammar School Arithmetic. English—Language Lessons in Hyde's Book II. Wonder Book. The Song of Hiawatha. 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.



SLOYD MODELS



SLOYD MODELS



SLOYD MODELS

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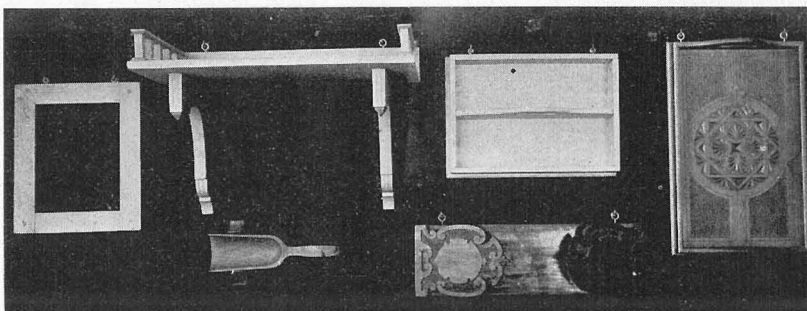
The course in English includes a thorough drill in writing, spelling and composition.

All pupils receive instruction in Vocal Music—Theory and Sight-reading. Systematic work in the gymnasium is offered.

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 require the following articles: a drawing-board, a T-square, triangles, set of drawing instruments, thumb-tacks, drawing-paper, pencils and erasers, which need not cost over \$4, and will be useful later in the Academy.



SLOYD MODELS

Academy

Requirements for Admission

All candidates for admission to the Academy will be required to show their ability to compose, spell and punctuate, and to use capital letters correctly.

Students holding a certificate of graduation from a California Grammar School, or any other school of equivalent grade, will be admitted without further 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.

Courses of Study

1. Roman numerals in the following table refer to subjects outlined on pages 23 to 38.

2. A subject once selected 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 Literary 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 Course); four years of Drawing; and four years of Shop-work (except in the Scientific Course).

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

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. To a limited extent gymnastics may be substituted for other manual work.

8. 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.

	Classical	Literary	Scientific
First Year	English I Mathematics I Latin I Drawing I Shopwork	English I Mathematics I { German I, Latin I or French I Drawing I Shopwork	English I Mathematics I { Physical Geography and Physiology Drawing I Shopwork
Second Year	English II Mathematics II Latin II Drawing II Shopwork	English II Mathematics II { German II, Latin II or French II Drawing II Shopwork	English II Mathematics II Zoölogy or Botany Drawing II Shopwork
Third Year	Latin III Greek I History I Drawing III Shopwork	{ English III or Physical Geography and Physi- ology { French I or German I History I Drawing III Shopwork	{ Latin I, German I or French I { English III or Mathematics III Chemistry Drawing III Shopwork
Fourth Year	Latin IV Greek II History II Drawing IV Shopwork	{ Physics, Chemistry or Biology { French II or German II History II Drawing IV Shopwork	{ Latin II, French II or German II History II { Physics, Chemistry or Geology { Drawing IV or Advanced Science Shopwork

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. Two courses are offered—Sloyd and Domestic Science. These courses are designed to fit persons to teach these subjects.

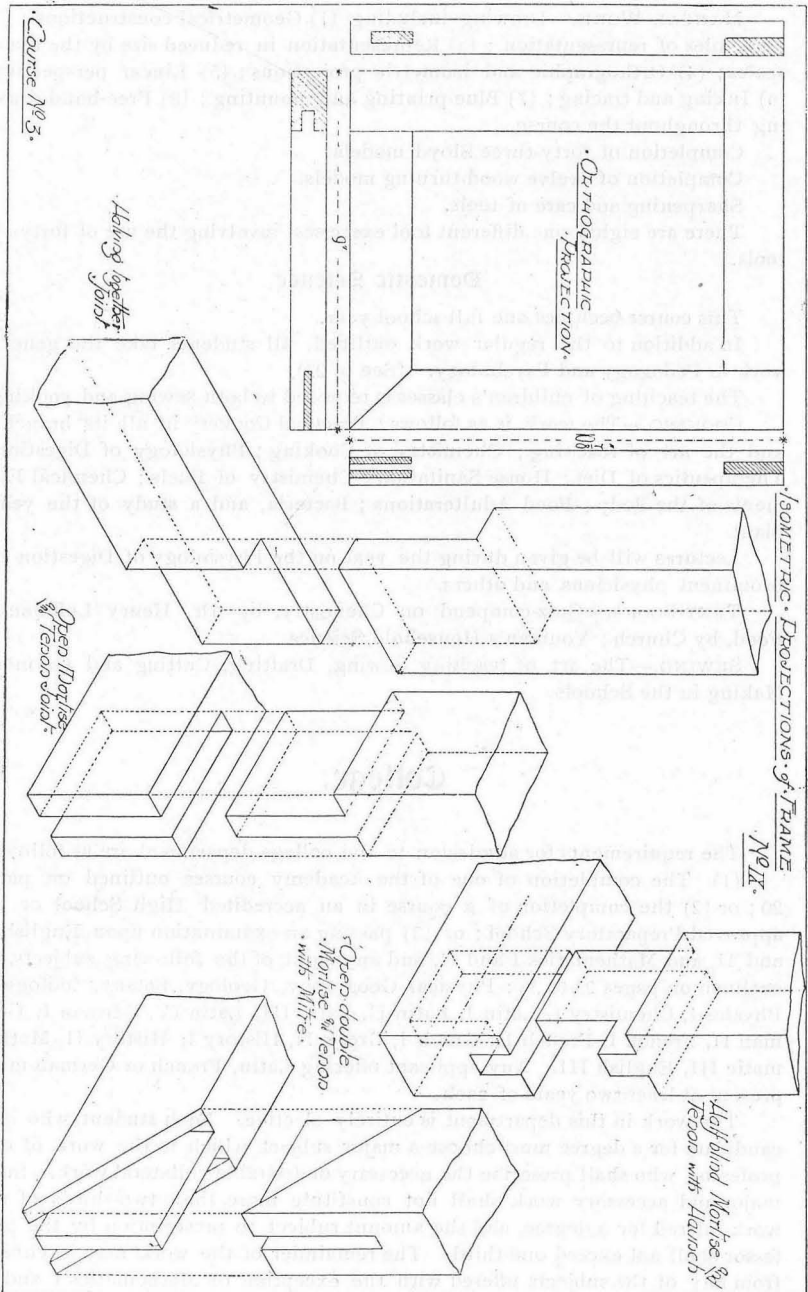
Sloyd

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 psychology and pedagogy (see p. 27) ; 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.



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.

Completion of forty-three Sloyd models.

Completion of twelve wood-turning models.

Sharpening and care of tools.

There are eighty-one different tool exercises, involving the use of forty-six tools.

Domestic Science

This course occupies one full school year.

In addition to the regular work outlined, all students take the general work in Pedagogy and Psychology. (See p. 27)

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 Dr. 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 page 20 ; 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 38 : Physical Geography, Geology, Botany, Zoölogy 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, Mathematic 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.

University Extension

A union of various educational institutions in Southern California, known as the Educational Extension Association of Southern California, has been formed to introduce and carry on the work of university extension in this part of the State. During the past scholastic year the Association has maintained a Superintendent who has devoted his whole time to the dissemination of information on this subject and the organization of centers. Under these auspices centers have been formed in eleven cities in Southern California, and sixteen courses have been given, besides many individual lectures.

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, determinants. 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. Henck's and Searle's Field Books are used.

V. 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. Leibnitz's Theorem. Expansion of functions. Maclaurin's and Taylor's Theorems. Functions of several independent variables. Applications to curves. Maxima and minima 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. Taylor'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 DuBois.

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.

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 Myers 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 Myers' 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 United States 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.

Ancient Languages

Latin

I. Collar and Daniels' Beginners' Book. 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.

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-Meissner's German Grammar and Brandt's Reader.

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

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

French

The course in French consists of

I. Elementary work on the Grammar and Vocabulary, reading French in order to obtain the pronunciation, a study of the verbs, and the oral use of the language. Translation into English of the following or some similar work, and retranslation into French.

Madame Thérèse by Erckmann-Chatrian.

Les trois Mousquetaires by Alexandre Dumas.

II. Special study of the syntax and idioms and practice in French conversation.

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.

Pedagogy and Psychology

One year's work is offered in Psychology and Pedagogy. The work is planned so as to accommodate those who have pursued professional studies elsewhere.

For the first half year James' Psychology is made the basis of the work. Sully, Dewey, Halleck, and other authorities are freely used. The second half year's work deals mainly with a study of scientific pedagogy. Free discussion on means and methods, etc., is encouraged. Essentials of Method, by De Garmo, Talks on Teaching, by Parker, Putnam's Manual of Pedagogy, and McMurry's General Method, etc., are used.

To the end that the greatest possible good may be secured to the students, the aim is to keep the child and his needs and capabilities constantly in mind.

Students will provide themselves with the following books:

James' Psychology; Putnam's Manual of Pedagogy; The Theory of Educational Sloyd, Salomon; The Educational Value of Manual Training, Woodward.

Natural Science

Physical Geography and Physiology

Physical Geography occupies one period daily during the first half of the year. The principal topics studied are the relation of the earth to the other bodies of the system, the various agents that modify its surface, such as rivers, waves, tides, currents and glaciers; the weather, winds and storms; the relation of man to the plants and animals around him and to inorganic nature. Text-book, "Physical Geography," W. M. Davis.

Physiology and Anatomy during the second half of the year are studied in such a manner as to enable the student to understand the position of the principal organs and the functions which they discharge in the various processes of life. Opportunity is also given to examine the more important tissues with the microscope. The hygienic importance of the study is kept in view throughout the course.

Geology

In this course are included (1) the Elements of Mineralogy or a study of the commonest and most important non-metallic and metallic minerals; (2) a sketch of the processes and changes through which the earth has passed during its history; (3) some study of the fossil remains that indicate the general course of the evolution of life; and (4) the principles of geological field-work and the representation of the results in maps and sections. Text-book, "Introduction to Geology," W. B. Scott.

Botany

This study includes systematic work on the dissection and naming of plants with reference to the natural orders; their manipulation and arrangement for the herbarium, and the investigation of the structure and functions of the various tissues composing their organs. Text-book, Bergen's "Elements of Botany."

Zoölogy

The purpose of this study is to afford students an opportunity of examining the leading types of animal life, both vertebrate and invertebrate, and also of becoming acquainted with some of the common living objects with which they meet in daily life. The relation of man to the rest of the organic creation, the advantages which he derives, and the losses which he suffers from them also receive attention. The work is for the most part done in the laboratory and not by the study of any text-book, but students will need one of the following works for their own use. Other and more extensive works are provided in the library of the Department:

Needham's "Lessons in Zoölogy."

Packard's "First Lessons in Zoölogy."

Advanced Work

Advanced work following the above preliminary studies may be taken later in the course by those who satisfy the professor in this department that they are qualified to undertake it. The work will be for the most part individual and students will be expected to conduct it with only general superintendence and advice. It will be arranged for those who wish to become practically acquainted with scientific methods and to study scientific subjects of a higher grade than those which can be taught in classes. Any of the many topics of natural science may be chosen according to the bent of the student, who must furnish the simpler and less expensive part of the outfit required, the more costly and valuable portion being supplied by the Institute subject to compensation for damage during use.

This arrangement enables the competent student to prepare himself for the field of work in which he expects to be employed on leaving college, but in order to profit by it he must be well grounded in the elements of the subject chosen.

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 too closely, 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. (a) More advanced work in Qualitative Analysis follows I (b) and is completed during the first term of the second year in chemistry. The work consists principally of the analysis of unknowns, accompanied by a thorough critical study of the processes used.

(b) Assaying and elementary organic chemistry follow II (a) during the second and third term. The work in assaying comprises fire assay of lead, silver and gold ores by various processes. 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 lectures, recitations, and laboratory exercises. The fundamental theories as well as important industrial applications of organic chemistry are discussed in the lectures and recitations.

The laboratory work comprises synthesis and class reactions.

The laboratory expense of Course II is from six to ten dollars.

III. In the third and succeeding years opportunities are offered for more advanced work, comprising quantitative analysis, inorganic, organic and theoretical chemistry, for which the laboratory is well equipped.

Special arrangements of work in these 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 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.

II. Theory and use of steam engine indicator, cradle dynamometer and Prony brake; efficiency tests of dynamos and motors; photometry; study of general technical applications of electricity as telegraphy, telephony, electric lighting, etc.

Instruction is given by means of laboratory work, recitations and

lectures. Electrical Engineering by Slingo and Brooker is used as a basis for practical work.

Open to those who have completed Electrical Engineering I.

III. (a.) Study of periodic currents by analytical and graphical methods.

(b.) Design of dynamos, motors and transformers.

(c.) Electric distribution and transmission of power.

Instruction is given by means of laboratory work, recitations and lectures. Periodic Currents by Bedell and Crehore is used as a text in (a). 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 II, and Differential and Integral Calculus.

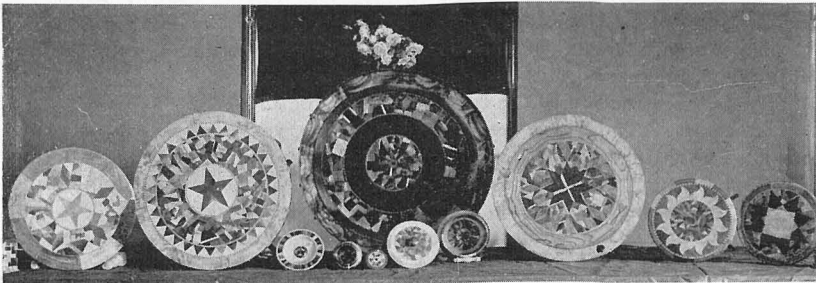
The laboratory fee in any of the above courses need not exceed \$1.50.

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 aesthetic 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.



INLAID WORK BY WOOD-SHOP PUPILS

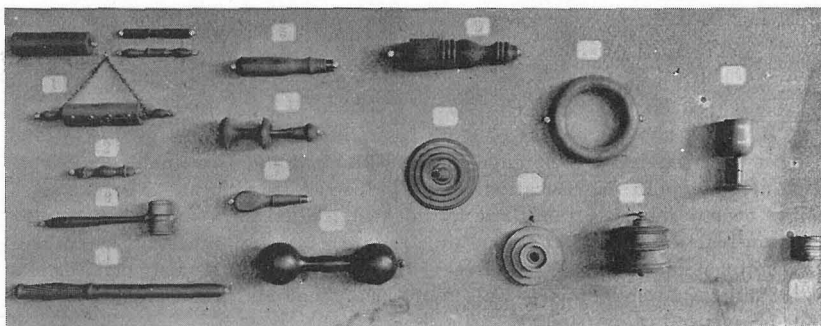
The course in joinery is composed of eighteen progressive exercises, involving the construction of sixteen different joints, the drawing of analytical and free-hand curves, and the use of fifty different tools and machines.

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.



EXERCISES IN WOOD TURNING

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

Forging

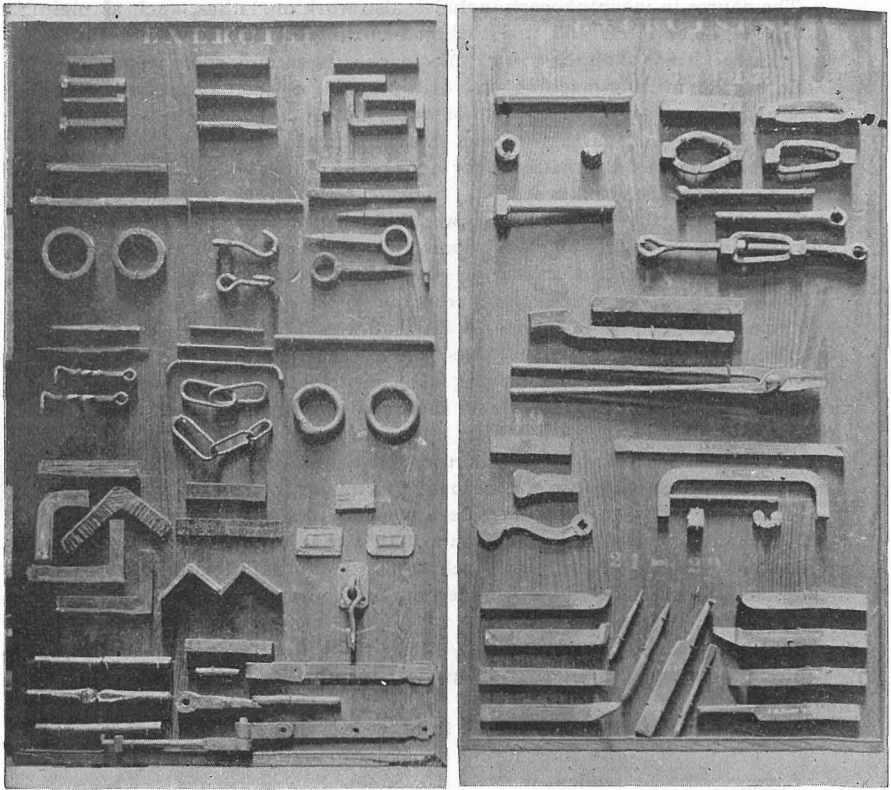
II. Forge. Mechanism and care of forge; preparation of forge for fire; building and managing fire.

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



EXERCISES IN FORGING

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 make, or assist in making a complete set of patterns for some piece of machinery, and to do the machine-work on the castings.

An idea of the scope of the work in this course may be obtained from the following list of work done this year: There have been constructed a two-horse power marine gas-engine, complete; a water meter for two-inch pipe, a reverse gear, propellor and fittings for a launch gas-engine built last year in the shops, a three-quarter horse-power single-acting steam-engine, a gramophone, a three-cylinder gasoline motor for a horseless carriage, a small propellor and driving mechanism for a row-boat, a sand-papering machine with adjustable table for the wood-working department (capable of polishing full-sized tables and doors up to four by seven feet), besides several attachments for machines already in use, and a number of special tools and pieces of apparatus for use in the various departments.

A complete set of patterns have been made for a circular saw which will be built the coming year for the wood-shop. It is to have a 42-inch square iron table and swing three 12-inch or 15-inch saws. Many additions and improvements, including a modern inertia governor, have been made to the generating set constructed by last year's students.

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.

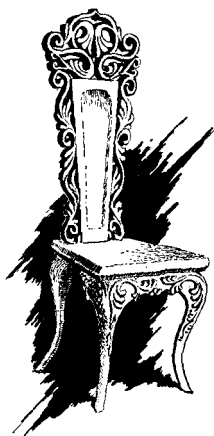
Wood Carving

This work aims to give 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 decorations, 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 is outlined above. The finished work belongs to the pupil.



STUDENT'S PEN AND INK
SKETCH OF WOOD
CARVING

Modeling

This work 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. No extra expense is attached to the work in clay unless pupils wish to preserve their work in plaster.

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 are demanded in all work.

Dressmaking

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; trimming and draping the same; putting on collars and revers; drafting, cutting and making sleeves; 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 must be made by 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) Entrées, 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.

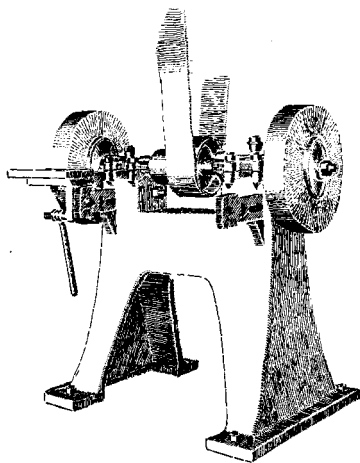
Throughout the year dietaries and nutrition will be kept constantly in mind, the object being as much to study the scientific principles of foods as to prepare palatable viands.

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



STUDENT'S PEN AND INK SKETCH
OF EMERY GRINDER

I. Principles of perspective as applied in the drawing of simple type forms, 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.

Drawing 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.

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.

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 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 prismatic, 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.

General Information

The Institute is included in the list of schools accredited by the State University. The Leland Stanford Jr. University and Vassar College also accept 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

Four literary societies, the Pierian, open to students of both sexes, the Gnome Club and the Debating 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.

A Camera Club and a Mandolin and Guitar Club find also a hearty support among the students of the Institute.

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

Exhibition Day

The last day of the spring term is devoted to an exhibition of the work of the year in the different departments. Articles made in the shops and studios remain in the charge of the various instructors until the close of Exhibition Day, when they may be claimed by their respective owners.

Finances

The tuition fee, the same for all departments, is \$75 a year, \$30 payable at the beginning of the first term, \$30 at the beginning of the second term and \$15 at the beginning of the third term; but students in attendance only one or two terms pay at the rate of \$30 a term.

There are no extra charges for work in any of the departments. A deposit of \$5 (\$10 if the student takes cooking or chemistry) 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 the amount deposited, an additional deposit must be made.

Term bills are 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.

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.

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.



HEADING FOR THE POLYTECHNIC
Drawn by a student in the Art Department

List of Students

1898-99

College

Bartlett, Louis A.....	Pasadena
Harris, Irving.....	Pomona
Hayes, Frank.....	Monrovia
Hays, Willis B.....	Pasadena
Jewett, Frank Baldwin, A. B. (T. P. I.).....	Lamanda
Logan, Elmer.....	Pasadena
Martin, Walter W.....	Pomona
Metcalf, Stella.....	Pasadena
Olson, Albert L.....	Kingsburg
Vickrey, Neal B.....	Los Angeles
Watts, Homer I.....	Athena, Oregon

Normal

Barker, Katharine K.....	Pasadena
Blanford, May.....	Los Angeles
Burnett, Grace.....	Los Angeles
De Yoe, Mrs. Rose J.....	Los Gatos
Ellean, Jeanette Marcelle.....	Los Angeles
Fordyce, Mabel.....	Pasadena
Ford, Mrs. R. E.....	Pasadena
Haller, Dora A.....	Los Angeles
Jordan, Mabel.....	Pasadena
Read, Archie L.....	Lytton
Sabin, Jessie M.....	Pasadena
Southwick, Clara.....	Pasadena

Academy

Adams, Guy E.....	Covina
Allen, Paul J.....	Pasadena
Andrews, Burton W.....	Sierra Madre
Bailey, Clinton J.....	Nellie
Bangs, William Dean.....	St. Louis, Mo.
Barker, Karl H.....	Searsmont, Me.
Barrett, Ruth.....	Pasadena
Bassett, Louis H.....	Colorado Springs, Colo.
Bixby, William Flint.....	Sierra Madre
Bley, John P.....	Pasadena
Braddock, Fred B.....	Pasadena
Braden, George W.....	Los Angeles
Bundy, Benjamin.....	Pasadena
Burnham, Ralph F.....	Orange
Burt, Dodge.....	Pasadena
Case, J. Ovington.....	Winchester

Case, Louis J.....	Pasadena
Chase, Arthur L.....	Cleburne, Texas
Clark, Adeline Orilla.....	Honolulu, H. I.
Colby, Fannie.....	Los Angeles
Coleman, Frank J.....	Pasadena
Conger, Harry P.....	Pasadena
Cowan, Sadie.....	Pasadena
Daggett, Maud.....	Pasadena
Davidson, Leonard E.....	Pasadena
Deacon, William.....	Cedar Rapids, Iowa
Derby, Roger Edsall.....	Pasadena
Derby, William Sperry.....	Pasadena
Earley, Jessie.....	Pasadena
Eaton, Harold.....	Los Angeles
Eddy, Nathaniel N.....	Avalon
Elleau, Jeannette Marcelle.....	Pasadena
Erskine, Alfred M.....	Racine, Wis.
Fassett, John G.....	Pasadena
Felter, Charles Pierce.....	Altadena
Fordyce, Mabel.....	Pasadena
Francis, William C.....	Buffalo, N. Y.
French, Ruth.....	Pasadena
Gale, Oliver Marble.....	Chicago, Ill.
Gardiner, William Alexander.....	Fullerton
Garratt, Graham Leslie.....	Bhusaval, British India
Giddings, Lawson H.....	Pasadena
Grant, Ethel J.....	Pasadena
Graettinger, Darwin George.....	Ontario
Greenhaw, Hosea.....	Phoenix, Ariz.
Griffith, Leigh Merriam.....	Pasadena
Grout, Frank Fitch.....	Rockford, Ill.
Heald, O. Leslie.....	Anaheim
Heath, Frank C.....	San Diego
Helwig, Walter.....	Elmodena
Hill, Harry H.....	South Pasadena
Hinkley, Vesta M.....	Emmetsburg, Iowa
Hitchcock, Anna C.....	Pasadena
Hodgson, Cecil E. C.....	Colgrove
Holabird, Harry G.....	Los Angeles
Holcomb, J. Delaney.....	Pasadena
Holton, Charles Rufus.....	Ramona
Hoose, James H., Jr.....	Pasadena
Hummel, Bert H.....	Los Angeles
Huston, James Drummond.....	Pasadena
Jerauld, Edwin W.....	Murrieta
Jerauld, Rodman Ernest.....	Murrieta
Jewett, Pauline.....	Lamanda
Jones, Allen.....	Pasadena
Jones, Cora A.....	Pasadena

Jones, Philip.....	Pasadena
Keeler, Vera Sylvia.....	Los Angeles
Kennedy, Lloyd B.....	Ontario
Kennelly, David J., Jr.....	Santa Monica
Lapp, Clemens Elmer.....	Pasadena
MacMillan, John.....	Los Angeles
Maxwell, Donald H.....	Pasadena
Metcalf, Mildred.....	Pasadena
Michener, Harvey D.....	Pasadena
Montague, Stella.....	Los Angeles
Painter, Charles Wilfred.....	Pasadena
Peabody, Thomas A.....	Fostoria, Ohio
Phillips, Virginia.....	Pasadena
Poage, Leland S.....	Pasadena
Quigley, John Frederic.....	Nellie
Raleigh, Carl Vernon.....	Los Angeles
Read, Archie L.....	Lytton
Richards, Bessie Everett.....	Pasadena
Schutte, Fritz.....	Toluca
Scott, Archie.....	Duarte
Sidwell, Chester C.....	Rivera
Smith, W. Sydney.....	South Pasadena
Stiner, Henry Mead.....	Eagleville
Strong, Robert Marquis.....	Pasadena
Swan, Frederick Howard.....	Pasadena
Swigart, Jacob DeWitt.....	Norwalk
Van Zandt, Jerome Goodspeed.....	Coronado
Wadsworth, Whitney.....	Orange
Walker, James G.....	San Francisco
West, Fred.....	Altadena
Williams, James T.....	Orange
Wood, Clifford H.....	Pasadena
Wood, Helen.....	Glendora
Wood, Hilda.....	Glendora
Woodbury, Fred.....	Pasadena

Grammar School

Adams, Morgan O.....	Pasadena
Atkinson, Ben Jesse.....	Los Angeles
Banbury, William Mohr.....	Pasadena
Barker, May D.....	Pasadena
Barker, Huntington.....	Pasadena
Barker, Parrish.....	Pasadena
Barnwell, Reginald Huntington.....	Alhambra
Bolt, Marjory.....	Pasadena
Brainerd, Edward Rankin.....	Los Angeles
Brigden, Timothy Dwight.....	Lamanda
Brooks, Albert Barnes.....	Pasadena
Burnham, Roderick Deane.....	Highland Park

Carter, Ned Peck.....	Pasadena
Coffin, George Holman.....	Pasadena
Curry, Grant.....	Pittsburg, Penn.
Curry, Harry M.....	Pittsburg, Penn.
Daggett, Ethel Elizabeth.....	Pasadena
Davis, Paul M.....	Banning
Douglass, Benjamin Kaime.....	Los Angeles
Douglass, Francis Archibald.....	Los Angeles
Douglass, Margaret Leigh.....	Los Angeles
Erickson, John A.....	Garvanza
Fay, Clarence.....	Los Angeles
Foulkes, Royal Thomas.....	Pasadena
French, Elma.....	Pasadena
Fussell, Edwin Briggs.....	Pasadena
Gaylord, John Clarence.....	Pasadena
Gaylord, Ruth Louise.....	Pasadena
Giddings, Levi Warren.....	Pasadena
Gould, Howard Arthur.....	Pasadena
Gray, Mary Elizabeth.....	Pasadena
Greenhaw, Miriam.....	Phoenix, Arizona
Hatch, Wilson Sumner.....	Los Angeles
Hinkley, George H.....	Emmetsburg, Iowa
Holmes, John Dewing.....	Pasadena
Hoover, Ernest Franke.....	Pasadena
Houser, Frank P.....	Covina
Howe, Eliot Callender.....	Pasadena
Hughes, William Ashton.....	Los Angeles
Keeler, Ernest D.....	Los Angeles
Kysor, Charles.....	Los Angeles
Markham, Gertrude.....	Pasadena
McCauley, Alma Louise.....	San Gabriel
McCauley, Mary Blanche.....	San Gabriel
McCormick, Arthur.....	Pasadena
Patmor, James Roy.....	Olive
Rouse, Paul.....	La Cañada
Schwed, David.....	Los Angeles
Sherman, Henry Lancey.....	Pasadena
Sparks, Harold S.....	Los Angeles
Stewart, Lawrence Barrent.....	Bagdad
Story, Henry Amos.....	Burbank
Thomas, Jessie.....	Pasadena
Turner, Ray S.....	Pasadena
Ward, Nellie Alexandre.....	Pasadena
Warner, Joseph Roy.....	Pasadena
Welsh, Clyde M.....	Los Angeles

Special Students

Burnham, William A.....	Hancock, Mich.
Cook, C. E.....	Los Angeles

Eliot, Edward L	Pasadena
Eliot, John V.....	Pasadena
Hawkins, Thomas J	Alhambra
Herr, Bessie	Pittsburg, Penn.
Klein, Mrs. Emilie S	Los Angeles
Markham, Alice	Pasadena
Maytham, Minnie A.....	Buffalo, N. Y.
McDermid, Kathryn	Pasadena
Messer, Edith M	Pasadena
Monroe, Grace Ella.....	Pasadena
Moore, Archie W.....	Grass Valley
Rees, Karl J.....	Lordsburg
van Rossem, Mrs. A. C	Pasadena
Stimson, Cordelia.....	Pasadena

Summary

	Male	Female	Total
College.....	10	1	11
Normal	1	11	12
Academy.....	79	21	100
Grammar School	44	13	57
Special Students.....	7	9	16
Total	141	55	196
Duplicates	1	2	3
Different Names	140	53	193

List of Graduates

1895

Sloyd Normal Course

Daniels, Esther C. (Mrs. Turner).....	Corona
Gower, Hattie F.....	Teacher of Sloyd, Los Angeles
Harris, Caroline E.....	Teacher of Sloyd, Pasadena
Miller, Charles E.....	Director Manual Training, Normal School, Los Angeles
Simcoe, Benjamin F.....	Superintendent Manual Training, San Diego

Academy

Allen, Robert S.....	Manager Telephone Co., Pasadena
Carlton, Don W.....	In business, Los Angeles
Doty, George F.....	In business, Pasadena
Ferguson, Clarence.....	Clerk, L. A. Water Co., Los Angeles

1896

College

Haynes, Dian M.....	Teacher, Weldon
Doty, George F.....	In business, Pasadena

THROOP POLYTECHNIC INSTITUTE

Sloyd Normal Course

Burkhead, Ada H (Mrs. Hale Weaver).....	Grand Rapids, Mich.
Chamberlain, Arthur H.....	Professor of Pedagogy, T. P. I., Pasadena
Johnson, Annette.....	Teacher of Sloyd, Los Angeles
Keyes, Mrs. Helen B.....	Holyoke, Mass.
Mathews, Amanda.....	Teacher of Sloyd, City of Mexico
McLaren, Jennie.....	Pasadena
Riggins, Ara.....	Teacher, San Bernardino

Academy

Arnold, Ralph	Student Stanford University, Palo Alto
Conger, Lulu N.....	Pasadena
Gray, Roy W.....	Draughtsman, Los Angeles
Morrison, Margaret L.....	Compton
Menner, Ivy.....	Pasadena
Snyder, Blanchard N.....	Anaheim
Winslow, Edward F.....	In business, Cedar Rapids, Iowa

1897

College

Grinnell, Joseph.....	Mining, Alaska
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Sloyd Normal Course

Batchelder, Lizzie	Teacher of Sloyd, Los Angeles
Blanchard, Ada F.....	Teacher of Sloyd, Los Angeles
Cleveland, Ada C.....	Teacher, Pasadena
Cook, Mary A.....	Glendora
Coombs, Sarah C.	Teacher, Visalia
Fisher, Pearl B.....	Pasadena
Holbrook, Lucy M.....	Student Normal School, Worcester, Mass.
Mellish, Ida M.....	Student Stanford University, Palo Alto
Smith, Mary M.....	Teacher Normal School, Los Angeles
Wright, Charles H.....	Instructor T. P. I., Pasadena

Academy

Baker, Calvin.....	Pasadena
Baker, Ruth Ellen.....	Pasadena
Barker, James Edmund.....	Student M. I. T., Boston, Mass.
Blick, Kate Fay.....	Pasadena
Conger, Lyda Drowne.....	Student Lombard University, Galesburg, Ill.
Conger, Ray Everett.....	In business, Dawson, Alaska
Farnsworth, John Arthur, Jr.....	Book-keeper, Los Angeles
Jewett, Frank Baldwin.....	Student University of Chicago, Chicago, Ill.
* Johnston, Blanche.....	
McQuilling, William.....	In business, Pasadena
Polkinhorn, Edwin J.....	In business, City of Mexico
Reed, John O.....	Chemist, Beet Sugar Factory, Alamos
Russell, Emma.....	Pasadena
Stimson, Charles W.....	Lumber business, Ballard, King Co., Wash.
Vose, Richard A.....	In business, Clinton, Iowa

* Deceased.

1898

College

Blackman, Roy Beebe.....	Ranching, Orange
Jewett, Frank Baldwin.....	Student University of Chicago, Chicago, Ill.

Sloyd Normal Course

Elleau, Jeannette Marcelle.....	Recorder's office, Los Angeles
Elleau, Pauline Margaret.....	San Francisco
Faithfull, Claude A.....	Architect's Office, Pasadena
Hannab, Lillian.....	Ontario
Hunt, Genie A.....	Teacher, Pasadena
Jordan, Mabel.....	Teacher Domestic Science, Riverside
Olson, Albert L.....	Student T. P. I., Pasadena
Russell, Emma.....	Pasadena
Sanders, M. Frances.....	Teacher, Los Angeles
Shields, Mrs. Alice.....	Teacher of Sloyd, Los Angeles
Webber, Marie Bambrick.....	Highgrove

Academy

Beery, Mary Ellen.....	South Pasadena
Folsom, Harry G.....	Student M. I. T., Boston, Mass.
Gaylord, Horace Amidon.....	Student, Baltimore Dental College, Baltimore
Gaylord, James Mason.....	Pasadena
Meuner, Lottie Ethel.....	Pasadena
Monroe, Grace Ella.....	Student T. P. I., Pasadena
Olson, Albert L.....	Student T. P. I., Pasadena
Poindexter, Charles Lawrence.....	Student Mining School, Houghton, Mich.
Sterrett, Roger Jordan.....	Student Stanford University, Palo Alto
Wright, Rachel Edna.....	Pasadena

1899

Normal Department

Barker, Katharine K.....	Pasadena
Blanford, May.....	Los Angeles
Burnett, Grace.....	Los Angeles
De Yoe, Mrs. Rose J.....	Los Gatos
Fordyce, Mabel.....	Pasadena
Haller, Dora.....	Los Angeles
Jordan, Mabel.....	Pasadena
Read, Archie L.....	Lytton
Sabin, Jessie.....	Pasadena
Southwick, Clara.....	Pasadena

Academy

Bixby, William F.....	Sierra Madre
Clark, Adeline Orilla.....	Honolulu, H. I.
Davidson, Leonard.....	Pasadena
Fordyce, Mabel.....	Pasadena
Raleigh, Carl.....	Los Angeles
Wood, Clifford H.....	Pasadena

Officers of the Alumni Association

President, Arthur H. Chamberlain, '96	Vice-President, Grace E. Monroe, '98
Secretary, James M. Gaylord, '98	Treasurer, Emma Russell, '98
Historian, George Doty, '96	

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1899.