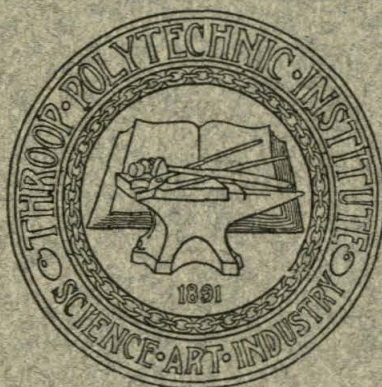


THROOP INSTITUTE BULLETIN

FIFTEENTH ANNUAL CATALOGUE

Number XXXII

✻ MAY—1906 ✻



Throop Polytechnic Institute

PASADENA, CALIFORNIA

PUBLISHED BY THROOP POLYTECHNIC INSTITUTE

Entered May 22, 1905, at Pasadena, California, as second-class matter
under Act of Congress of July 16, 1894.

CALENDAR

1906-1907

Annual Meeting Board of Trustees, Tuesday, September 11, 1906
Registration.....September 21, 22, 24 and 25, 1906
Fall Term beginsWednesday, September 26, 1906
Thanksgiving Vacation, Thursday and Friday, Nov. 29 and 30, 1906
Founder's DayThursday, Dec. 13, 1906
Quarterly Meeting Board of TrusteesTuesday, Dec. 11, 1906
Fall term ends.....Wednesday, Dec. 19, 1906

CHRISTMAS VACATION

Winter Term begins.....Wednesday, January 2, 1907
End of the first half-yearFriday, February 8, 1907
Washington's BirthdayFriday, February 22, 1907
Quarterly Meeting Board of Trustees..Tuesday, March 12, 1907
Winter Terms endsFriday, March 22, 1907

SPRING VACATION

Spring Terms beginsMonday, April 1, 1907
Memorial DayThursday, May 30, 1907
Baccalaureate SundayJune 9, 1907
Fitz E. Beach Prize Contest.....Monday evening, June 10, 1907
Graduating Exercises, Grammar School Tues. morn'g., June 11, '07
Alumni ReunionTuesday evening, June 11, 1907
CommencementThursday evening, June 13, 1907
Exhibition Day and End of TermFriday, June 14, 1907
Quarterly Meeting Board of Trustees....Tuesday, June 11, 1907

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Published Quarterly by

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Entered May 22, 1905, at Pasadena, California, as second-class matter
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FOUNDER

HON. AMOS G. THROOP

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

BOARD OF TRUSTEES

(Arranged in the order of seniority of service)

	Term Expires
EVERETT L. CONGER, D. D. Pasadena.....	1907
MRS. LOUISE T. W. CONGER..... Pasadena.....	1907
E. E. SPALDING, A. M..... Pasadena.....	1910
NORMAN BRIDGE, A. M., M. D..... Pasadena.....	1909
JOHN WADSWORTH..... Pasadena.....	1909
CHARLES D. DAGGETT..... Pasadena.....	1908
WILLIAM STANTON Pasadena.....	1906
MRS. CLARA B. BURDETTE Pasadena.....	1910
HIRAM W. WADSWORTH, A. B..... Pasadena.....	1906
JAMES H. MCBRIDE, M. D..... Pasadena.....	1910
S. HAZARD HALSTED..... Pasadena.....	1907
JOHN S. CRAVENS, A. B..... Pasadena.....	1906
ARTHUR H. FLEMING..... Pasadena.....	1909
MICHAEL CUDAHY Pasadena.....	1908
EDWARD C. BAILEY, B. L., LL. B. ... Pasadena.....	1908

OFFICERS OF THE BOARD

NORMAN BRIDGE, President C. D. DAGGETT, Vice-President

JOHN WADSWORTH, Treasurer E. E. SPALDING, Auditor

THEODORE COLEMAN, Sec'y and Business Agent

Residence, 149 South Madison Ave.

GRACE B. WRIGHT, Assistant Secretary

Residence, 306 Pleasant Street

E. C. BAILEY, Esq., Attorney

EXECUTIVE COMMITTEE OF THE BOARD

NORMAN BRIDGE, *Chairman ex-officio*

C. D. DAGGETT

JOHN WADSWORTH

E. C. BAILEY

S. HAZARD HALSTED

FACULTY

1905-1906

Arranged in groups in order of appointment

WALTER ALISON EDWARDS, President

A. B., A. M. and LL. D., 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.
408 S. Orange Grove Ave.

ARTHUR HENRY CHAMBERLAIN, Dean

Professor of Education and Director of Normal School

B. S. and A. M., Columbia University; Master's Diploma, Teacher's College, N. Y.; graduated Cook County Normal School; Teacher in the Public Schools of Cook County, Ill., 1892-4, Principal W. Harvey Public Schools, 1893-4; graduated, Normal School, Throop Polytechnic Institute; diplomas Deutsche Lehrerbildungsanstalt für Knabenhandarbeit, Leipzig, Germany, and Sjödläroarseminarium, Näås, Sweden; Teachers' College Scholar, 1902-03; State Director National Educational Association; Author of Educative Hand Work Manuals, Bibliography of the Manual Arts, Technical Education in Germany.
377 N. Los Robles Ave.

HERBERT BOARDMAN PERKINS

*John Wadsworth Professor of Mathematics; Instructor in Mechanical Drawing

S. B., Massachusetts Institute of Technology, 1874; Professor of Mathematics and Astronomy, Lawrence University, 1878-80 and 1882-6; student, University and Polytechnikum, Munich, Germany, and University of Geneva, Switzerland, 1880-82; student, University of California, 1886-8; Professor of Modern Languages, University of Southern California, 1890-2.
45 S. Fair Oaks Ave.

WALLACE KENDALL GAYLORD

Professor of Chemistry; Registrar

S. B., Massachusetts Institute of Technology, 1893; Member American Chemical Society; Member Society of Chemical Industry.
75 N. Hudson Ave.

LUCIEN HOWARD GILMORE

Professor of Physics and Electrical Engineering; Editor of the Catalogue

A. B., Leland Stanford Jr. University, 1894; Acting Assistant, Department of Physics, Leland Stanford Jr. University, 1894-5; graduate student, University of Chicago, 1898-9.
649 Galena Ave.

MRS. JENNIE COLEMAN

Professor of English

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; Holder of California High School Life Diploma.
149 S. Madison Ave.

JOSEPH GRINNELL

Professor of Biology; Curator

A. B., Throop Polytechnic Institute, 1897; A. M., Leland Stanford Jr. University, 1901; Assistant Instructor, Throop Polytechnic Institute, 1897-98; Assistant in Embryology, Hopkins Laboratory, Leland Stanford Jr. University, 1900; Instructor in Ornithology, Hopkins Laboratory, 1901-2; Instructor in Zoology and Botany, Palo Alto High School, 1901-03; graduate student, Leland Stanford Jr. University, 1901-03; Fellow American Ornithologists' Union.
572 N. Marcngo Ave.

*The founding of a Professorship is secured by the donation of \$20,000.

FRANCES STERRETT

Director of Art

Portrait Artist, Springfield, Ohio, 1886-91; student Chicago Art Institute, 1891-2; graduated Normal Art Department, Pratt Institute, Brooklyn, N. Y., 1894; pupil of M. Injalbert, Sculptor, Academie Colarossi, Paris, France, 1900.
373 S. Catalina Ave.

MRS. GRACE DUTTON

Director of Domestic Science

Graduated Pennsylvania State Normal School 1885; Instructor in Public Schools of Twin Oaks, Pa., 1885-8; graduated Mrs. S. T. Rorer's Philadelphia School of Domestic Science 1897.
28 W. California St.

ROBERT EDGAR FORD

Director of Manual Training; Instructor in Machine Shop Practice and Pattern Making

B. E. E. and 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; graduate student University of Minnesota, 1900.
137 S. Madison Ave.

NORVAL GIBSON FELKER

Director of Commercial School

Graduated Bryant & Stratton Business College, Louisville, Ky. Instructor in same, 1886-90; Vice-President, Woodbury Business College, Los Angeles, Cal., 1891-8; President same, 1898-1903.
755 E. Walnut St.

VIRGINIA PEASE

Director of Elementary School

Graduated Franklin Academy, Malone, N. Y.; Instructor in English, Annie Wright Seminary, Tacoma, Wash., 1890-2; Principal North Ontario Public School, 1892-6; Teacher Pasadena Public Schools, 1896-1904; Principal Garfield School, Pasadena, 1902-4.
289 N. Los Robles Ave.

PAUL BOEHNCKE

Associate Professor of German and Latin

A. B. Leland Stanford, Jr., University, 1905; Architectural Draughtsman and Superintendent of Construction, 1893-7; Teacher, Public School, Elizabeth Lake, California, 1898-1900.

BENJAMIN FRANKLIN STACEY

Associate Professor of History and Economics; Librarian

A. B. and B. D., Lombard College, 1898; M. A., University of Arizona, 1903; Scholar, University of Chicago, 1898-1900; Fellow, *ibid.*, 1900-1; Investigator of Institutions for the Chicago Bureau of Charities 1899-1900; Supt. "Camp Goodwill," *ibid.*, 1900; Instructor in Economics and Philosophy, University of Arizona, 1902-4.
640 Summit Ave.

HARRY CLARK VAN BUSKIRK

Associate Professor of Mathematics

Ph. B., Cornell University, 1897; special mention in Mathematics; Instructor in the University Preparatory School, Ithaca, N. Y., 1898-1904; Assistant Principal University Preparatory School, 1900-1904.
664 N. Madison Ave.

PEARL BLANCHE FISHER

Instructor in French and Assistant in Free-Hand Drawing

Student, Mary Institute, St. Louis, Mo.; student in Paris, France, and in Lacaze Institute, Lausanne, Switzerland; graduated Normal School Throop Polytechnic Institute, 1897.
1227 W. Seventh St., Los Angeles.

* HARRY DAVIS GAYLORD

Instructor in Mathematics and Wood Carving

Graduated Pasadena High School, 1893; student in Art, Throop Polytechnic Institute, 1894-6; Teacher Private Classes in Carving, 1896-9.

WALTER WILLIAM MARTIN

Instructor in Wood Working

Graduated Rockford High School, Rockford, Ill., 1898; graduated Normal School, Throop Polytechnic Institute, 1900.

754 Locust St.

CLARA JUDSON STILLMAN

Instructor in Elementary School Subjects

Graduate of Terry Kindergarten Institute, Bridgeport, Conn., 1878; student Henniker, N. H., Academy, 1878-9; Inspector and Instructor, Public Schools, Arizona, 1881-5; Instructor, Public School, Coronado, California, 1895-9.

66 S. Los Robles Ave.

CLARA SOUTHWICK

Instructor in Elementary School Subjects

Graduated High School, Chicago, 1893; Instructor Public Schools, Chicago, 1893-8; graduated Normal School, Throop Polytechnic Institute, 1899.

385 S. Euclid Ave.

ANNIE HOLMES

Instructor in Elementary School Subjects

Instructor in San Diego County Schools, 1895-8 and 1899-1902; Student, University of California, 1898-9.

92 N. Marengo Ave.

**ERNEST ALLEN BATCHELDER

Instructor in Design and Elementary School Drawing

Graduated Massachusetts Normal Art School, 1899; Director of Drawing, Public Schools, Adams, Mass., 1899-1901; Instructor in Theory of Design, Harvard University, Summer Session, 1901.

CLARENCE ARTHUR QUINN

Instructor in Forging

Graduate, Normal Department of the Stout Manual Training School, Menominee, Wis., 1897; Instructor in Shops and Mechanical Drawing, same 1898-1899; Instructor in Manual Training, Minneapolis, Minn., 1900; Instructor in the Manual Training High School and Director of Manual Training in the grade schools of Eau Claire, Wis., 1901-1902.

60 S. Euclid Ave.

CHITA KRAFT

Instructor in Spanish and Physical Culture

A. B., Leland Stanford Jr. University, 1903.

433 Maple Way.

HARRY TRUMBULL CLIFTON

Instructor in Mathematics and Mechanical Drawing

Ph. B., Sheffield Scientific School, Yale University, 1895; graduate student, Yale University, 1895-6; with Traffic Department, New York Telephone Co., 1897-1900.

871 N. Lake Ave.

*Absent on leave, school year, 1905-6; studying at Harvard University.

**Absent on leave, school year, 1905-6; studying in Europe.

ARTHUR CLAUDE BRADEN

Instructor in Physical Culture

Student of Physical Culture and Heavy Gymnastics, Y. M. C. A. Gymnasium, Cedar Rapids, Iowa, 1892-6; student, High School, Cedar Rapids, Iowa, 1896-7; student, High School, Pasadena, Cal., 1897-1900; Physical Director, Y. M. C. A., Sacramento, Cal., 1901; Physical Director, Oakland, Cal., 1902; Acting Physical Director, Y. M. C. A., in San Francisco, Cal., 1903; student in General Gymnastics with M. C. O'Brien San Francisco, Cal., 1902-3; chairman Southern California Section, A. L. N. A.

521 Belvidere St.

ELLA VICTORIA DOBBS

Instructor in Manual Arts

Graduated Manual Training, Normal School, Throop Polytechnic Institute, 1900; Supervisor Cardboard Construction, Los Angeles Public Schools, 1900-1; Instructor in Sloyd ibid, 1901-2; Acting Instructor Normal Manual Arts, Throop Polytechnic Institute, 1902-3; Supervisor Manual Training, Helena, Montana, Public Schools, 1903-4.

960 E. Colorado St.

MABEL COWDREY HIMROD

Instructor in Domestic Art

Student, High School, Brooklyn, N. Y.; graduated Normal Domestic Science, Pratt Institute, Brooklyn, N. Y., 1895; Director of Domestic Art, Y. W. C. A., Pittsburg, Pa., 1895-8; graduated Normal Domestic Art, Pratt Institute, 1899; Instructor in Sewing, Hampton Institute, Va., 1899-1900; Instructor in Dressmaking, Pratt Institute, 1900-1; Director Domestic Art and Instructor in Domestic Science, Berea College, Ky., 1901-3.

375 S. Catalina Ave.

VESTINA SCOBEE

Instructor in Music and English

Graduated High School, Chicago; pupil of Ella L. Krum in voice culture; pupil of William L. Tomlins in voice culture, expression and method; studied with Louise Robyn, harmony and piano; studied with Elizabeth Nash, physical culture; assistant to William L. Tomlins in Chicago Settlement, 1903; Instructor in Music and Elementary School Subjects, Stevan School, 1902-4.

53 N. Catalina Ave.

ADA JANE MILLER

Instructor in English

Graduated Cornell College, Iowa; Ph. B., University of Chicago; graduate student, University of Chicago, 1903-4; graduate student, Leland Stanford, Jr., University 1904-5; Head of English Department, Marian, Iowa, High School, 1895-1901; Instructor in English, Iowa State College, 1901-3.

107 Ford Place.

NELLIE ALEXANDRA WARD

Instructor in Wood Carving

Graduated, Academy, Throop Polytechnic Institute, 1904.

53 Pepper St.

IDA MELLISH

Acting Instructor in Design and Elementary School Drawing

Graduated Pasadena High School, 1892; graduated Sloyd Normal Course, Throop Polytechnic Institute, 1897; student, Leland Stanford, Jr., University, 1898-9; assistant in Sloyd, Throop Polytechnic Institute, 1899-1901; student, Mark Hopkins Art School; 1901; student of Art and Languages, Europe, 1901-5.

423 Lincoln Ave.

HARRIET HUNT CONKLING

Instructor in Elementary School Subjects

Graduated Albany Academy, Albany, N. Y.; instructor in private school, Castleton, N. Y., 1886-9; graduated Los Angeles Normal School, 1892; instructor in Los Angeles County Schools, 1892-1902; instructor in Pasadena Public Schools, 1902-5.

217 So. Orange Grove Ave.

BLANCHE WAKEHAM

Assistant Instructor in Domestic Economy.

Graduated Normal School, Throop Polytechnic Institute, 1903; student University of California, 1903-4.

320 Cypress Ave.

HILDA WOOD

Assistant Instructor in Zoology

Graduated, Academy, Throop Polytechnic Institute, 1902.

315 Center St.

JAMES COLLINS MILLER

Assistant Instructor in Manual Arts

Graduated High School, Regina, Canada, 1898; graduated Territorial Normal School, Regina, Canada, 1899; teacher, Alberta Public Schools, 1899-1903; graduated MacDonald Manual Training School, Calgary, Alta. 1903; graduated Manual Training Normal School, Throop Polytechnic Institute, 1905; student, Summer School, University of California; student, College Throop Polytechnic Institute, 1905-6.

377 N. Los Robles Ave.

BERTHA ELLIS

Assistant Instructor in Domestic Science

Graduated Mrs. S. T. Rorer's School of Domestic Science, 1900; assistant in Domestic Art, Throop Polytechnic Institute, 1902-3; teacher, Domestic Science, Stimson Industrial School, Los Angeles, 1903-4.

115 E. Walnut St.

ERNEST BRYANT HOAG

Lecturer in Biology

B. S., Northwestern University, 1892; A. B., Leland Stanford, Jr., University, 1894; A. M., Northwestern University, 1902; M. D., *ibid*, 1902; Instructor in Biology, Throop Polytechnic Institute, 1895-8; Instructor in Biology, Michigan State Normal School, 1899-1900; Instructor in Biology, Northwestern University, 1900-2.

101 N. Los Robles Ave.

EDWARD SPAULDING WARREN

Musical Director, Mandolin and Guitar Club

Pupil of Blakeslee, Chicago; special instruction from Abt, Seigel, Weeks and others.

351 Congress St.

FACULTY COUNCIL

W. A. EDWARDS, Chairman

A. H. CHAMBERLAIN

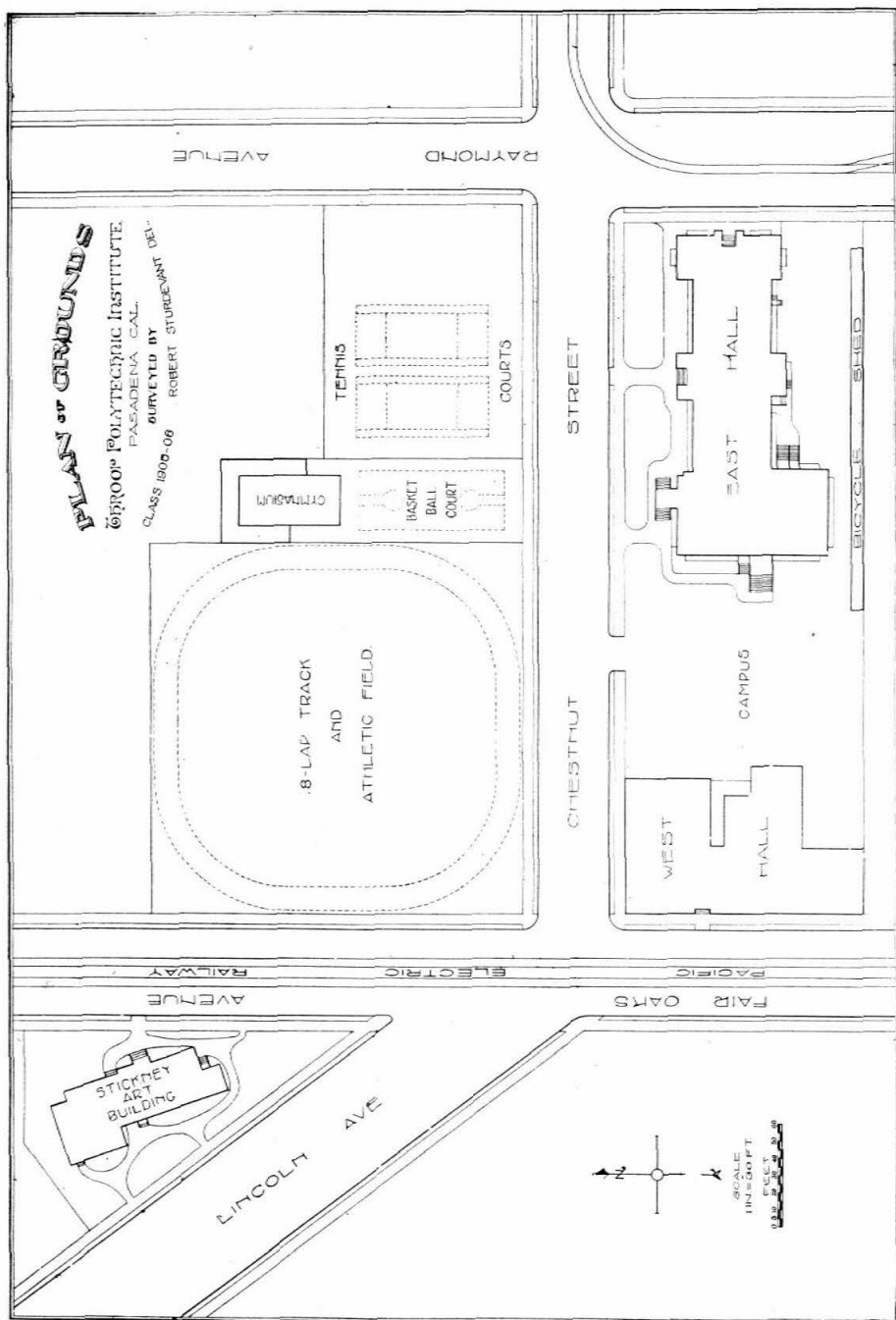
MRS. JENNIE COLEMAN

R. E. FORD

W. K. GAYLORD

L. H. GILMORE

VIRGINIA PEASE



PLOT OF GROUNDS, BY STUDENT.

GENERAL INFORMATION

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 the 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."

Polytechnic Hall, containing shops and laboratories, was built in 1892; East Hall, containing offices, recitation rooms, laboratories, etc., was built in 1893. In 1900 a commercial school was added in response to a large demand, and in order to accommodate this school and to relieve the crowded condition of other schools it became necessary to build another wing to East Hall. In 1904 further enlargement became necessary, and a two-story brick addition was made to Polytechnic Hall, while all the shops were overhauled and extensive improvements made. These changes were made possible by the generous action of citizens in subscribing a fund of about \$1200 for the work. A little later a complete equipment of lockers was put in East Hall.

GYMNASIUM

An out-door gymnasium, the gift of John S. Cravens, with a fine equipment of apparatus, was added in the autumn of 1904.

STICKNEY MEMORIAL BUILDING

August 2, 1904, Miss Susan H. Stickney, of Pasadena, generously donated to Throop Institute the handsome structure at the junction of Fair Oaks and Lincoln Avenues known as the Stickney Memorial Building, with the sole condition that the property be occupied by the art department of the Institute and for no other purpose. The large-hearted gift was accepted with this understanding. The building is entirely devoted to the work of the

Art Department, and is found to be admirably suited to the requirements of the school.

ELDRIDGE M. FOWLER TRUST FUND

The Eldridge M. Fowler Trust Fund of \$50,000 is in the hands of a board of trustees created for the purpose of managing it in such manner that the income only shall be used for the maintenance of the Institute. This board is constituted from the members of the board of trustees of Throop Institute. The donors of the fund are the late Eldridge M. Fowler, Mr. William Morgan, Mrs. Clara B. Burdette, Mr. William Stanton, Dr. Norman Bridge, Mr. H. T. Kendall, Mr. J. S. Torrance, Mr. J. D. Thomson and the F. and W. Thum Company, all of Pasadena, and one other.

OLIVE CLEVELAND FUND

Upon the death of Miss Olive Cleveland, in 1903, an agreement made with her by the Institute became operative. It is to the effect that the income from a piece of property devised by her to this Corporation, and worth \$20,000, shall be used in perpetuity to aid needy boys and girls in obtaining an education at Throop Institute. The particulars relating to this generous bequest may be learned upon application at the business office of the Institute.

JOHN WADSWORTH PROFESSORSHIP FUND

Mr. John Wadsworth, one of the oldest members of the Board of Trustees in point of service, gave to the Institute several years ago income-producing property now worth about \$30,000, thus founding the John Wadsworth Professorship of Mathematics.

LOCATION

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

SCHOOLS

The Institute comprises five schools: the College, the Normal School, the Academy, the Commercial School and the Elementary School.

LIBRARIES

The books belonging to the Institute are located with reference to convenience of students, special libraries being placed in the various department rooms. A general assortment is found in the main library room, in East Hall. The library also receives regularly several periodicals, selected with special reference to the work of students.

The Pasadena Public Library, to which students have access, is situated near the Institute.

ACCREDITING

The State University and the Leland Stanford Jr. University accept the certificates of the Institute and similar privileges are accorded to its graduates by various eastern institutions.

ADMISSION

Applicants for admission to any School 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. They are also urged to bring such statements from previous teachers concerning studies completed in other schools as will be helpful in determining their classification.

HOURS

The daily exercises begin at 9 o'clock in the morning and continue until 3:55 in the afternoon, with an intermission from 12:10 to 1:00. Chapel exercises occupy the time from 10:30 to 10:40, and all students are expected to attend regularly.

REPORTS

Reports of the progress of each student are sent to parents every four weeks, and oftener if advisable because of unsatisfactory work.

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. Any conduct harmful to the moral standing of the school will render a student liable to dismissal. Parents may at any time be asked to withdraw from the Institute students whose work is unsatisfactory by reason of lack of diligence.

ATHLETICS

Encouragement is given to athletics, and very careful supervision is kept over the various branches. Students entering athletics are required to undergo a thorough medical examination. These examinations are given without charge to the students by the medical examiners of the Institute, Drs. E. B. Hoag and Edith J. Claypole.

Membership in any of the athletic teams is subject to forfeiture for failure in any regular line of school work.

The athletic grounds include a basket-ball court, two tennis courts, a field for baseball and football and an eight-lap running track.

An out-door gymnasium provided with a good equipment of apparatus is now in use.

ORGANIZATIONS

Several literary, debating and musical organizations are maintained by the students of the Institute with the co-operation of the Faculty, and are doing good work. They afford an opportunity for training in debating, essay writing, declamation, extempore speaking, parliamentary practice, etc.

PUBLICATIONS

The Institute publishes quarterly the "Throop Institute Bulletin," one number containing the catalogue of the Institute, another the annual reports of its officers, and others miscellaneous information for the benefit of pupils, patrons and the public. Any of these may be obtained free of charge on application at the Secretary's office. "The Polytechnic," a monthly paper devoted to the interests of the Institute, is published by the students.

EXHIBITION DAY

The last day of the spring term, including evening, 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.

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 person desirous of extending the influence of the school in this way may obtain full information from the Secretary.

PRIZES

A first prize of fifteen dollars, and a second prize of ten dollars, offered by Mr. Fitz E. Beach, are awarded each year to the first and second best in contest in declamation, held in commencement week, the contestants being selected from the students in the Academy and Commercial School. These prizes were won in 1905 by Lucile Culver and Delbert Beals.

REGISTRATION

The last days of each vacation and the first day of the new term are set apart for registration of students. A special registration fee of one dollar is charged all who register later than the first day of each term.

TUITION

The tuition fee in the elementary school is \$75 a school year, in all other departments \$85 a year, payable in advance at the beginning of each term as follows:

	ELEMENTARY SCHOOL	ALL OTHERS
First Term - - - - -	\$30 00	\$35 00
Second Term - - - - -	30 00	35 00
Third Term (for full year students) -	15 00	15 00

Students in attendance less than the school year pay as follows: In the elementary school \$30, in all other departments \$35, for each entire term, and a proportionate share of this amount plus 20 per cent for the fraction of any term, except that no reduction is made in the tuition of any student entering during the first three weeks of any term and no refund or reduction is made in the tuition of any student who may leave school after the middle of the term for which he has paid.

Those taking but one period of study per day, pay \$12.50 per term in the elementary school, \$14 in all other departments; those taking but two periods per day are charged double these rates. The full tuition is paid by those taking more than two periods per day.

SHOP AND LABORATORY FEES

Fees are required in the following work, payable at beginning of each term:

Biology	\$1 00
Chemistry	5 00
Clay Modeling	1 25
Cooking, Academy.....	6 00
Cooking, Elementary School.....	3 50
Cooking, Normal	6 00
Electrical Engineering	1 25
Forging	4 00
Free-hand Drawing, Painting and Design.....	50
Manual Arts, Elementary Grades.....	1 50

Manual Arts, Normal.....	3 00
Pattern and Machine Shop.....	2 50
Physics	1 00
Sewing or Dressmaking, either or both.....	50
Typewriter, Use of.....	1 00
Wood Carving, (1st year, 1st term).....	50
Wood Shop.....	1 50

In wood carving, drawing, painting, sewing and dressmaking, students will furnish their own materials, and in all other work where extra large or unusually costly articles are desired, the material for the same will be paid for by the student.

Breakage and damage done to buildings, books, furniture, equipment, etc., or any tools lost, will be charged to the student responsible for the same.

LOCKER FEES

The Institute is provided with individual lockers for the safe keeping of books and other personal property, the use of which is compulsory for all students except those of the Elementary School. Gymnasium lockers are also in place. Locker fees are 40 cents per term, with 25 cents additional as a deposit for key, the latter to be repaid upon return of the key. Two pupils may use the same locker at 60 cents per term and 25 cents deposit for each key.

DIPLOMA FEES

College	\$5 00
Normal School.....	1 25
Commercial School.....	1 25
Academy	1 25

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

BOARDING HALL FOR BOYS

The Institute maintains a Boarding Hall for a limited number of boys and young men, where comfortable rooms, excellent table board and the careful supervision of a member of the Faculty living in the house, insure a good home for the occupants. The cost of these accommodations, including also all charges for tuition and fees, ranges from \$375 to \$425 per school year, according to room chosen.

Two-fifths of the yearly rate is payable at the beginning of the first and the second term, one-fifth at the beginning of the third term. No reduction is made for absences from the hall of less than six consecutive days. No extra charge is made for board during vacations of less than ten days' duration.

BOARD

Good board elsewhere can be obtained at from \$6 to \$7 per week. Any change in boarding place must be immediately reported at the office.

LUNCH ROOM

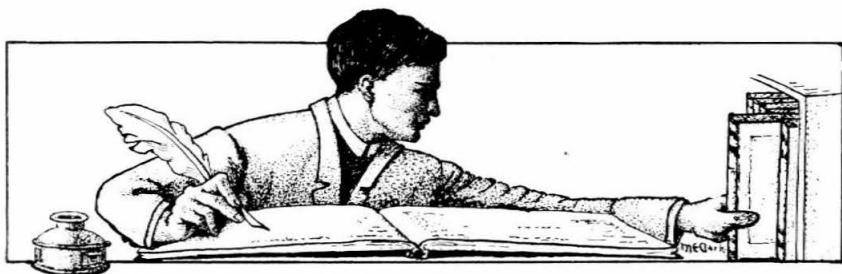
A conveniently arranged lunch room in the basement of East Hall is open daily for the accommodation of teachers and pupils, where well-cooked and wholesome dishes are served at noon at nearly cost prices. The benefit to health of providing pupils with hot and nourishing food is obvious.

TEXT-BOOKS

The text-books used in the classes of the Institute may be purchased at the Institute book store, on the second floor of East Hall, at less than the usual retail prices.

EVENING SCHOOL

During the fall and winter months evening classes are conducted, meeting Monday, Wednesday and Friday evenings. The subjects taught include bookkeeping, stenography, arithmetic, type-writing, penmanship, English, mechanical and free-hand drawing, and other subjects as called for. The charge for tuition in the Evening School is five dollars for twelve lessons.

**COMMERCIAL DEPARTMENT**

POLYTECHNIC HEADING DRAWN BY STUDENT



POLYTECHNIC HALL

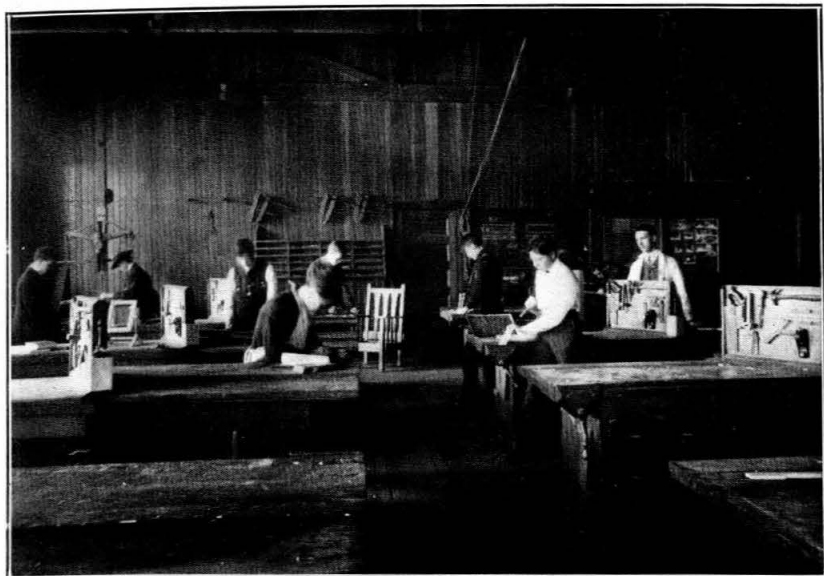
BUILDINGS

POLYTECHNIC HALL

Polytechnic Hall is a two-story brick building with a frontage of 140 feet on Fair Oaks Avenue and 80 feet on Chestnut Street. Recently a complete overhauling and re-equipment of the shops and laboratories has been accomplished, and a new wing has been added to the building—giving ample and satisfactory accommodation to all departments.

WOOD SHOP

The wood shop, located on the second floor, has recently been refitted and enlarged, and now contains twenty-nine benches with



WOOD SHOP

corresponding tool and locker equipment. A power jig-saw and grindstones are also in this room.

PATTERN SHOP

The pattern shop is equipped with fifteen benches with tools and lockers, together with an outfit of moulder's tools, flasks, etc., so that patterns may be tested in the sand.

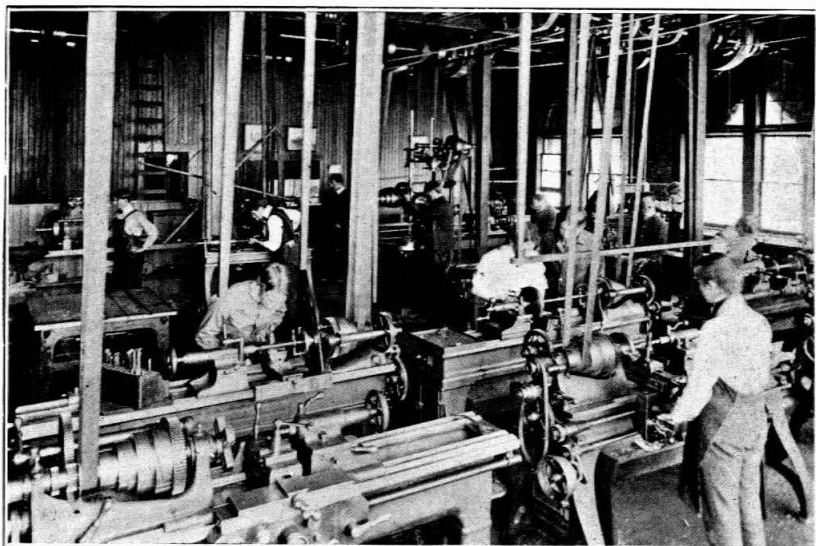
LATHE ROOM

Adjoining both wood shop and pattern shop, and available for the use of either, is the lathe room with an equipment of thirty wood-turning lathes, also one large pattern-maker's lathe with double end head-stock.

MACHINE SHOP

The machine shop is located in a large room on the first floor. The equipment for all classes of machine shop practice is ample, and of a high grade. The machines are, without exception, of the best and most substantial type, and include a planer, shaper, milling machine, drill presses, saw, fourteen lathes of various sizes, grinders, etc.

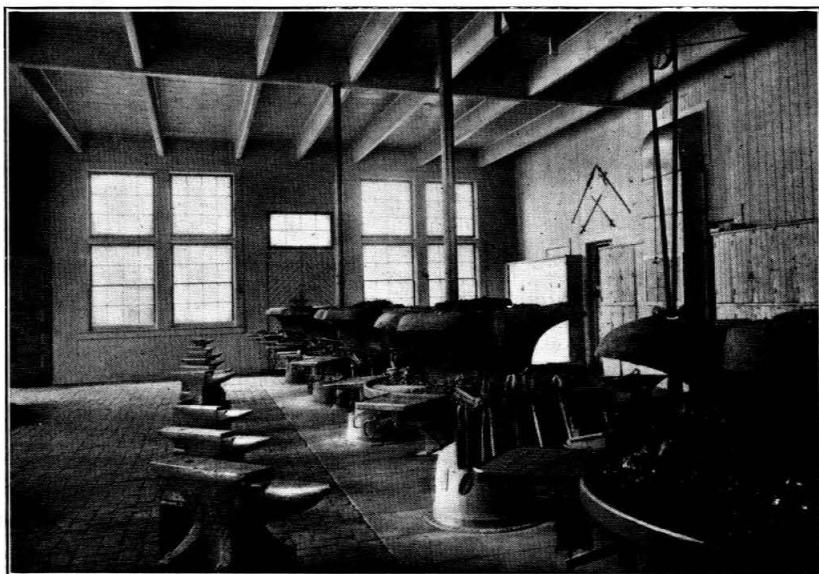
A twenty-horse power electric motor, furnishing power for the different shops, is located in this department.



MACHINE SHOP

FORGING SHOP

The forging shop is equipped for twenty-one students. A complete re-equipment, with down draft forges, makes this shop remark-



FORGING SHOP

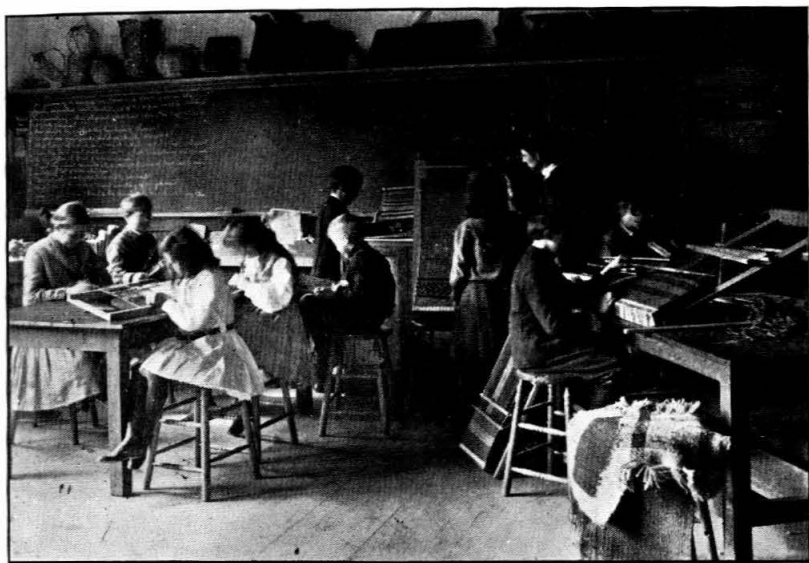
ably light and attractive. Five sets of Buffalo quadruple forges, with down draft hoods, one single forge with natural overhead draft together with anvils, drill presses, emery grinder and the usual outfit of small tools, comprise the equipment of this department.

TOOL ROOM

A stock and tool room adjacent to all shops, contains the small tools and supplies needed in the various departments. An attendant is constantly in charge.

MANUAL ARTS—ELEMENTARY GRADES

This department is accommodated in two rooms on the second floor of the new wing of Polytechnic Hall. One room has equipment



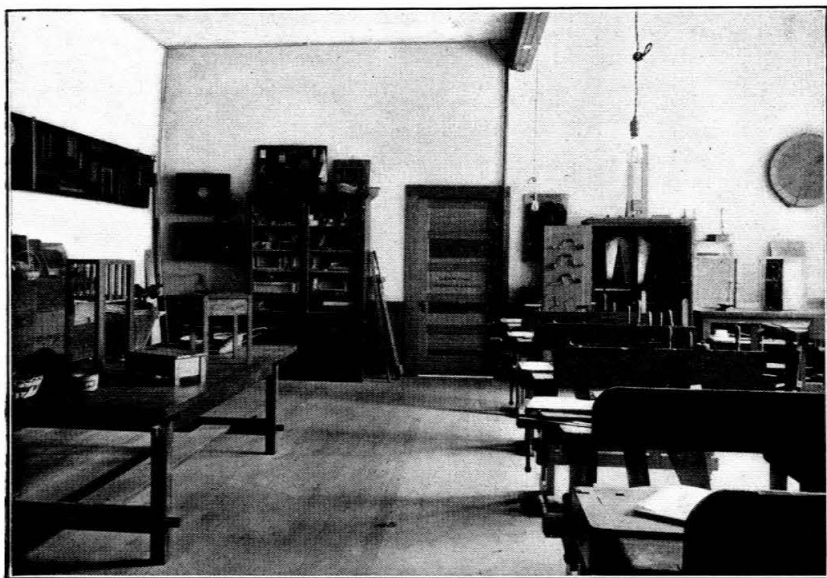
CLASS IN MANUAL ARTS—ELEMENTARY GRADES

for elementary work in cardboard, basketry, bookbinding, etc., while a larger room with locker room adjacent has an equipment of benches, tools, etc., suitable for work in wood.

MANUAL ARTS ROOM—NORMAL SCHOOL

The room used for normal sloyd and manual training work is fitted with all necessary tools and equipment. Models, exercises and drawings of English, Swedish and German courses, and from American schools, as well, are supplied for comparative study.

The library of the department includes the best works on psychology, education and manual training subjects.



MANUAL ARTS ROOM—NORMAL SCHOOL

WOOD CARVING ROOM

The wood carving room is a well lighted room on the first floor and is furnished with tools, benches and lockers for the use of the students, and cases for the exhibition of work.

A good selection of charts and casts of historic ornament is available in this and other art rooms of the Institute.

ELEMENTARY SCHOOL DRAWING ROOM

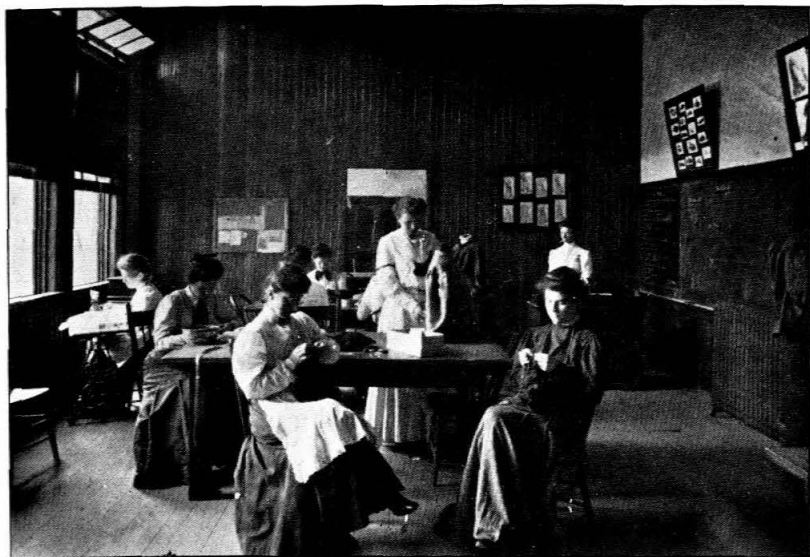
A large, well-lighted room on the first floor is devoted to the drawing work of the pupils of the Elementary School.

MECHANICAL AND ARCHITECTURAL DRAWING DEPARTMENT.

This department occupies a suite of three rooms on the second floor of the south wing. A main drawing room with ample lighting arrangements, contains tables for twenty students, with lockers for each student's tools and materials. Adjoining is a drawing room for advanced classes, with like equipment, and a lecture or library room containing the mechanical library, models, drawings and casts, for use of students. Arrangements for blue printing are found in the advanced drawing room.

DEPARTMENT OF DOMESTIC ART

This department occupies two well-lighted rooms on the first floor, equipped with large tables, sewing machines, electric iron and



SEWING ROOM

pressing-boards, dress forms and tables containing drawers for the individual use of the students.



COOKING ROOM

DEPARTMENT OF DOMESTIC SCIENCE

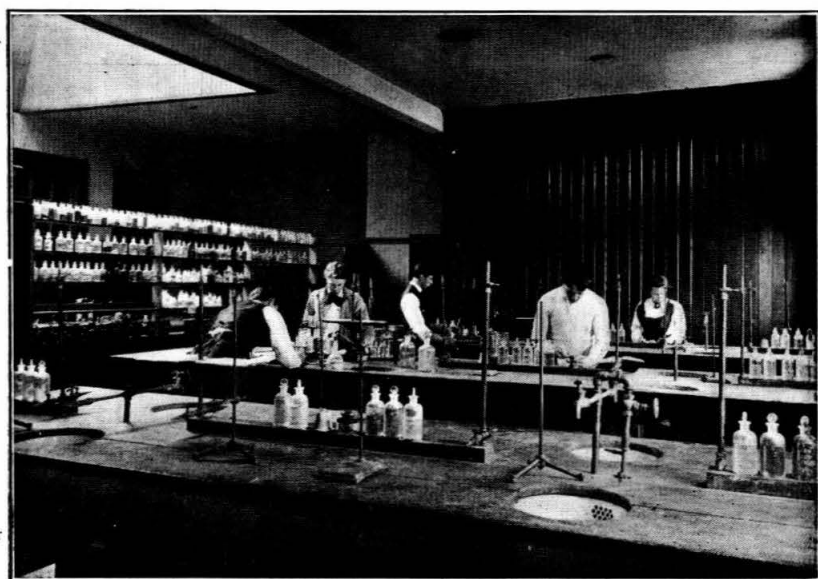
The cooking room is located on the first floor and is supplied with tables upon which are gas stoves. The drawers contain cooking utensils, mixing and measuring dishes, stirring-spoons, kitchen knives and forks, etc., while in cupboards beneath is a full assortment of stove and kitchen furnishings. A large dust-proof cupboard, containing meal and flour bins, dish closets, etc., a large water-heater, a gas range, a refrigerator, and cupboards for furnishings are also provided.

The department also occupies an adjacent room both for lectures and recitations, and also for the luncheons and dinners which individual students are required to serve from time to time as evidence of their proficiency.

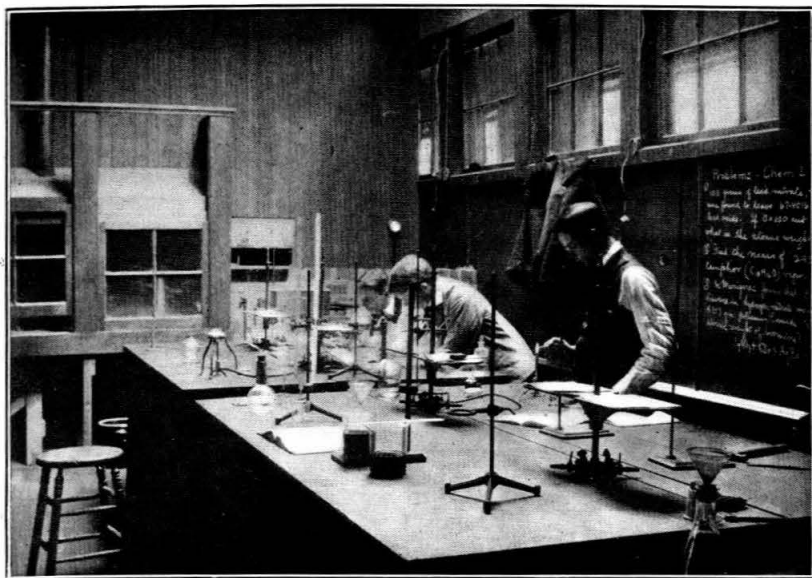
CHEMICAL LABORATORIES

The laboratory for general chemistry, 19x27, is found on the second floor of Polytechnic Hall. It is furnished with benches and lockers for 48 students and supplied with apparatus and chemicals for thorough work in experimental chemistry.

The laboratory of analytical chemistry and assaying, 12x30, is adjacent to the laboratory for general chemistry and is capable of



LABORATORY OF GENERAL CHEMISTRY

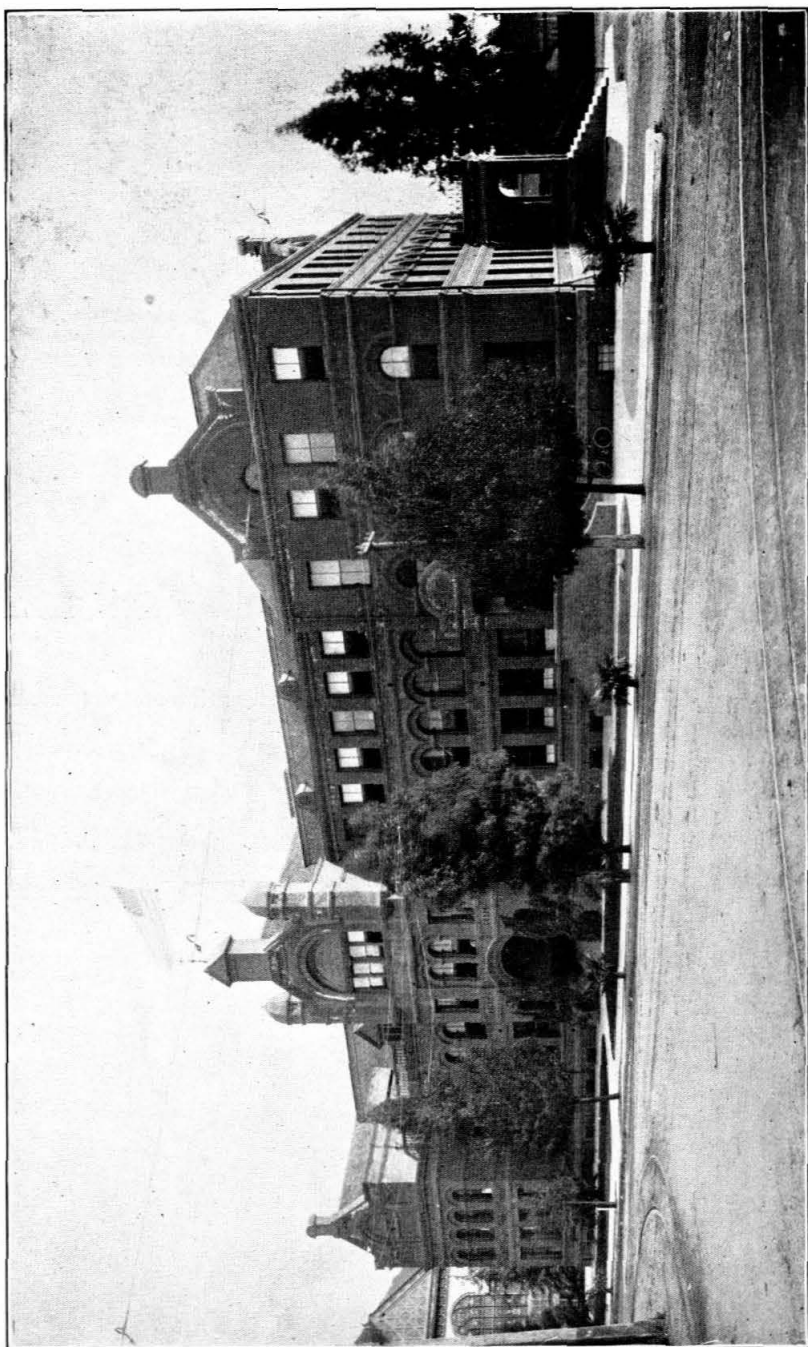


ANALYTICAL LABORATORY

accommodating 10 students. It is furnished with roomy lockers, and a full supply of apparatus, chemicals, balances, furnaces, etc., for rapid and accurate work in chemical analysis and assaying.

The library of the department is kept in a room next to the laboratories, and contains about 85 valuable reference books, the number of which is being constantly increased. The Journal of the Society of Chemical Industry is regularly received by the department.

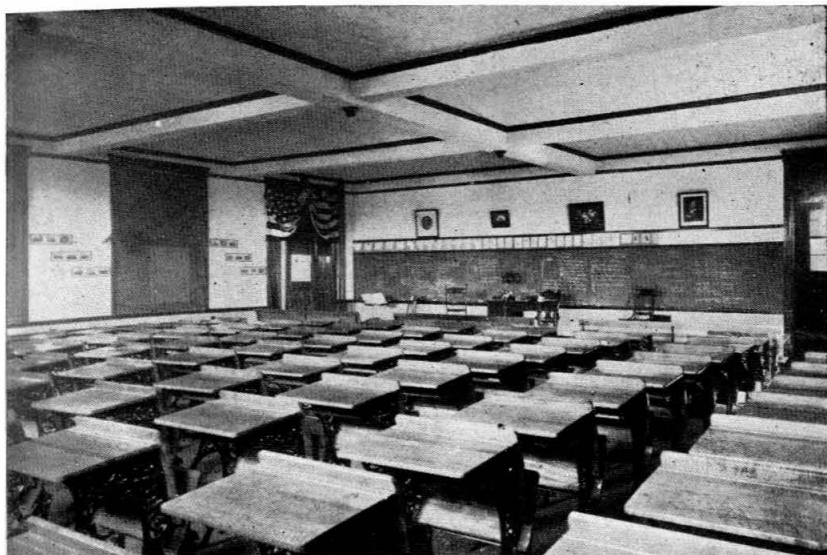
The library room contains a large working collection of minerals, furnishing much valuable material for the students in chemistry, mineralogy and assaying.



EAST HALL.

EAST HALL

East Hall is a large three-story brick building on Chestnut street and Raymond avenue. In addition to the rooms described below, it contains a reception room, the offices of President, Business



ELEMENTARY SCHOOL

Manager and Dean, the general library, a large assembly room, various recitation rooms, etc.

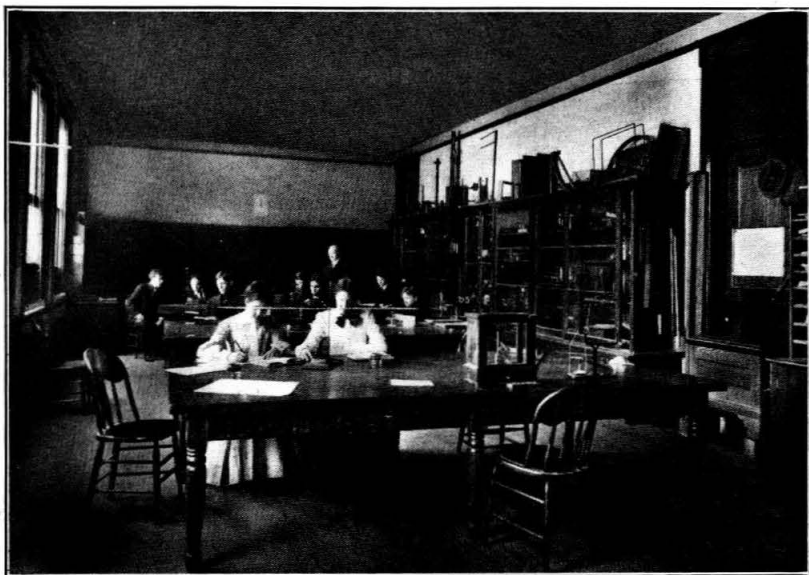
ELEMENTARY SCHOOL

The entire lower floor of the west wing of East Hall is devoted to the Elementary School. On the south is a large, well-lighted assembly hall with a seating capacity of about one hundred; it connects with two recitation rooms on the north and with another on the east. All rooms are seated with desks and fully equipped with all necessary appointments. The pupils of this School are provided with cloak and lunch rooms in the well-lighted basement.

PHYSICAL AND ELECTRICAL ENGINEERING LABORATORIES

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.

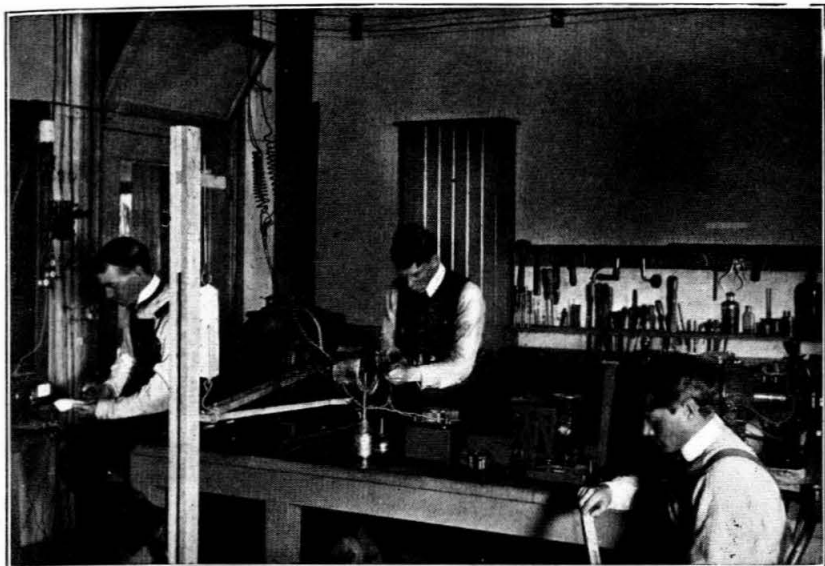
The Electrical Engineering Laboratory is a large room with cement floor, heavy piers of brick and cement, work-benches and



PHYSICAL LABORATORY

cases. It is piped for gas and water 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 in the two laboratories may be mentioned the following: Becker balance, micrometer calipers, aneroid and mercurial barometers, spectroscope, revolving mirror, compound microscope, Deprez-D'Arsonval mirror galvanometer with three coils of different resistances, Thompson tripod galvanometer, universal tangent galvanometer, scales and telescopes, resistance boxes, Queen portable testing set, quadrant electrometer, one-third microfarad condenser, adjustable condenser for alternating current work reading up to five microfarads, standard cells, slide-meter bridges, large induction coil, X-ray tube, Prony brakes, cradle dynamometer, steam engine indicator, Amsler planimeter, speed indicator, direct and alternating current voltmeters and ammeters, Siemens electro-dynamometers, wattmeters, direct and alternating current dynamos and motors including an experimental dynamo fitted with commutator and collecting rings so that it may be used as a generator of direct and alternating currents as well as a synchronous motor and a rotary converter, auto-transformer adjustable for various voltages, switch board, storage cells, Bunsen and Joly photometers, arc, incandescent and Nernst lamps. A large dark room



STUDENTS TESTING INDUCTION MOTOR IN ELECTRICAL ENGINEERING LABORATORY for use in photometry adjoins the Electrical Engineering Laboratory.

The library of this department is situated in the Physical Laboratory. Some of the leading periodicals are kept on file and frequent additions are made of the latest works on physics and electrical engineering.



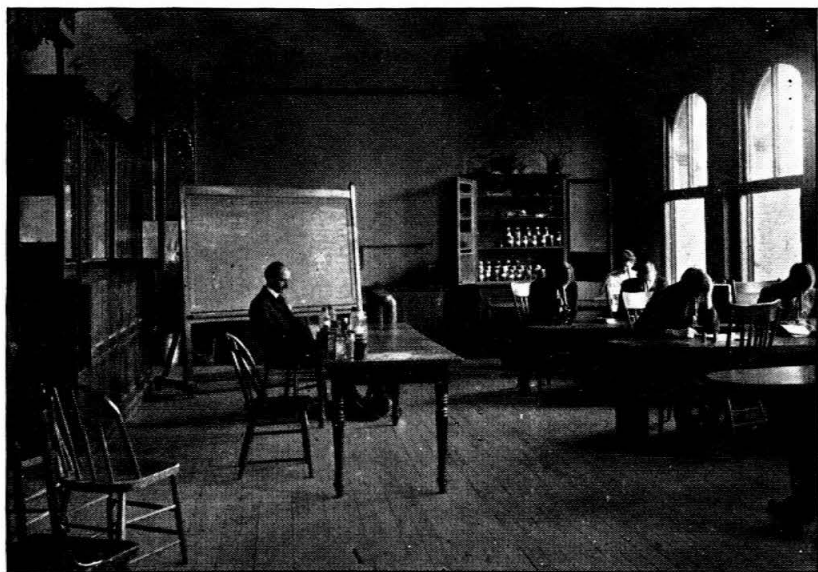
COMMERCIAL SCHOOL ROOM

COMMERCIAL SCHOOL

The Commercial School occupies the entire second floor of the west wing of East Hall, and contains all the furnishings, fittings and offices, including a bank, required by the best business and stenographic colleges.

BIOLOGICAL LABORATORY

The Biological Laboratory occupies two rooms on the second floor of East Hall, on the north side of the building. The seven large windows supply an abundance of the diffuse north light most



BIOLOGICAL LABORATORY

favorable for microscopic work. Six flat-iron-shaped black-topped tables, with their narrow ends farthest from the windows, permit of several students working at one table without light interference.

There are lockers for each individual, re-agent shelves and gas-burners for each table, and a plentiful supply of petri-dishes, flasks, test-tube racks, and the various other utensils used in the different lines of work. Sixteen compound microscopes, twenty dissecting microscopes, a microtome, camera lucida, steam and dry sterilizing ovens, two incubators, and a five glass aquaria, contribute to an equipment such as is required in the higher grades of work.

The Department library contains an unusually large selection of reference books in all lines, and these are constantly added to by

the Institute as new volumes appear. Twenty of the leading scientific journals are received regularly so that the ambitious college student may keep abreast of the times in whatever line he is working.

Very large collections of birds, mammals, reptiles, and plants are available for the use of students interested in those subjects. What is, perhaps, most to be appreciated is the wonderful variety of animal and plant life to be found in the immediate neighborhood of Pasadena. This affords material of every description ready to be drawn upon by the student at any season.

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 is attractively furnished with substantial and artistic furniture designed and built by members of the Gnome Club.

STICKNEY MEMORIAL BUILDING

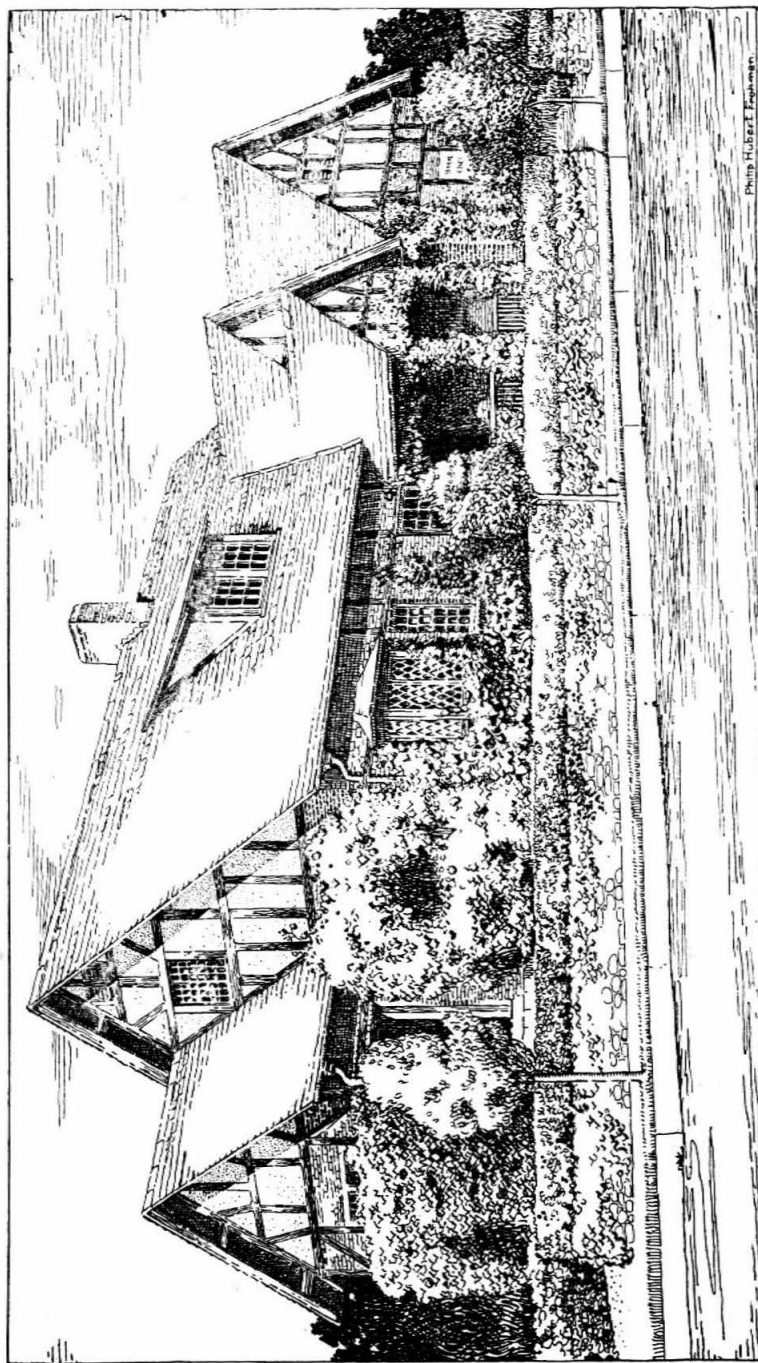
Classes in the Art Department occupy Stickney Memorial Building, just across the street from Polytechnic Hall. This ivy-covered Shakespearean structure is an inspiration to all the students who are constantly adapting its artistic lines, both interior and exterior, to sketches made in the different media, pencil, pen and ink, wash drawings.

FREE-HAND DRAWING, PAINTING AND DESIGNING ROOMS

Two large rooms on the lower floor are used by the classes in drawing and painting, and are well provided with all necessary equipment for this work as well as other appliances for lectures, recitals, etc., namely: lecture platform, screen for lantern slides, piano, curtains, rooms for costumes. A pantry and kitchen, with all facilities for social functions are at the disposal of the students.

CLAY MODELING ROOMS

The various rooms on the second floor are occupied by the classes in clay modeling. These rooms contain numerous plaster casts, models, lockers, vats for clay, and revolving stands used in working from the living model, when the work must be turned and viewed from every point in process of construction.

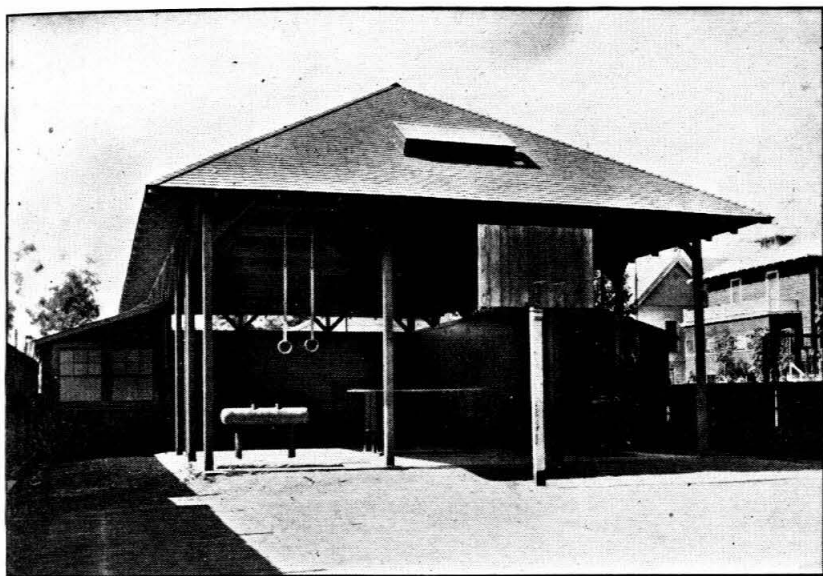


PEN AND INK SKETCH OF STICKNEY MEMORIAL BUILDING BY FOURTH YEAR ACADEMY STUDENT

GYMNASIUM

The gymnasium stands on the north side of Chestnut street, opposite East Hall, and is fitted up with such apparatus as dumb-bells, Indian clubs, wands, horizontal and vaulting bars, parallel bars, horse, buck, spring board, mattresses, traveling rings, Roman rings, climbing ropes and ladders, suitable for both light and heavy gymnastics.

In the east wing are the girls' quarters. Each girl has a private dressing room and shower bath, and the construction and equipment



GYMNASIUM

are in every respect modern. On the boys' side are rubbing tables, shower baths, dressing rooms, etc., and in both wings are lockers of the best manufacture.

THROOP HALL

Throop Hall, where from forty to fifty boys and young men are afforded a comfortable home, is located at 289 North Los Robles avenue, which is within ten minutes' walk of the Institute. The property is owned by the Institute and comprises a main building of about thirty-five rooms and two adjoining cottages, situated in the midst of shrubbery and flowers on a tract of about



THROOP HALL

one and a third acres. A tennis court and a play ground are included in the conveniences for the pupils living at the house. A billiard room, a grand piano, plenty of books, etc., add to the attractiveness of the hall.

SCHOOLS

COLLEGE

REQUIREMENTS FOR ADMISSION

The requirements for admission to the college are as follows:

(1) The completion of one of the Academy courses outlined on page 48; or (2) the completion of a course in an accredited high school or an approved preparatory school; or (3) passing an examination upon English 1, 2 and 3 and Mathematics 1 and 3 and any ten of the following subjects, as outlined on pages 49 to 64. Physical Geography, Botany, Zoology, Physics 1, Chemistry 1, Latin 1, Latin 2, Latin 3, Latin 4, German 1, German 2, French 1, French 2, History 1, History 2, History 3 and 4, Mathematics 2 and 4. Any applicant offering Latin, French, or German, must present at least two years of each.

COURSES OF STUDY IN THE COLLEGE

The following tables show the work required of students for the degree of B. S. in each department. To the subjects named below must be added elective work to make a total equivalent of 32 General credits. Three Manual credits are taken as the equivalent of 2 General credits and not more than 12 Manual credits may be offered toward graduation. The credits, General and Manual, earned by each subject are indicated in the tabulated statement on page 76.

Although courses in Mechanical, Civil and Mining Engineering are not outlined below, considerable work is given in these branches of engineering and their collateral subjects. It is also the purpose of the Institute to extend the work along these lines as demand for it arises.

Arabic numerals below refer to the subjects described on pages 33 to 39, and 49 to 64.

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

Students in Engineering who are graduates of high schools where manual training is not taught may complete required work in wood shop and forging in one year of ten periods per week.

	CHEMISTRY	ELECTRICAL ENGINEERING	BIOLOGY
FIRST YEAR	Chemistry 1 English 5 Mathematics 5, 6 French 1, or German 1	Physics 2 Mathematics 5, 12 English 5 Drawing—Mechanical Shop-work 1, 2	Vertebrate Anatomy and Physiology Physics 1, or Chem. 1 French 1, or German 1 English 5
SECOND YEAR	Chemistry 2, 3 Physics 2 Mathematics 8 French 2, or German 2	Electrical Engineering 1 Mathematics 8 Chemistry 2, 3 Drawing—Mechanical Shop-work 3, 4	Vertebrate Embryology Chemistry 2, 3 French 2, or German 2
THIRD YEAR	Chemistry 4, 5, 6, 7 Mathematics 9 Mineralogy	Electrical Engineering 2, 3 Steam Engineering 1 Mathematics 9 Drawing—Mechanical	Systematic Vertebrates Entomology Mineralogy
FOURTH YEAR	Chemistry 8, 9, 10	Electrical Engineering 4, 5 Mathematics 13	Geology Ecology Ornithology Bacteriology

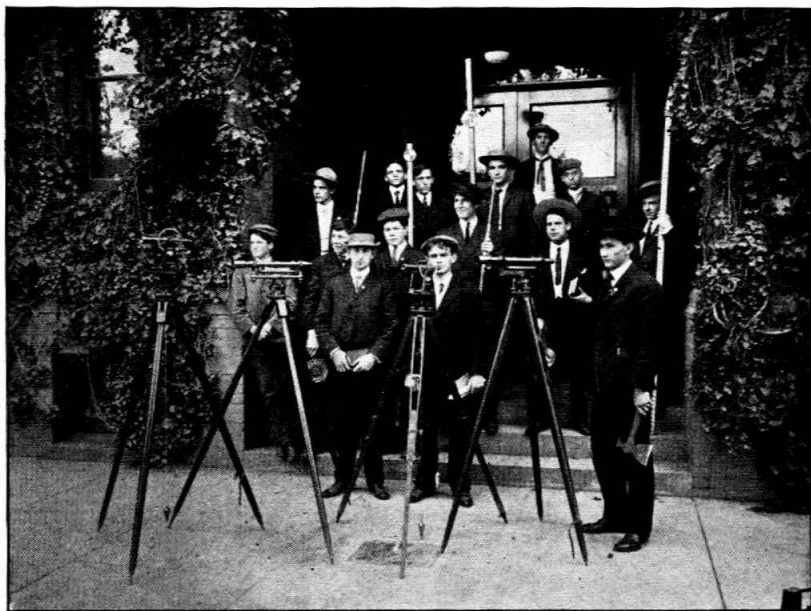
SUBJECTS AND METHODS OF INSTRUCTION

MATHEMATICS

In all the courses given below, stress will be laid on such parts of mathematics as are of special help in scientific work.

6. SURVEYING.—(a) PLANE SURVEYING. Surveying 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.

(b) 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.



CLASS IN SURVEYING

(c) FIELD ENGINEERING.—Theory and practice of laying out curves, side-tracks; economic principles of railway location and construction. Henck's and Searle's Field Books are used.

(d) 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.

Ten periods per week throughout the year.

7. HIGHER ALGEBRA.—Determinants, complex quantities (graphic method), inequalities, limits and indeterminate forms, convergency and divergency of series, indeterminate coefficients with applications to integral functions, partial fractions, expansion of functions and summation of series, continued fractions, permuta-

tions and combinations, the binomial theorem for any index, exponential and logarithmic series, theory of numbers, theory of equations, including the plotting of entire functions of one letter, Descartes' rule of signs, the solution of higher numerical equations, derived functions, etc. Five periods per week throughout the year.

8. ANALYTIC GEOMETRY.—Analytic Geometry of two dimensions, Analytic Geometry of three dimensions. Five periods per week throughout the year.

9. CALCULUS.—Differential and Integral Calculus. Five periods per week throughout the year.

10. DIFFERENTIAL EQUATIONS.—A course in Differential Equations with especial reference to such applications as occur in Physics and Engineering. Five periods per week throughout the year.

12. DESCRIPTIVE GEOMETRY.—Five periods per week throughout the year.

13. THEORETICAL AND APPLIED MECHANICS.—This course is intended for all students in Engineering. Analytical and graphical methods for the study of the statics and dynamics of bodies as practically illustrated in beams of wood and iron under loads, of the stresses in framed structures, of the action and work done by machines, etc., are employed in connection with experimental tests. The study of work-measuring machines, or dynamometers, is a prominent feature of the course. There is also an elementary study of hydraulics, with special reference to both the disposal and disposition of water by drainage systems and its utilization as a source of power. Instruction is given by lectures and classroom work and experimental work in the laboratory. Preparation required: Mathematics 10. Ten periods per week throughout the year.

ENGLISH

5. DEVELOPMENT OF ENGLISH LITERATURE.—Written exercises throughout the course. Stopford A. Brooke's *History of English Literature* will be made the basis of study, with the reading of the following: Hall's *Beowulf*, Chaucer's *Prologue*, Book I, Spenser's *Faery Queene*, Bacon's *Essays*, Lodge's *Rosalind and As You Like It*, Pilgrim's *Progress*, Milton's *Paradise Lost*, Books I and II, Dryden's *Absalom and Achitophel*, Pope's *Essay on Man*, Addison's *She Stoops to Conquer*, Swift's *Tale of a Tub*, Johnson's *Rasselas*, Sheridan's *Rivals*. Preparation required: English 4. Five periods per week throughout the year.

LATIN

1, 2, 3 and 4 as outlined on pages 51 and 52.

GERMAN

1, 2 and 3 as outlined on page 52.

FRENCH

1, 2 and 3 as outlined on pages 52 and 53.

EDUCATION

1, 2 and 3 as outlined on pages 41 and 42.

SOCIO-ECONOMICS

1. ELEMENTARY SOCIO-ECONOMICS.—A study of the characteristic concepts of sociological and economic thought, designed to acquaint the student with the vocabulary of the subject and the current theories of social and economic interpretation. The first part of the course will include a brief discussion of the elements of association underlying social relations and institutions; the result of race, group, and individual competition; the relation between the individual and society; and some of the conditions of social progress. The second part will include a summary of economic history and examination of the meaning and scope of economics, and a discussion of the production, distribution, exchange, and consumption of wealth; the wage question; labor organizations; co-operation and profit-sharing; panics and depressions, and socialism. A text will be used, supplemented by lectures, readings and reports. Open to first year college students, normal students, and such others as, in the judgment of the instructor may be able to do the work satisfactorily. Five periods per week throughout the year.

BIOLOGY

4. VERTEBRATE ANATOMY AND PHYSIOLOGY.—This course demands a detailed study, by dissection, of the anatomy of selected vertebrates, such as the shark, frog, pigeon and cat. Experiments are conducted to ascertain the functions of the various tissues and organs. Preparation required: Course 2, Physics 1. Ten periods per week throughout the year.

5. VERTEBRATE EMBRYOLOGY.—The development of the chick forms the main subject of this course, though some study is devoted to the shark, salamander and mammal. Special attention is paid to histological technique in the preparation of serial sections and surface views of embryos. Preparation required: Course 4, Chemistry 1. Ten periods per week throughout the year.

6. SYSTEMATIC STUDY OF VERTEBRATES.—The principles of classification are discussed and applied; methods of collecting and preserving specimens are tested in the field; and the life habits and means of artificial propagation of such commercially important animals as fishes are investigated. Preparation required: Course 2. Five periods per week throughout the year.

7. GENERAL ORNITHOLOGY.—The study of birds in its many phases is conducted with a view to its practical as well as scientific bearing. The important relation of birds to agriculture is investi-

gated experimentally. Feather-structure, moult, migration, distribution, classification, habits, and preparation of study skins are treated of in the field, laboratory and lecture-room. Preparation required: Courses 2 and 3. Ten periods per week throughout the year.

8. ECONOMIC ENTOMOLOGY.—This course consists in the laboratory and field study of insects in general, but more especially of those which in California prove so injurious to the farmer and orchardist. Preparation required: Courses 2 and 3. Five periods per week throughout the year.

9. PLANT AND ANIMAL ECOLOGY.—This is the study of the relation of living things to their surroundings. The effect of temperature and humidity (that is, climate) in determining the distribution of plants and animals is abundantly illustrated on our nearby mountains and plains. The practical bearing of this subject comes in the mapping of crop zones. Preparation required: Courses 1, 2 and 3. Five periods per week throughout the year.

10. BACTERIOLOGY.—A study of available forms of bacteria, their life-histories, disease-producing powers or uses, and their growth characters, including the technique of sterilization, preparation of culture-media and staining. Practical experiments are carried on with local milk and water supplies. Preparation required: Courses 1, 2, 3 and 9, Chemistry 1 and Physics 1. Ten periods per week throughout the year.

CHEMISTRY

1. Course outlined on page 54.

2. QUALITATIVE ANALYSIS.—Preliminary work, analysis of unknowns, including minerals and industrial products. Critical study of processes of analysis. Text-book: A. A. Noyes' Qualitative Chemical Analysis. Students are also advised to procure Treadwell's Qualitative Analysis. Preparation required: Chemistry 1 and Physics 1. Nine periods per week for thirty-six weeks.

3. PRINCIPLES OF GENERAL CHEMISTRY.—A course in general descriptive and physical chemistry with special attention to its connection with chemical analysis. Given in connection with Course 2. Text-book: H. C. Jones' Principles of Inorganic Chemistry. One period per week for thirty-six weeks.

4. INORGANIC PREPARATIONS.—Methods of preparation and purification of organic chemicals, starting with raw materials. Tests for impurities. Discussion of reactions. Preparation required: Chemistry 2 and 3. Text-book: Thorp's Inorganic Preparations. Six periods per week for twelve weeks.

5. ORGANIC CHEMISTRY.—Recitations on typical members and reactions of the various groups of carbon compounds. Laboratory work upon class reactions. Text-book: Remsen's Organic Chem-

istry. Preparation required: Chemistry 2, 3. Two periods per week throughout the year. Laboratory work eight periods per week for twenty-four weeks.

6. **QUANTITATIVE ANALYSIS I.**—Typical determinations in gravimetric and volumetric analysis. Discussion of methods and solution of stoichiometric problems. Text-book: Talbot's *Quantitative Analysis*. Preparation required: Chemistry 2, 3. Ten periods per week for twenty-four weeks.

7. **ASSAYING.**—Fire assay for gold, silver and lead. Volumetric assay for copper and silver. Preparation required: Chemistry 5. This course must be accompanied by mineralogy. Ten periods per week for twelve weeks.

8. **QUANTITATIVE ANALYSIS II.**—Advanced work, comprising analysis of industrial products, minerals, milk, water, foods, air, etc. Preparation required: Chemistry 6. Twenty periods per week for eighteen weeks.

9. **INDUSTRIAL CHEMISTRY.**—Lectures and readings on important chemical industries, inorganic and organic. Two periods per week for eighteen weeks.

10. **HISTORY OF CHEMISTRY**, and reading of French and German chemical literature. Preparation required: German 2, Chemistry 2. Two periods per week for eighteen weeks.

11. **MINERALOGY.**—This course offers a detailed study of the elements of mineral analysis, the first half of the year being devoted to the study of the type forms and the second to a more systematic study of the sub-groups of minerals. The work is largely practical, analysis of unknowns receiving an important place. Text-book: Crosby's *Mineralogical Tables*. Preparation required: Biology 1, Chemistry 1. Five periods per week throughout the year.

PHYSICS

2. **GENERAL ADVANCED PHYSICS.**—This course is intended for those who wish to continue their work in physics or pursue the work in electrical engineering. Recitations are accompanied by laboratory work, consisting of a series of physical measurements intended to supplement Physics 1.

General Physics, Hastings and Beach, and a *Manual of Experiments in Physics* by Ames and Bliss are used as texts. Preparation required: Physics 1 and Chemistry 1. Ten periods per week throughout the year.

ELECTRICAL ENGINEERING

1. **ELECTRICITY AND MAGNETISM.**—It is the purpose of this course to give a thorough grounding in the principles of electricity and magnetism to serve as a foundation for the following courses in electrical engineering. Instruction is given by study

of the text with references to books in the library and by work in the laboratory comprising chiefly such experiments as determination of horizontal component of the earth's magnetism and galvanometer constants; measurement of resistance, current, electromotive force, capacity, self and mutual induction; study of the magnetic qualities of iron and characteristic curves of dynamos and motors. Text-book: *Electricity and Magnetism*, Jackson. Preparation required: Physics 2 and Mathematics 5. Ten periods per week throughout the year.

2. POWER MEASUREMENTS.—Theory and use of steam engine indicator, cradle dynamometer, transmission dynamometers, Prony brake; efficiency and other tests of dynamos and motors; photometry. Text-books: *A Laboratory Manual of Physics and Applied Electricity*, Nichols, Vol. II, Part I, *Testing of Electromagnetic Machinery and other Apparatus*, Frankenfield and Swenson. Preparation required: *Electrical Engineering I*. Ten periods per week first half year.

3. DYNAMO DESIGN.—The theory and calculation of electromagnets are first reviewed and a brief study is made of the principles and types of dynamo electric machinery. As soon as may be some particular type of dynamo is selected to be designed and its design is carried along with the development of the various principles and formulas thus bringing about their immediate application. Text-book: *Dynamo Electric Machines*, Wiener. Preparation required: *Electrical Engineering I*. Ten periods per week second half year.

4. ALTERNATING CURRENTS.—Study of alternating currents by analytical and graphical methods accompanied by work in the laboratory. Among the subjects taken up are: measuring instruments; inductance and capacity; harmonic electromotive force and harmonic current; problems of the inductive circuit, resonance; problems of coils in series and in parallel; the use of complex quantity; single and polyphase alternators; single and polyphase systems; theory of the transformer, synchronous motor, induction motor, rotary converter and transmission lines. Numerous problems are worked and the theory is accompanied by much illustrative experimental work in the laboratory. Text-books: *Alternating Currents*, Franklin and Williamson. Preparation required: *Calculus and Electrical Engineering 3*. Five periods recitation and ten periods laboratory work first two terms.

5. ELECTRIC TRANSMISSION AND DISTRIBUTION OF POWER.—Consideration of steam engines, gas engines and water wheels for power generating purposes; general conditions and principles of power transmission; transmission by direct and alternating currents; line and line construction; problems of distribution. In this course the usual methods of instruction are supplemented by visits to the various electrical plants in the vicinity and by talks from men en-

gaged in commercial electrical work. Preparation required: Electrical Engineering 4. Ten periods per week last term.

STEAM ENGINEERING

I. ELEMENTARY STEAM ENGINEERING.—This course deals with the principles governing the action of engines, chiefly the simple and compound steam engine but also air, gas and oil engines. A study is also made of the properties of gases and vapors with especial reference to the bearing of theory on practical results. The class makes a study of engines in actual operation in various manufacturing plants, and assists in designing and constructing various styles of engines in the Institute Pattern and Machine Shops. The text-book used is the Steam Engine and other Heat Engines, by J. A. Ewing. Five periods per week throughout the year.

NORMAL SCHOOL

REQUIREMENTS FOR ADMISSION

Admission to this School can be gained by persons holding teachers' certificates, by graduates of High or Normal Schools or Colleges, and by others giving satisfactory evidence of attainments necessary to secure a teacher's certificate in this State.

COURSES OF STUDY IN THE NORMAL SCHOOL

Four courses are offered in the Normal School as follows: 1. Manual Training for Elementary Schools; 2. Manual Training for Secondary Schools; 3. Domestic Economy (Domestic Science and Domestic Art); 4. Fine Arts.

The time necessary to obtain a diploma in any department of the Normal School is two years. The recognition of the diploma is general and certificates to teach are granted to those holding diplomas.

Students properly qualified may, with the approval of the Faculty, omit certain book subjects, and select such other work as will gain the necessary number of credits for graduation.

Every opportunity is offered the student for complete and extended work in the several departments. In addition to the various class rooms and shops with their equipments, a conference and library room is at the disposal of Normal students, and here may be found books dealing with the various phases of handiwork and magazines and periodicals on current literature in each subject.

While the school does not guarantee positions to its graduates, it assists them in every possible way. The demand for graduates of the Normal School, both East and West, far exceeds the supply. More than fifty graduates of the school are at present engaged in teaching manual training, domestic economy or art.

	MANUAL TRAINING FOR ELEMENTARY SCHOOLS	MANUAL TRAINING FOR SECONDARY SCHOOLS	DOMESTIC ECONOMY	FINE ARTS
FIRST YEAR	First Half			
	Education 1	Education 1	Education 1	Education 1
	Fine Arts 6	Fine Arts 6	Education 6	Fine Arts 7
	Manual Train- ing 2	Manual Train- ing 3	Fine Arts 8	Fine Arts 8
	Manual Train- ing 3	Manual Train- ing 3	Domestic Science 3	Fine Arts 11
	Manual Train- ing 8	Manual Train- ing 8	Domestic Science 5	Manual Train- ing 8
FIRST YEAR	Second Half			
	Education 1	Education 1	Education 1	Education 1
	Fine Arts 6	Fine Arts 6	Education 6	Fine Arts 7
	Manual Train- ing 2	Manual Train- ing 3	Fine Arts 8	Fine Arts 8
	Manual Train- ing 3	Manual Train- ing 5	Domestic Science 3	Fine Arts 11
	Manual Train- ing 8	Manual Train- ing 8	Domestic Science 5	Manual Train- ing 8
SECOND YEAR	First Half			
	Education 2	Education 2	Education 2	Education 2
	Education 4	Education 4	Education 5	Education 7
	Fine Arts 11	Fine Arts 11	Domestic Science 4	Fine Arts 9
	Fine Arts 12	Manual Train- ing 6	Domestic Art 6	Fine Arts 10
	Manual Train- ing 8	Manual Train- ing 7	Domestic Art 7	Fine Arts 12
SECOND YEAR	Second Half			
	Education 3	Education 3	Education 3	Education 3
	Education 4	Fine Arts 11	Education 5	Education 7
	Fine Arts 11	Manual Train- ing 4	Domestic Science 4	Fine Arts 9
	Fine Arts 12	Manual Train- ing 6	Domestic Art 6	Fine Arts 10
	Manual Train- ing 3	Manual Train- ing 9	Domestic Art 7	Fine Arts 12

SUBJECTS AND METHODS OF INSTRUCTION IN THE NORMAL SCHOOL

EDUCATION

1. ELEMENTS OF PSYCHOLOGY.—This course aims to give a general introduction to psychology. A study of the laws of psychology will be taken up and the educational implications made. The relation of the work to school practices and the principles that determine successful teaching will be studied. Recitations and practical work. Five periods per week throughout the year.

2. PEDAGOGY.—This course aims at special investigation and research. Constant reference will be made to the educational phases of the subject, and topics most intimately related to teachers and school officers will be taken up. Methods of studying various school conditions, measurement of mental, moral and physical qualities, the curriculum, relative values of studies, examinations, experimentation and question in child-study and treatment of statistics will come within the range of this course. Research work, recitations, reports, discussions and lectures. Five periods per week throughout the year.

3. HISTORY OF EDUCATION.—The history and principles of education, their relation to our present-day conditions. The educational epochs of the past will be taken up and their relation to social, industrial and educational evolution discussed. The fundamental principles will be traced out and their philosophic bases criticised. Practical work, assigned readings, reports, and lectures.

4. ORGANIZATION AND METHODS IN MANUAL TRAINING.—A study is made of the development of the manual training idea, its significance in the schools of today and its relation to the various subjects of the curriculum; the organization, equipment, cost and management of departments; study of typical systems and methods of teaching.

Lectures, reports and practical work.

5. ORGANIZATION AND METHODS IN DOMESTIC SCIENCE.—A study of the significance of the various lines of domestic science and their place in the school program, planning, teaching and criticisms of lessons; organization of work and study of kind and cost of equipments; relation of cookery to biology and chemistry.

Lectures and assigned topics.

6. ORGANIZATION AND METHODS IN DOMESTIC ART.—This course will consider the theory and practice of teaching domestic art in the elementary and secondary schools, its legitimate place in the course of study, and its relation to the other branches and to life. Lessons will be observed and planned, classes taught, and organization of work and cost and planning of equipments considered.

Lectures and discussions.

7. ORGANIZATION AND METHODS IN THE FINE ARTS.—Lectures on the history of painting, sculpture, architecture, and the applied arts illustrated by photographs and lantern slides; talks on methods of instruction to be followed by discussions and papers on all lines studied and the actual test of the same in class room teaching will fall within the range of this course. A study of equipments and of administration of work will be carried on.

MANUAL TRAINING

1. See Education 4.

2. HANDWORK FOR THE PRIMARY GRADES.—The work of this course will be such as can be carried on in the specially equipped manual training room under a special teacher and in the grade room as well as under direction of the regular grade teacher. Attention will be given processes having an industrial and economic significance and constant reference will be made to the design and art features and the thought sides along with a consideration of constructive phases. The course includes construction in paper and cardboard, bent iron, wood, weaving, sewing and textiles, basketry with raffia, reed and native materials, and in pottery.

Practical work and discussions.

3. **HANDWORK FOR THE ELEMENTARY SCHOOLS.**—Particular attention is given to wood work processes suitable for the upper grades. In addition to the making of certain typical objects, involving necessary technical skill and the principles of wood construction, a study will be made of timber,—its sources, growth, structure, and adaptability. Decorative work in leather and in metals will form a part of this course. Sheet metal, copper and brass, will be used in the construction of decorative and useful forms, boxes, bowls, vases, trays and the like.

Practical work and discussions.

4. **WOODWORK FOR SECONDARY SCHOOLS.**—A course dealing with wood work processes adapted to high school pupils, involving a number of constructive problems and comprising advanced work in joinery, cabinet making, inlaying, veneering, decorating and finishing. Special attention is given to original work in designing and construction. Study of timber as noted under manual training 2.

5. **WOOD TURNING.**—Turning at the lathe in hard and soft woods, bringing in the various methods employed commercially, and involving center, face-plate, chuck work and inside turning. This course is closely connected with manual training 3, the completion of certain projects comprising work in both courses.

6. **FORGING AND METAL WORK.**—This course deals with processes suitable for the high schools,—exercises, practical projects, tools, etc., and ornamental pieces. A study of the material of the forge, the care of tools, and instruction in typical and fundamental processes, bending, upsetting, welding, chipping, filing, tempering and the like is given.

7. **WOOD CARVING.**—Elementary work in exercises and small objects, to be followed by more elaborate projects, aiming to give a thorough knowledge of the foundation principles and a comprehensive view of the purpose and practice of carving as applied to elementary schools. Course 5 in design will be applied in this work.

8. **MECHANICAL DRAWING—INTRODUCTORY COURSE.**—Principles of working drawings, plans, elevations, sections, scales; free-hand and geometric lettering; drawing of models made in the shop; orthographic and isometric projections; domestic architecture; tracing and blue printing. The needs of the elementary school are kept in mind throughout this course.

9. **MECHANICAL DRAWING.**—Work suited to secondary conditions; cavalier projection; coloring and tinting; perspective; intersections; shadows; elements of architectural drawing.

DOMESTIC SCIENCE

2. See Education 5.

3. **DOMESTIC SCIENCE TEACHING.**—The purpose of this course is to present the methods of domestic science teaching in the grades and the high school, together with practical work in cooking. It

includes a study of foods, history of food products, traces the raw materials through the various processes of manufacture, comparative food values, study of cooking apparatus and fuels, and a consideration of various cookery processes. Special work in cooking and in serving breakfasts, dinners and luncheons is a part of the course.

Theory, practical work and discussions.

4. **ADVANCED COURSE IN FOODS AND COOKERY.**—Chemical and physiological classification and cost, preservation and preparation of foods; dietaries; a study of national foods; relation of food to climate; invalid cookery; food adulterations; bills of fare; the dish and table decoration; home and public hygiene; evolution of the home.

Observation and teaching with practical work and discussions.

5. **SPECIAL BIOLOGY.**—This course is required of all students in Domestic Science.

(a) A review of elementary botany, plant structure and function, with a special study of food plants.

(b) Laboratory work in plant physiology.

(c) Review of elementary inorganic chemistry, with lectures and laboratory practice.

(d) Elementary lecture course in organic chemistry.

(e) Physiological Chemistry, including review of elementary physiology, physiology of man as related to that of other mammals and of lower vertebrates, chemistry of the tissues and functions of animals and plants.

Six periods per week throughout the year.

DOMESTIC ART

4. See Education 6.

5. **SEWING.**—Thorough training is given in hand and machine sewing, including a knowledge of the various kinds of stitches and their special uses; the form and construction of garments based on the principles of drafting (by a simple system of measurements); cutting and fitting; sewing machine practice and the use of machine attachments, and a study of the production and manufacture of materials and implements,—their qualities and cost.

Reports and discussions.

6. **DRESSMAKING.**—A study of the fundamental principles of dressmaking is given covering the principles of drafting by a chart system; the cutting and fitting of lined waists and sleeves; the making of a woollen gown; the selection of textiles and design, and a study of color combinations.

7. **MILLINERY.**—The work in millinery covers the making and finishing of hat brims; the making of bows and trimming of hats; the designing, drafting and making of frames, and the covering and making of hats. The study of color, line, form and textures form a part of the course.

FINE ARTS

5. See Education 7.

6. PURE AND APPLIED DESIGN.—This course will give practice in the elements of pure design. To be followed by applied design in working out problems for elementary wood construction, wood carving, metal work, leather, potting forms, and the various media suitable to elementary schools. The aim throughout will be to show a natural correlation between design upon the one hand and the various constructive problems upon the other.

7. PRINCIPLES OF PERSPECTIVE.—The aim of this course is to give students a thorough knowledge, in theory and practice, of the basic principles of drawing. It includes drawings and sketches artistically rendered to illustrate the principles of cylindric, rectangular and oblique perspective. The drawing of type forms; groups of still life and their effective rendering in pencil, wash, and pen and ink, will be followed by artistic treatment of houses, trees, landscapes, etc. Model and blackboard drawing, light and shade, charcoal and designing.

8. DESIGN AND COMPOSITION.—The principles of design and composition as applied to straight and curved line designs, floral motif, landscape composition, surface patterns, posters, book covers, etc., lettering, designs made appropriate to wood, metal, textiles, and the various materials handled in the shops and laboratories.

9. DRAWING AND CHARCOAL.—Still life and cast; study of human face and form from cast; anatomical drawings; pose drawings; thirty-minute sketches from life.

10. WATER COLOR.—Water color as applied to still life and natural flowers; illustration and poster design; lectures on history of painting, architecture and ornament.

11. CLAY MODELING.—ELEMENTARY COURSE.—Modeling of fruits and flowers and natural forms from nature and from cast. The study of form carried on through mass work; ornament and plant forms; head from cast in relief and in the round.

12. CLAY MODELING.—ADVANCED COURSE.—Modeling full length figure from cast; portrait bust from life with studies of living model, composition, grouping, etc.

PRELIMINARY COURSES FOR NURSES

Throop Polytechnic Institute offers during the fall and winter terms certain courses specially planned for those who contemplate entering a training school for nurses. The work in question occupies six months and includes the chemistry, cooking, house sanitation, bacteriology, etc., which constitute a most desirable, if not absolutely necessary preparation for the professional studies of the nurses' school. Students are permitted also to elect such other Institute courses as they have time for, subject to the approval of

the Faculty. For this instruction a tuition charge of \$25 is made to regularly enrolled students of the Pasadena Hospital School for Nurses, \$12.50 payable at the beginning of the fall term, and \$12.50 at the beginning of the winter term, to which must be added the laboratory fees amounting to \$12 per term. The amount paid for tuition is refunded to the student by the Institute upon her graduation from the Pasadena Hospital School for Nurses. The charge for this course to others than students in the Pasadena Hospital School for Nurses is \$35 per term, plus fees for materials, \$12. The Institute reserves the right to determine the preparation necessary for admission to these courses.

The following courses are offered:

BIOLOGY

(a) Hygiene of Milk: model dairies, sanitary dairies, bacteria of milk, how diseases are spread by milk, prevention of same.

(b) Water Supplies: bacteria of water, diseases spread by water, prevention of same, water filtration, chemical differences in water.

(c) Sewerage Systems: disease caused by sewage, prevention of same.

(d) Tuberculosis: how contracted, how prevented, how to care for patient at home, what everybody should know about the treatment of tuberculosis.

(e) Air: bacteria of air, air in the city and the country, air of the mountains and the ocean, ventilation, relation of ventilation to diseases.

(f) Foods: different classes of foods, laboratory experiments, physiology of foods, artificial digestion, adulteration, methods of preserving foods.

(g) Contagious Diseases: cause and prevention, personal and public hygiene in relation to contagious diseases.

Laboratory experiments are introduced whenever possible.

Six periods per week for two terms.

PHYSIOLOGY AND HISTOLOGY

This is a special course of lectures and demonstrations covering as much of these subjects as the time permits. Physiological processes are discussed and illustrative experiments performed. The minute structure of the body tissues is studied microscopically. Special attention is paid to the nervous, digestive and circulatory systems. Four periods per week for two terms.

CHEMISTRY

(a) Chemical and physical changes, elements and compounds, symbols, formulas and equations.

(b) Water: composition; methods of analysis and synthesis; water supplies and purification; action on metal pipes.

(c) Acids and alkalies, bases and salts; chlorine, bromine and iodine; disinfectants; ammonia and refrigeration.

(d) Metals and their oxides and salts; detections of metals.

(e) Carbon and its compounds; hydrocarbons, alcohols, acids, and their derivatives; combustion, illuminating gas, gas stoves and ventilation; oils and fats, soap and candles; food constituents; alkaloids.

(f) Analysis of milk and other food products, detection of preservatives and adulterations.

(g) Urinalysis: Chemical and microscopical.

Laboratory work throughout the course.

Two periods daily first two terms.

COOKING

This course consists of a study of foods, their composition, digestion and nutritive value; also special diets for special diseases.

The preparation of food in the most wholesome and attractive manner.

Special attention will be given to the serving of meals to invalids.

The principles learned in the study of Dietetics will be applied in the practical cookery.

Other courses from which election may be made are: botany, zoology, physiography, physics, mathematics, modern languages, Latin, English literature, history, education, bookkeeping, commercial law, stenography, typewriting, gymnastics, sewing, millinery, drafting, art, etc.

Further information may be obtained by addressing the President of Throop Polytechnic Institute or the Superintendent of the Pasadena Hospital, Pasadena, California.

ACADEMY

REQUIREMENTS FOR ADMISSION

Students holding a certificate of graduation from a California grammar school, or any other school of equivalent grade, will be admitted 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 composition, spelling,

punctuation, use of capital letters, elements of English grammar and the analysis of the sentence, Lady of the Lake and Evangeline.

COURSES OF STUDY IN THE ACADEMY

The diploma of graduation is granted upon the completion of one of the following courses:

	CLASSICAL	LITERARY	SCIENTIFIC
FIRST YEAR	English 1 Algebra Latin 1 { Drawing, Free-hand { and Mechanical Manual Training	English 1 Algebra { German 1, French 1, { or Latin 1 { Drawing, Free-hand { and Mechanical Manual Training	English 1 Algebra Physical Geography { Drawing, Free-hand { and Mechanical Manual Training
SECOND YEAR	English 2 Plane Geometry Latin 2 { Drawing, Free-hand { and Mechanical Manual Training	English 2 Plane Geometry { German 2, French 2 { or Latin 2 { Drawing, Free-hand { and Mechanical Manual Training	English 2 Plane Geometry Zoology or Botany { Drawing, Free-hand { and Mechanical Manual Training
THIRD YEAR	English 3 History 1 Latin 3 Drawing Manual Training	English 3 History 2 { German 1, or { French 1 Drawing Manual Training	English 3 { German 1, { French 1, or Spanish 1 Chemistry 1 Drawing Manual Training
FOURTH YEAR	History 4 and 5 { Zoology, Botany, { Chemistry 1, or { Physics 1 Latin 4 Drawing Manual Training	History 4 and 5 { Zoology, Botany, { Chemistry 1, or { Physics 1 { German 2, or { French 2 Drawing Manual Training	History 4 and 5 Mathematics 2 and 4 Physics 1 German 2, French 2, or Spanish 2 Drawing

Arabic numerals in the above table refer to subjects outlined on pages 49 to 64.

A subject 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 Faculty Council, this regulation may be set aside.

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.

Considerable freedom of choice is allowed in the selection of manual training work indicated in table above. Boys, however, are recommended to select Shop-work 1, 2, 3, 4, 5, 6.

No one is permitted to take more than one manual training course (two periods daily) at a time, except in the case of an advanced student making up back work.

In the first two years free-hand drawing is taken five periods per week, either the first or second half of each year, and mechanical drawing five periods per week for the other half.

In the last two years the student may elect either free-hand or mechanical, taking the one elected five periods per week throughout the year.

In special cases courses may be arranged substituting book subjects for manual training work. A diploma of graduation certifying that fact will be granted to any student completing such a course.

To a limited extent subjects from the commercial course may be substituted for subjects named above and physical culture for other manual work.

When substitutions are allowed in the above regular courses, sufficient work must be done for graduation to earn a total equivalent of 32 general credits; 3 manual credits are taken as the equivalent of 2 general credits and not more than 12 manual credits may be accepted toward graduation. The credits, general or manual, earned by each subject are indicated in the tabulated statement on page 76. Credits earned by college subjects will not be accepted toward graduation from the academy.

SUBJECTS AND METHODS OF INSTRUCTION IN THE ACADEMY

MATHEMATICS

1. **ELEMENTARY ALGEBRA.**—Fundamental operations, simple equations, factors, factor theorem, fractions, simultaneous equations, involution, evolution, theory of indices, surds, simple quadratic equations, ratio, proportion. Text-book: Tanner's Elementary Algebra. Five periods per week throughout the year.

2. **HIGHER ALGEBRA.**—Theory of indices, surds, simultaneous quadratic equations, theory of quadratic equations, indeterminate equations of the first degree, inequalities, variation, arithmetical, geometrical, harmonical, and other simple series, permutations and combinations, the binomial theorem for a positive integral exponent, logarithmic calculations. Text-book: Hall and Knight's Algebra for Colleges and Schools. Five periods per week first half year.

3. **PLANE GEOMETRY.**—Books I to V, inclusive, in Shutt's Plane and Solid Geometry. Five periods per week throughout the year.

4. **SOLID GEOMETRY.**—Course as given in Shutt's Plane and Solid Geometry. Five periods per week second half year.

In both Plane and Solid Geometry special attention is given to the demonstration of original theorems and to the solution of original exercises.

5. **TRIGONOMETRY.**—The course comprises plane and spherical trigonometry. Problems from text-books proven in the field, also solved by the class. Five periods per week first half year.

ENGLISH

All regular students are required to take instruction in English during three years of the Academic course. Frequent and varied written exercises are required. Special attention given to spelling, punctuation, paragraphing, and the forming of a plain natural style. Much care given to oral reading, especially in English 1 and 2. The following subjects are made the basis of study:

1. **FIRST YEAR WORK.**—Alhambra, Classic Myths, Horatius, Vision of Sir Launfal, Lockwood and Emerson's Composition to page 179, Chap. 8. Collection of material for theme. Five periods per week throughout the year.

2. **SECOND YEAR WORK.**—Merchant of Venice, Sir Roger de Coverley, Ancient Mariner, Tam O'Shanter, Deserted Village, American Scholar, Fortunes of the Republic, Lincoln's Gettysburg Speech, Second Inaugural Address, Lockwood and Emerson's Composition completed. Five periods per week throughout the year.

3. **THIRD YEAR WORK.**—Silas Marner, Vicar of Wakefield, Comus, Lycidas, Elegy, Eve of St. Agnes, the Odes, Keats, Shelley, The Bard, Tintern Abbey, Laodamia, Transcript from Euripides, Alexander's Feast. Five periods per week throughout the year.

4. **FOURTH YEAR WORK.**—Julius Caesar, Macbeth, Macaulay's Essay on Clive (for reading), Warren Hastings, Burke on Conciliation, Macaulay on Reform, Webster's Reply to Hayne, L'Allegro, Il Penseroso, Winter, Winter Morning Walk, Review Snow Bound, Carlyle on Burns, Burns' Poems, Byron's Chillon or Childe Harold, Tennyson's Passing of Arthur, Short History of English Literature. Five periods per week throughout the year.

ELOCUTION

1. **ELEMENTARY COURSE.**—The aim of this course is to instruct students how to remedy defective speech to articulate distinctly, to see, to think, to understand, to feel; to appreciate noble literature; and to express thought and emotion by a natural and responsive use of voice and body.

HISTORY AND CIVICS

The aim of the work in this department is to give the student a general idea of the essential unity of history, an insight in the development of various nations and peoples along social, economic, religious and political lines, and a training in clear thinking and broad and discriminate reading. There are five courses offered; courses 4 and 5 being required of all students before graduating.

1. ANCIENT HISTORY.—The Eastern nations, Greece, and Rome, are studied with special reference to the character and development of their institutions, and their contributions to our modern civilization. Text-book: West's Ancient World, with assigned readings and reports. Five periods per week throughout the year.

2. MEDIAEVAL AND MODERN HISTORY.—Particular attention is given to the institutional and social life of the people; the rise of the many contemporaneous nations, and the varied forms of their progress from 800-1500, A. D.; and, since then, their marvelous expansion and interaction and development. Text-book: Schwill's General History of Europe, Thatcher and Robinson's Western Europe, with assigned readings and reports. Five periods per week throughout the year.

3. ENGLISH HISTORY AND CIVICS.—The object here is to give the student as clear an idea as possible of the origin and development of the English Nation; special attention being given both to the gradual growth of English institutions and the effect of these on those of other countries—especially those of the United States. Text-books: Cheyney, a Short History of England and Moran, the English Government; with assigned readings and reports. Five periods per week throughout the year.

4. AMERICAN HISTORY.—Attention is given here to the different ideas of colonization, the struggle of race elements for supremacy, the growth of national ideas and ideals, and the gradual development of social, religious, economic and political institutions. Text-book: Channing's Students' History of the United States, with assigned readings and reports. Five periods per week first two terms.

5. CIVICS.—The aim of this course is to give the student an idea of the structure and functions of our government, to familiarize him with the governmental affairs of the day, and to develop independent thought. Text-book: Ashley, American Government, with assigned readings and reports. Five periods per week last term.

LATIN

1. BEGINNING LATIN.—Special attention to forms and vocabularies; translation of the exercises from Latin into English and from English into Latin; structure of Latin sentence and comparison with English sentence-structure. Bennett's Foundation, Conner's Beginner's Caesar. Five periods per week throughout the year.

2. CAESAR.—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 New Revised Grammar, Allen and Greenough's New Caesar, Pearson's Composition. Five periods per week throughout the year.

3. **CICERO'S ORATIONS.**—Textual study, as in Caesar, 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 Cicero; Orations and Letters. Five periods per week throughout the year.

4. **VERGIL'S AENEID.**—Structure of the poem, with the theory and practice of scansion; translation into idiomatic English; study of the superstitions and religious rites of antiquity, as well as the myths and legends; minute word study and analysis. Allen and Greenough's text. Five periods per week throughout the year.

GERMAN

1. **FIRST YEAR WORK.**—Careful attention to correct pronunciation; thorough drill in forms, and on the principles of syntax; practice in translation at sight and hearing, in conversation and memorizing. Text-book: Spanhoofd's Lehrbuch. Five periods per week throughout the year.

2. **SECOND YEAR WORK.**—Exercises throughout the year in conversation, translation and composition. Text-books: Bierwirth's German Grammar; Immensee, Storm; Leberecht Hühnchen, Seidel; Der Bibliothekar, von Moser; Germelshausen, Gerstäcker. Composition based on texts. Five periods per week throughout the year.

3. **THIRD YEAR WORK.**—Reading of Modern German of literary value followed by some introduction to the classics, chiefly Schiller. Difficult passages only will be translated or paraphrased. occasional work in translation. German used in the class room. Composition based on texts read outside. Text-books: Der Trompeter von Säkkingen, Sheffel; Undine, Fouqué; Schiller's Ballads; Maria Stuart or Wilhelm Tell; for Composition, Gerstäcker's Irrfahrten and other modern prose. Five periods per week throughout the year.

FRENCH

1. **FIRST YEAR WORK.**—The grammar and vocabulary, reading French in order to obtain the pronunciation, a study of the verbs, and frequent dictations. French conversation required in class. Text-books: Abridged French Grammar, Fraser and Squair; Guerber's Contes et Légendes. Five periods per week throughout the year.

2. **SECOND YEAR WORK.**—Special study of the syntax and idioms and special, daily practice in French conversation. Text-books: French Syntax and Composition, Bouvet; Le Voyage de Monsieur Perrichon, Labiche and Martin; Le Comte de Monte Cristo, Dumas; La Joie Fait Peur, Emile de Girardin. Five periods per week throughout the year.

3. **THIRD YEAR WORK.**—Reading, composition and conversation. Text-books: French Syntax and Composition, Bouvet; Colomba, Prosper Mérimée Pecheur d'Islande, Pierre Loti; Le Cid, Corneille, selected plays of Racine and Moliere. Five periods per week throughout the year.

The texts mentioned for second and third year courses are illustrative and may be varied from year to year.

SPANISH

1. **FIRST YEAR WORK.**—Thorough drill in pronunciation and forms by means of much conversation; practice in translation at sight and hearing, and in memorizing. Text-books: *Introducción á la Lingua Castellana*, Marion y Garennes, Ramsey's Reader. Five periods per week throughout the year.

2. **SECOND YEAR WORK.**—Exercises throughout the year in conversation; translation at hearing; essays; correspondence, reading of standard Spanish, both prose and poetry; review of forms; syntax. Text-books: Garner's Spanish Grammar; Ramsey and Lewis' Exercises in Spanish Composition, Part I; *El Pajaro Verde*, Valera; *Zaragüeta*, M. R. Carrión y Vital Aza; *El Capitán Veneno*; Alarcón. Five periods per week throughout the year.

3. **THIRD YEAR WORK.**—Continuation of study of Grammar. Study of Ramsey and Lewis' Exercises in Spanish Composition, Part II. Reading of *La Familia de Alvareda*, Caballero; *Electra*, Galdós; *El Nino de la Bola*, Alarcón or Jose, Valdes. Special attention is also paid to rapid reading, conversation and advanced composition work, consisting of translation from English and the writing of original themes on topics suggested by the teacher or selected by the student. Five periods per week throughout the year.

In connection with the classes a Spanish Club has recently been organized to stimulate interest in Spanish conversation. The meetings of the club are chiefly of a social nature, but are conducted entirely in Spanish. Although the membership consists principally of students in the advanced classes, it is open to any in the first year classes who fulfill the requirement for admission, which is the ability to carry on a simple conversation in the Spanish language.

BIOLOGY

Carefully kept note and drawing books are called for in all courses. Reference and text-books are assigned as required.

1. **PHYSICAL GEOGRAPHY.**—An elementary course in general science dealing with the position of the earth in the solar system; the agents affecting the earth's surface, such as rivers, waves, tides and glaciers; climatic conditions and weather changes; geographical distribution of plants and animals, and the relation of these to their

surroundings. The course includes laboratory work, and field trips to the mountains and sea shore. Text-book: Tarr's New Physical Geography. Five periods per week throughout the year.

2. ZOOLOGY.—The course in zoology consists of a careful study of several selected animals, such as the earth-worm, cray-fish, crane-fly, star-fish, squid, toad and rabbit. Their structure, physiology and life-histories are treated of in the laboratory and lecture-room. Occasional field excursions are undertaken in order that the habits and haunts of living animals may be observed. Ten periods per week throughout the year.

3. BOTANY.—The course in botany is intended to give a general idea of the structure and relationship of plants. Special studies are made of certain selected types, from the one-celled forms to the flowering plants. Particular attention is paid to such groups as the algae and fungi, and to the higher plants which are of economic value. During the spring months some work is also done in naming and classifying our commonest native plants. Collecting trips therefore become a regular feature at that season. Ten periods per week throughout the year.

CHEMISTRY

I. 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 scientific methods of observation and thought, to which the acquirement of the mere facts of chemistry is considered of secondary importance. To this end experiments are selected which require considerable care in manipulation, and illustrate quantitative relations of substances so far as possible. The time spent in laboratory work is seven periods per week. The experimental work is individual, and careful notes must be daily submitted to the instructor for examination. Accompanying the laboratory work there are three recitations per week. Considerable attention is paid to the solution of problems.

The metals are studied in the second half-year and the principles of qualitative analysis are taken up near the end of the year. Occasional lectures are given on the metallurgy and industrial chemistry of the principal elements.

Text-books: Hessler and Smith's Essentials of Chemistry and Laboratory Manual. Preparation required: Algebra, Plane Geometry, English I. Students are strongly advised to defer beginning chemistry until the third year of their academy course.

PHYSICS

I. GENERAL PHYSICS.—Instruction is given by means of laboratory work with discussion of experiments performed and study of references to text and books in library. Experiments are performed

by the student himself, and careful notes are required. Text-book: Elements of Physics, Sanford. Preparation required: Algebra and Plane Geometry. Ten periods per week throughout the year.

FREE-HAND DRAWING

1. PERSPECTIVE.—Principles of perspective as applied in the drawing of simple type forms, beginning with cube, sphere, cylinder, etc., followed by objects based on type solids; perspective drawings of wood and iron-shop models. Relative proportion, and the study of values in light and shade are developed in the execution of drawings of still-life, corners of rooms, houses, etc. Five periods per week first or second half-year.

2. DESIGN AND LETTERING.—Systematic drill in the execution of curves and scrolls as applied to ornamental design; original application of scrolls to iron and wood designs. These designs are practical, and are wrought in iron or carved in wood by the student-designer. Lettering, as applied to book covers, posters, menus, etc. Pen and ink rendering of the leading styles of ornament. Five periods per week first or second half year.

3. CHARCOAL, PEN AND INK.—Drawing in charcoal, groups of still-life, and cast, flowers executed in pen and ink and water-color; textile designing in color. This course includes a series of weekly lectures on art given during the winter term, discussing historic ornament, architecture, sculpture, and painting, illustrated by large posters, photographs and lantern slides. These lectures are not limited to art students, and others may if they desire make arrangements to attend them. Five periods per week throughout the year.



STUDY FROM LIFE BY THIRD YEAR
ACADEMY STUDENT

4. CHARCOAL, WATER COLOR, SKETCHING.—Advanced work in charcoal from cast, full-length figure; sketching from life. Five periods per week throughout the year.

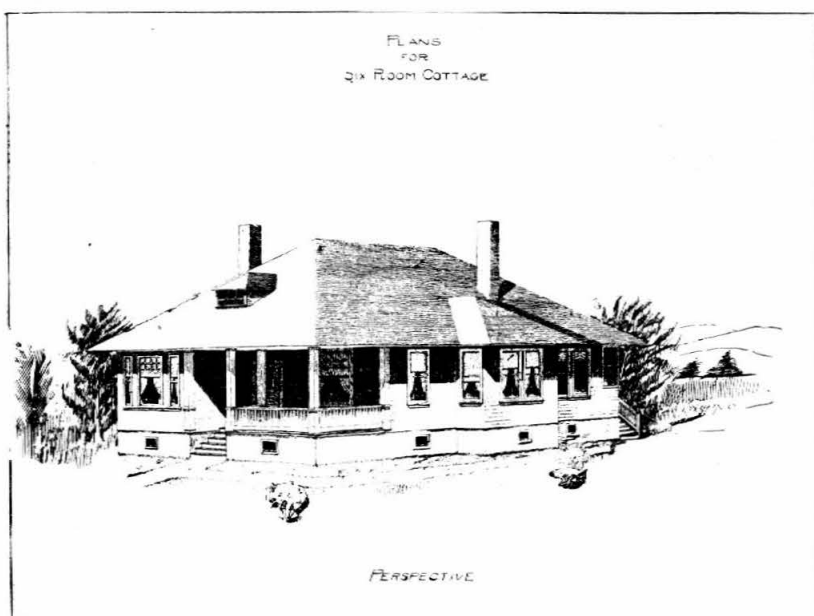
Special courses may be planned to meet the needs of advanced students.

MECHANICAL DRAWING

1. ELEMENTARY GEOMETRIC AND SHOP DRAWING.—Practice sheets of lines and circles; free-hand and geometric lettering; orthographic projections of simple models; elementary working drawings of wood-shop models drawn to scale; tracing and blue-

printing; drawings of supplementary shop exercises. Five periods per week first or second half-year.

2. PROJECTION AND PERSPECTIVE.—Cavalier and isometric projections; methods of stretching paper and coloring drawings; orthographic projection of objects inclined to the plane of projection; patterns and developments; intersection of solids; fundamental principles of perspective; application of simple shadows. Five periods per week first or second half-year.

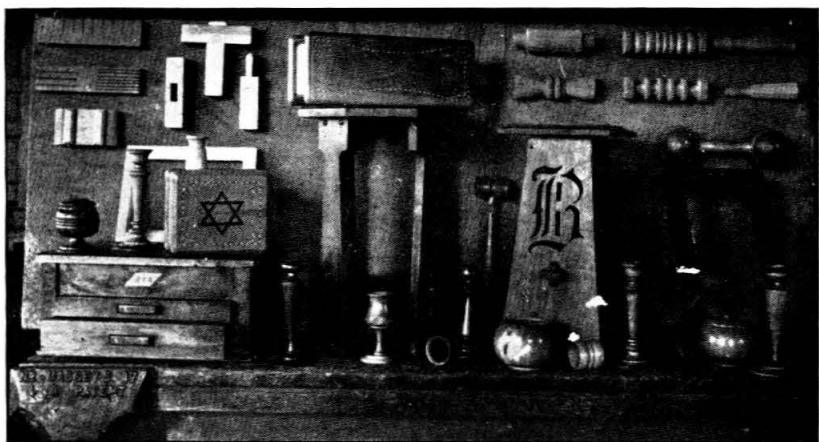


DRAWING BY STUDENT

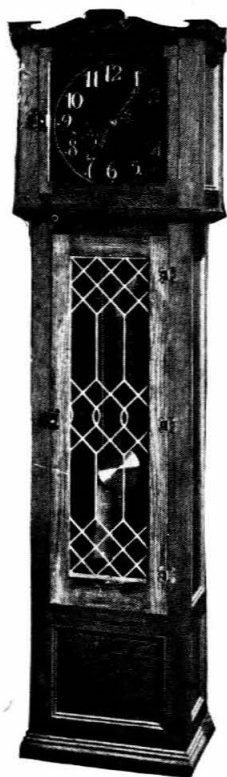
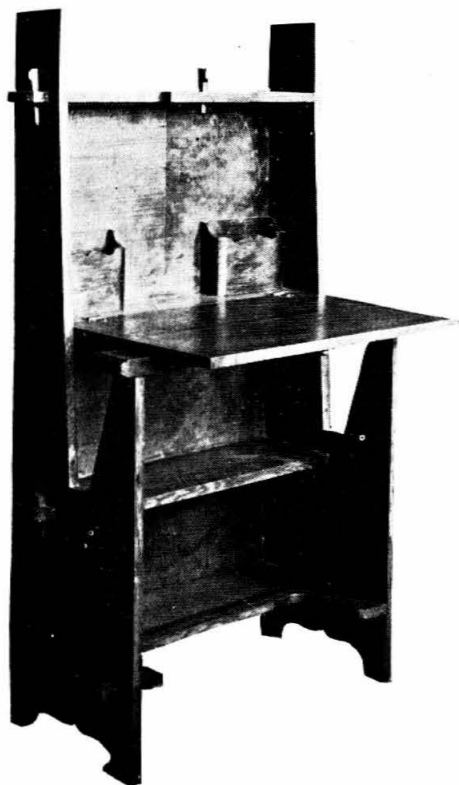
3. ARCHITECTURAL AND MACHINE DRAWING.—Complete set of plans of moderate priced cottage, perspective of house and of one room; projection of shadows; machine details, bolts, nuts, rivets, monkey wrench, machinist's vise with section details, sketches to be made first; details of machinery, lathe, drill, shaper, grinder or dynamo. Five periods per week throughout the year.

4. KINEMATICS.—Mechanical movements, external and internal epicycloidal and involute gears, spur gears, bevel gears, cams, eccentrics and useful geometric problems in connection therewith. Five periods per week throughout the year.

Special courses may be planned to meet the needs of advanced students.



TYPICAL EXERCISES IN WOOD WORKING



ORIGINAL WORK DONE IN WOOD SHOP

APPLIED ART

1. A course in applied art will be offered, open to both girls and boys in third and fourth years of the Academy, although with the approval of the Faculty others may be admitted. The course presupposes an elementary knowledge of freehand and mechanical drawing and it is desirable that the student be familiar with the tools of one or more shops. Special attention will be given the metal crafts, including the construction of boxes, caskets, cups, bowls, articles of jewelry, etc., all appropriately decorated. Also applied design in wood, leather, and the other materials of the craftsman that lend themselves to artistic treatment.

SHOP-WORK

1. WOOD WORK.—This course consists of work in joinery, turning and cabinet making. Each article is complete and useful in itself and has been designed to secure a gradual growth in the difficulty of construction and at the same time present practical, useful and aesthetic elements.

The course in turning consists of progressive exercises involving center, face-plate, chuck-work and inside turning.

Near the close of the year each student either designs and constructs an ornamental piece of cabinet work under the direction of the instructor, or he may take advanced work looking to greater skill and practice in joinery.

A series of lectures on the growth of trees, the properties of wood, methods of lumbering, etc., are given during the fall term.

2. FORGING.—(a) Forge. Mechanism and care of forge; preparation of forge for fire; building and managing fire.

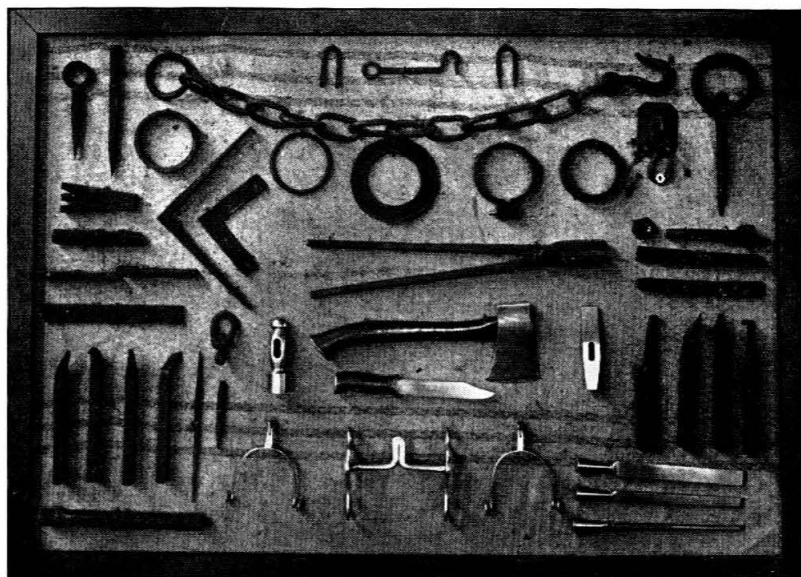
(b) Tools. Instruction in the care and use of tools.

(c) 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.

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

(e) Ornamental iron work. Simple pieces of ornamental iron work are constructed during the year, preparatory to the more elaborate piece made at the close of the year. Preparation required: Wood Work, Algebra. Ten periods per week throughout the year.

3. PATTERN-MAKING I.—This course comprises a series of exercises embodying the principles governing pattern construction, with lectures and illustration of molding and other foundry practice having direct bearing upon pattern work.



TYPICAL EXERCISES IN FORGING

The allowance for draft, shrinkage and casting finish are kept prominently before the student throughout the course, and with each succeeding model additional principles are brought out, comprising split patterns, simple and complex core-work, rib-work, segment-work, filleting, etc. Patterns may be actually tested in the molding sand, as the pattern shop has, as an adjunct, properly furnished molding benches. Some work in molding is required of every student.

Preparation required: Algebra, Plane Geometry, Forging. Ten periods per week first term.

4. **PATTERN-MAKING II.**—A continuation of the work begun in Pattern-making I. See also Machine-shop Practice II. Preparation required: Pattern-making I. Ten periods per week first term.

5. **MACHINE-SHOP PRACTICE I.**—In bench and vice work the student takes up chipping, filing, scraping, polishing, laying out of work, etc.

As a preparation for work on machines, a careful investigation of each machine is required, to familiarize the student with its construction and various motions, the office of each bolt, nut, handle, gear wheel, etc., being determined, and the general design compared with other machines. The care of machines is considered at this point, and a systematic study is made of the needs of the machine for successful and rapid operation.

Machine work is begun with a series of exercises illustrating the principal processes, as plain turning, facing, thread-cutting, inside boring and threading, turning of tapers, hand tool and chuck work of all kinds. At different stages of the course work is given on the shaper, planer, drill-presses and milling machines. Text-books are not used. Students are expected to provide themselves with calipers and scale. Preparation required: Pattern-making I. Ten periods per week last two terms.

6. MACHINE-SHOP PRACTICE II.—This course and Pattern-making II continue the work begun in previous courses, and embrace exercises illustrating more complicated processes and a large amount of practical work in actual construction of machines. During each year there are constructed various pieces of machinery, all of the work on which is done by the students. Preparation required: Machine-shop practice I. Ten periods per week last two terms.



MADE BY STUDENT IN WOOD SHOP

WOOD-CARVING

This work aims to give practical application to the principles gained in drawing and modeling.

1. ELEMENTARY CARVING.—Instruction in the care and use of tools; exercises to illustrate the principles of carving; application of these principles in designing and ornamenting furniture, in chip-carving, incising and low relief in historic arts.

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

Lectures on the general structure of wood, its preparation for use, and the special qualities necessary to render it suitable for carving. Ten periods per week throughout the year.

2. ADVANCED CARVING.—Low and high relief in historic styles, introducing the additional feature of grotesque figures. Ten periods per week throughout the year.

CLAY MODELING

This work is of great value in comprehending the facts of form; as drawing is but the representation of form, the student is made stronger in drawing by coming in contact with the realities of form, viz., length, breadth and thickness.

1. **ELEMENTARY MODELING.**—Modeling of fruit, flowers and sprays of foliage from nature and cast; ornament from cast and original designs; animals from cast such as Barye's lions and panthers; human skull followed by heads from cast such as Julius Caesar, Venus de Milo, Julian de Medici, etc. Ten periods per week throughout the year.

2. **SECOND YEAR MODELING.**—The *ecorché* (flayed figure displaying every muscle in action) is modeled in preparation for work to follow upon full length figures such as Fighting Gladiator, Michael Angelo's Day, Night, Greek Slave, etc.; portrait busts from living model; original compositions combining human figure and ornamental motif in designs for fountains, electroliers, statuettes, etc. Ten periods per week throughout the year.

3. **THIRD YEAR MODELING.**—Advanced work from life and original composition.

4. **ARCHITECTURAL MODELING.**—Students making a specialty of architectural drawing will find it to their interest to model architectural details of ornament, capitals, consoles, finials, etc., which give the only accurate rendering of light and shade obtainable when modeled; high relief.

DOMESTIC ART

This department provides a systematic course in plain sewing, dressmaking and millinery, covering a period of two years.

The course of work is carefully graded, not only to insure a thorough knowledge of the subject, but to develop habits of order, accuracy and self reliance. Each student furnishes the materials for her work, and is required to keep a note-book in which a description of the work is recorded.

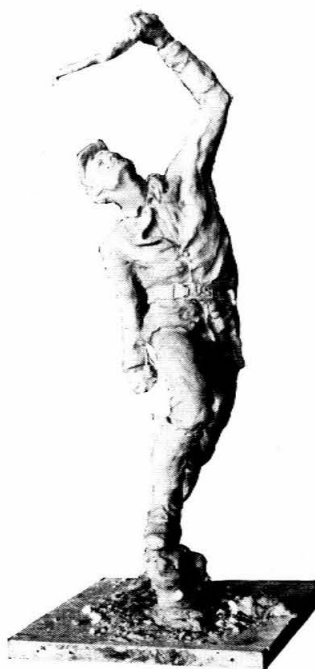
1. **SEWING.**—Fundamental stitches in hand sewing, patching, darning, mending; talks on materials and tools used; practice in machine sewing; drafting, cutting, fitting and making undergarments, skirt, corset cover, and shirt waist, and unlined dress of washable material. Freehand Drawing I must be taken either previous to the course, or in the same year with it. Ten periods per week throughout the year.

2. **DRESSMAKING.**—Study of a chart system in drafting skirts and waists; basting and fitting waist and sleeves of practice material; cutting, fitting and making gown of woolen material. Study of color, line and form. Preparation required: Sewing. Freehand Drawing II, must be taken previous to dressmaking or in same year with it. Ten periods per week first half year.

3. **MILLINERY.**—Renovating felt and straw hats, velvets, silks, and ribbons; binding and wiring hats; cutting and putting on facings, both plain and shirred; fold and bow making; practice trimming;



STUDENTS WORK IN WOOD CARVING



MODELED FROM LIFE BY SECOND YEAR ACADEMY STUDENT



WALL FOUNTAIN MODELED BY FIRST YEAR ACADEMY STUDENT



PORTRAIT BUST, MODELED FROM LIFE BY THIRD YEAR ACADEMY STUDENT

making wire and buckram frames, sewing straw; making and trimming final hat. Preparation required: Sewing. Ten periods per week second half year.

DOMESTIC SCIENCE

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

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

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

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

Instruction is given on development of odors and flavors of foods; food for the sick; food adulterations; cheapest and most wholesome foods; physiology of digestion and a general plan of household work.

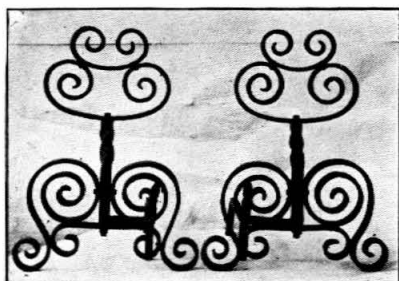
Throughout the year dietaries and nutrition will be kept constantly in mind, the object being as much to study the scientific principles of food as to prepare palatable viands.

Books required: Mrs. Rorer's Cook Book, blank books for chemistry notes. Ten periods per week throughout the year.

PHYSICAL CULTURE

I. GENERAL COURSE.—The course in physical culture aids students in maintaining a high standard of vitality, corrects bad postures, develops larger lungs, better control, greater strength. It consists of carefully graded exercises with wands, Indian clubs and dumb-bells, breathing gymnastics, instruction on horizontal and parallel bars, ground tumbling general athletics. This work is given in the open air.

There is throughout the most careful supervision to prevent any possible overstrain.



DESIGNED AND MADE BY STUDENT IN FORGING

COMMERCIAL SCHOOL

REQUIREMENTS FOR ADMISSION

Students having passed the studies of the eighth grade are admitted to the course in this school, but the Commercial student who has graduated in a high school, or even a college course of studies, will be greatly advantaged thereby, and may omit any subjects in the Commercial Course already covered by preparation.

COURSE OF STUDY IN THE COMMERCIAL SCHOOL

It requires two years to complete the regular course in the Commercial School and on its completion a diploma of graduation is granted. Should the student elect to take only a part of this course a certificate is given naming the work satisfactorily completed.

Students in the Commercial School have superior advantages for securing thorough drill in the English branches as well as the privilege of taking one or more periods of manual training, thus better fitting them to meet in an intelligent way the requirements of a business life. Typewriting, penmanship and commercial geography may be taken either in the first or second year of the course.

<i>First Year</i>	{ Bookkeeping 1 English and Spelling Arithmetic 1 Penmanship 1 Stenography 1	<i>Second Year</i>	{ Bookkeeping 2 Stenography 2 Commercial Geography 1 Civil Government Commercial Law 1 Finance 1 Typewriting 1
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SUBJECTS AND METHODS OF INSTRUCTION IN THE COMMERCIAL SCHOOL

BOOKKEEPING

I. GENERAL BOOKKEEPING.—(a) Class and personal instruction in the nature of transactions and accounts, journalizing, and recording transactions.

(b) Opening, conducting and closing accounts and books of accounts, use of the journal, cash-book, sales-book, invoice-book, ledger, special column books, and auxiliary books in retailing and wholesaling.

(c) Conducting a business with a cash capital, constructing, passing, filing and disposition of business papers and vouchers.

Text-book: Sadler Rowe Co.'s Budget System, in which the student from beginning is inducted into and practices the duties of an office accountant.

Five periods per week throughout the year.

2. **ADVANCED BOOKKEEPING.**—(a) Finish budgets, practice single entry bookkeeping, change to double entry books. Commission house bookkeeping is given an important place in the course.

(b) **Banking.**—A full set of banking books, papers and vouchers illustrating a bank in its daily routine as presented in the modern illustrative bookkeeping. During the course the student devotes some time to the practical work of banking in the Banking Department, where an ideal set of bank books is used. The student is taught to balance pass books, and also receives instruction regarding the nature and work of a clearing house.

Ten periods per week throughout the year.

STENOGRAPHY

The range of work in stenography is carefully planned to meet the requirements of every line of business, office practice, legal forms, court proceedings, and to lay for the persevering student a foundation on which to build a successful future as a highgrade verbatim reporter.

The Benn Pitman System of Phonography is taught. "A system," according to the report of the Commissioner of Education, "which is more generally used than any other in this country, and may be called the American System."

1. **ELEMENTARY STENOGRAPHY.**—Instruction in the principles of shorthand writing, completion of the manual of phonography dictation including letters and selected matter and reading from notes, drills in the uses of simple phrases, etc. Text-book: *The Phonographic Amanuensis*, Pitman and Howard. Five periods per week throughout the year.

2. **ADVANCED STENOGRAPHY.**—General dictation and verbatim reporting, advanced phrasing, legal forms, business forms and correspondence, journalism. Speed drills in dictation and reading from notes. Five periods per week throughout the year.

TYPEWRITING

The principal object of the instruction of typewriting is to train the pupil to a correct and scientific method of fingering and to write by touch. This is the only proper method of operating the typewriter, and is easy to learn when one has proper instructions at the beginning. Various kinds of office practice work, commercial and business papers, attorneys' briefs and other legal papers, business letters, specifications, etc., manifolding and filing, letter press copying. Text-book, Fuller. Five periods per week throughout the year.

ARITHMETIC

I. BUSINESS ARITHMETIC.—(a) Special daily drill for accuracy and speed in the practice of the fundamental rules.

(b) Interest, percentage, commission, discounts, etc.

(c) Daily drill on practical problems applying to all features of commercial work. A short daily drill is also given in rapid calculations. The old, slow and routine methods are displaced by the new and practical business methods.

Text-book: Goodyear and Marshall. Five periods per week throughout the year.

CIVIL GOVERNMENT

I. ELEMENTARY CIVIL GOVERNMENT.—Introduction to the study of commercial law. Bringing the student in touch with the laws by which we are governed as a nation. This subject is supplemented by study of current events.

Text-book: Fitch's New Civil Government. Five periods per week during the first term.

COMMERCIAL LAW

I. ELEMENTARY COMMERCIAL LAW.—The aim of this subject is to fit students for the exigencies of daily life. The attempt is not to make lawyers of the students, but to have them so understand the general law of business as to enable them to avoid legal complications. Text-book, Gano. Five periods per week during the second term.

FINANCE

I. FINANCE.—The teaching of finance is to awaken in the students an interest in public and private funds; to learn the nature and uses of money; to inquire (1) What funds are, (2) How funds are obtained, (3) The institutions and agencies employed in funding operations. Text-book: First Lessons in Finance, Cleveland. Five periods per week during the third term.

PENMANSHIP

I. PLAIN PENMANSHIP.—Students are taught a plain legible style of penmanship, which the business world demands. There is no other accomplishment that is of greater assistance to a young person in securing employment in a business office than a graceful, rapid handwriting. The students frequently engage in competitive drills in which speed and quality are made the chief aim.

Five periods per week throughout the year.

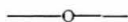
COMMERCIAL GEOGRAPHY

I. **ELEMENTARY COMMERCIAL GEOGRAPHY.**—The purpose of commercial geography is to bring the student in touch with and to impart a knowledge of the commercial resources of the world, manufacturing centers, routes of transportation, government revenues and a general acquaintance with products and wares.

Text-book, Adams. Five periods per week throughout the year.

ENGLISH AND SPELLING

I. **COMMERCIAL ENGLISH.**—A special course in English for commercial students. The object of the instruction is the immediate improvement of the student's written and spoken language. Spelling is made an important part of the course. Text-book: *Seventy Lessons in Spelling*, Williams and Rogers. Five periods per week throughout the year.



ELEMENTARY SCHOOL

COURSE OF STUDY

The regular course of the Elementary School covers a period of eight years beginning with the First Grade. Pupils are admitted to any grade upon the presentation of credentials from the schools they last attended, showing that the work of the previous grade has been satisfactorily completed.

ARITHMETIC

PRIMARY GRADES.—Simple work in the four fundamental operations; concrete work in simple fractions; measures; mental arithmetic.

FOURTH GRADE.—Notation and numeration, combinations of numbers. Multiplication and division by numbers of two and three figures. Measures. Mental arithmetic. Fractional work continued. *Walsh's Elementary Arithmetic* completed.

FIFTH GRADE.—Common fractions completed; special attention given to analyzing and solving problems and to business fractions. Mental arithmetic. *Smith's Grammar School Arithmetic*.

SIXTH GRADE.—Decimal fractions and measurements involving their use; measurements correlated with manual arts, measurements with common business applications; checks; receipts; bills; percentage. Mental arithmetic. *Smith's Arithmetic*.

SEVENTH GRADE.—Measurements. Metric system. Percentage; interest; banking transactions. Ratio and proportion. Powers and roots. Smith's Arithmetic.

EIGHTH GRADE.—Partial payments; banking transactions; insurance; taxes; bonds; stocks. General review of arithmetic. The use of the algebraic equation and elementary geometry. Smith's Arithmetic.

ENGLISH

The course in English aims to cultivate: First, the power to communicate thought both orally and in writing; second, the power to read; third, the love of good literature. To this end, in addition to the school work, each pupil is required to read at least three books a year, and to memorize a few of the beautiful short poems and ballads in which he may become interested; making his selections from lists furnished by the teacher. The work in English, as outlined, includes that usually classified under the four heads: literature, grammar, reading and spelling, and is as far as possible closely related to the work of the other departments.

PRIMARY GRADES.—Literature. Based on stories of the siege of Troy and story of Ulysses, Bible stories, Aladdin, Siegfried, selected poems. Language. Use of period, question mark, capitals, common abbreviations; letter writing; dictation. Reading. Spelling.

FOURTH GRADE.—Literature. Stories of ancient Rome, Bible stories, Jungle Book, King Arthur and His Court, selected poems. Language. Mother Tongue, Book I; Heath Reader, Book IV.

FIFTH GRADE.—Literature. Wonder Book, the Great Stone Face, Macaulay's Lays, selected poems, Mother Tongue, Book I; Heath Reader, Book V.

SIXTH GRADE.—Literature. Heroic Ballads, Bell of Atri, Ways of Wood Folk, selected poems, St. Francis of Assisi, Mother Tongue, Book II.

SEVENTH GRADE.—Literature. Stories of feudal period, City of Florence, guilds, Burroughs' Birds and Bees, Industries of Today, selected poems, Mother Tongue, Book II.

EIGHTH GRADE.—Literature. Lay of the Last Minstrel, selected poems, special study of certain American and English authors, Sketch Book, English Grammar.

GEOGRAPHY

In following this course as outlined, the pupil gains a comprehensive idea of the growth and progress of a country along the lines of agriculture, mining, manufacturing and commerce by a careful study of the climate, soil, minerals, position and peoples.

FOURTH GRADE.—Tarr and McMurray's Geography, Book I; sand modeling; map modeling of Los Angeles county; map drawing of Los Angeles county.

FIFTH GRADE.—Tarr and McMurray's Geography, Book I; map modeling and product map of California.

SIXTH GRADE.—Tarr and McMurray's Geography, Book II; outline section maps of United States; map and modeling of North America.

SEVENTH GRADE.—Tarr and McMurray's Geography, Book III; product maps of the continents; map modeling and product map of the United States.

HISTORY

The foundation for United States history as taught in the eighth grade is laid in grades preceding. In the knowledge of famous characters as types of the peoples those characters represent, the students readily see causes whose influence is felt in early United States history.

FOURTH GRADE.—Stories of famous characters selected from ancient and medieval history.

FIFTH GRADE.—Continuation of fourth grade work; stories of the 16th century.

SIXTH GRADE.—History stories in connection with the geography of the United States.

EIGHTH GRADE.—Montgomery's American History; Ivanhoe Historical Note-book, Part I.

SCIENCE

One lesson in elementary science is given each week in each grade. All pupils are obliged to take this course. Instruction is given by specialists in the various sciences

FOURTH, FIFTH AND SIXTH GRADES.—Elementary work in natural science.

SEVENTH GRADE.—Elementary chemistry.

EIGHTH GRADE.—Elementary physics.

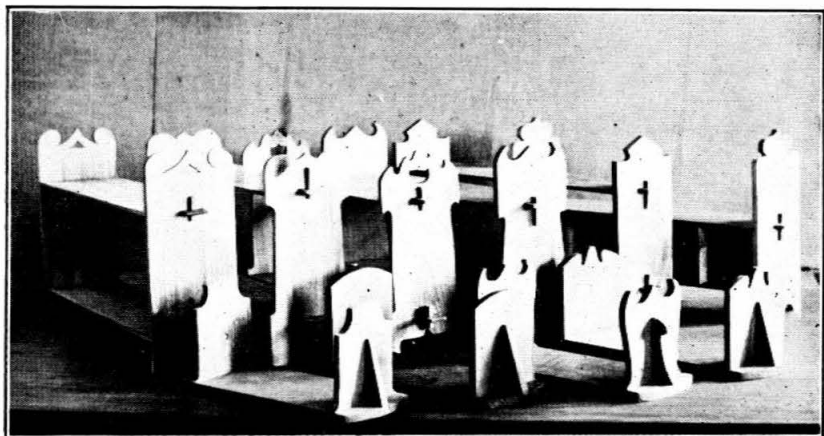
DRAWING

Drawing is given in each grade. Pupils are allowed to take but one period a day. The work may be divided into two parts—Representation and Design. (a) Representation.—Free-hand work in pencil, ink and color from plants, animals, figures, objects, action studies, illustrative sketches, etc., to cultivate observation and freedom of expression. (b) Design.—Study of elementary principles of line and area composition, with more careful study of color and tone

relations. In the upper grades a close correlation is maintained between the art and manual training departments; pupils designing objects to be by them constructed in wood, leather, etc. This tends to develop creative ability with simple and consistent expression within the limitations of the material chosen for the work.

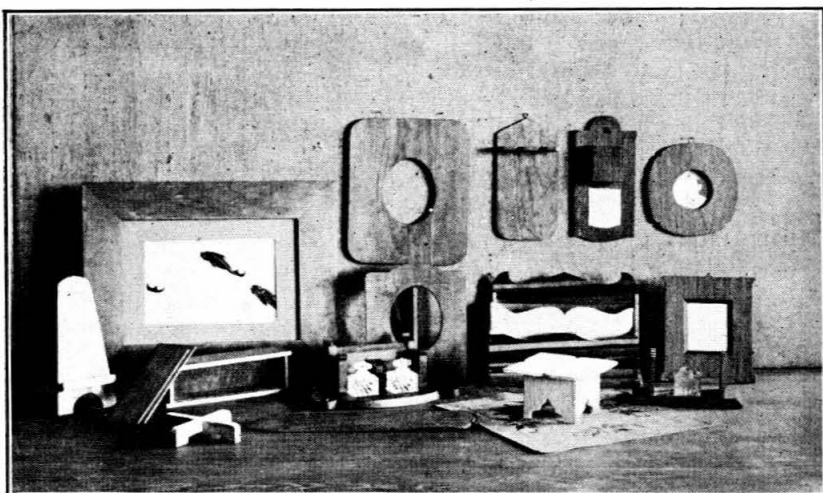
MANUAL ARTS

ELEMENTARY COURSE.—Including first five grades. (a) **Reed Basketry.**—Large free movements to give control of the hands, strengthen the fingers and develop sense of form. (b) **Weaving.**—Various materials used in making mats, rugs, pillows, etc. Special attention given to study of textiles, color combinations and artistic design. (c) **Paper and Cardboard Construction.**—Progressive work in measurements, elements of construction, mechanical and freehand drawing.



SLOYD WORK FROM ORIGINAL DESIGN, SEVENTH GRADE

SIXTH, SEVENTH AND EIGHTH GRADES.—**Bench Work.**—A definite but elastic course is planned beginning with simple tool operations and leading to such problems as enter into the construction of plain furniture and other useful articles. Wood is the principal material used, combined when convenient, with leather, sheet metal, and other media. Pupils are required to make working drawings for all projects and individuality in design, decoration and finish is encouraged. Instruction is given in the care of tools, characteristics, preparation and finish of materials, their source of supply and commercial value. All handwork is related as closely as possible to the work in the other departments, especially to drawing, arithmetic and geography.



EXAMPLES OF SLOYD WORK, FIFTH, SIXTH AND SEVENTH GRADES

DOMESTIC ECONOMY.—(a) Sewing.—The course in sewing includes the elementary stitches in hand sewing and their application in the making of simple and useful articles. (b) Cooking.—A course in this department is offered to students in the Eighth Grade.

MUSIC

PRIMARY GRADES.—Physical exercises; breathing; note songs; sight reading; interval and scale drill.

FOURTH AND FIFTH GRADES.—Physical exercises; ear training; breathing; vocalizes and solfeggios; scale building; interval and scale drill from chart and dictation; two part music introduced.

SIXTH GRADE.—Review of previous work and continued study along same lines; vocalizes and solfeggios; two part songs.

SEVENTH GRADE.—Physical exercises; review of all keys; solfeggios and vocalizes; three part songs and exercises; introduction of bass clef.

EIGHTH GRADE.—Review of work in all previous grades, three and four part songs. Since the body as well as the voice should express harmony, and because harmonious bodily expression makes for freedom in vocal utterance, physical training is given in all grades in connection with the music work. This training is in the form of a series of exercises necessary to secure proper poise of the body, and control and flexibility in the use of its members, a result not attained from exercises given for strength only. A brief study

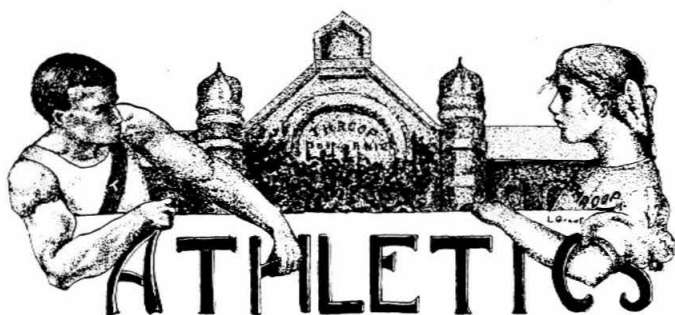
of the lives of great musicians is begun in the Fourth and completed in the Eighth Grade. Special attention is given in all classes to song interpretation and rhythm.

MODERN LANGUAGES

Classes in French and German conversation are formed each year for the benefit of those students who wish to take advantage of such work.

PHYSICAL TRAINING

Students in the Elementary School are expected to take the work in Physical Training. Exercises are offered suited to individual needs, the classes for boys and girls being separate.



POLYTECHNIC HEADING DRAWN BY STUDENT

TABULAR ARRANGEMENT OF SUBJECTS

COLLEGE

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Alternating Currents	Lab. Rec.	10 } 5 }	24	3.4 G	Mathematics 8, Dynamo Design
Analytic Geometry	Lab. Rec.	5 }	36	2. G	Trigonometry
Assaying	Lab. Rec.	8 }	12	0.3 G	Quantitative Analysis I
Bacteriology	Lab. Rec.	10 }	36	2. G	Biology 2, 3, 9, Chemistry 1, Physics 1
Calculus	Rec.	5 }	36	2. G	Analytical Geometry
Descriptive Geometry	Rec. Draw.	5 }	36	2. G	Solid Geometry
Differential Equations	Rec.	5 }	36	2. G	Calculus
Dynamo Design	Rec. Draw.	10 }	18	1. G	Electricity and Magnetism
Economic Entomology	Lab. Rec.	5 }	36	2. G	Biology 2, 3
Electricity and Magnetism	Lab. Rec.	10 }	36	2. G	Physics 2, Mathematics 5
English 5	Rec.	5 }	36	2. G	English 4
General Chemistry	Rec. Read.	1 }	36	0.2 G	Qualitative Analysis
General Ornithology	Lab. Rec.	10 }	36	2. G	Biology 1, 2
Geology	Lab. Rec.	5 }	36	2. G	Biology 1, 2, Chemistry 1, Physics 1
Higher Algebra	Rec.	5 }	36	2. G	Trigonometry
History of Chemistry	Rec. Read.	1 }	12	0.2 G	General Chemistry, Organic Chemistry
Industrial Chemistry	Rec. Read.	5 }	18	1. G	Qualitative Analysis
Inorganic Preparations	Lab.	8 }	12	0.5 G	Qualitative Analysis
Kinematics	Draw.	5 }	36	1. M	Mechanical Drawing 3
Mechanics	Lab. Rec.	10 }	36	2. G	Calculus
Mineralogy	Lab. Rec.	5 }	36	2. G	Biology 1, Chemistry 1
Organic Chemistry	Lab. Rec.	8 } 2 }	24 } 36 }	1.5 G	General Chemistry
Physics 2	Lab. Rec.	7 } 3 }	36	2. G	Physics 1, Chemistry 1
Plant and Animal Ecology	Lab. Rec.	5 }	36	2. G	Biology 1, 2, 3
Power Measurements	Lab. Rec.	10 }	18	1. G	Electricity and Magnetism
Qualitative Analysis	Lab. Rec.	7 } 2 }	36	1.8 G	Elementary Chemistry, Physics 1
Quantitative Analysis I	Lab. Rec.	8 } 2 }	24	1.7 G	Qualitative Analysis
Quantitative Analysis II	Lab. Rec.	20 } 2 }	18	2. G	Quantitative Analysis I
Socio-Economics	Rec.	5 }	36	2. G	
Surveying	Field Rec.	10 }	36	2. G	Trigonometry
Systematic Study of Vertebrates	Lab. Rec.	5 }	36	2.	Biology 1, 2
Transmission and Distribution of Power	Lab. Rec.	10 }	12	0.3 G	Alternating Currents
Vertebrate Anatomy and Physiology	Lab. Rec.	10 }	36	2. G	Biology 2, Physics 1
Vertebrate Embryology	Lab. Rec.	10 }	36	2. G	Biology 4, Chemistry 1

TABULAR ARRANGEMENT OF SUBJECTS

NORMAL SCHOOL

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Domestic Arts 5.....	Sew.	10	36	2	English 3, History 4 and 5 Education 1 Education 2 Education 1, Manual Tr'g 2 or 3, Manual Train'g 8. Fine Arts 6 Educat'n 1, Dom. Science 3 Educat'n 1, Domest. Arts 5 Education 1, Fine Arts 7 and 8, Manual Train'g 8
Domestic Arts 6.....	Sew.	10	18	1	
Domestic Arts 7.....	Sew.	10	18	1	
Domestic Science 3.....	Cook.	10	36	2	
Domestic Science 4.....	Cook.	10	36	2	
Domestic Science 12.....	Lab.	6	36	1	
Education 1.....	Rec.	3	36	2	
Education 2.....	Rec.	2	18	1	
Education 3.....	Rec.	2	18	1	
Education 4.....	Rec.	5	36	2	
Education 5.....	Rec.	5	36	2	
Education 6.....	Rec.	5	36	2	
Education 7.....	Rec.	5	36	2	
Fine Arts 6.....	Studio	5	36	1	
Fine Arts 7.....	Studio	10	36	2	
Fine Arts 8.....	Studio	5	36	1	
Fine Arts 9.....	Studio	10	36	2	
Fine Arts 10.....	Studio	5	36	1	
Fine Arts 11.....	Studio	10	36	2	
Fine Arts 12.....	Studio	10	36	2	
Manual Training 2.....	Shop	5	36	1	Bookkeeping 1
Manual Training 3.....	Shop	10	36	2	
Manual Training 4.....	Shop	10	36	2	
Manual Training 5.....	Shop	10	18	1	
Manual Training 6.....	Shop	10	36	2	
Manual Training 7.....	Shop	10	18	1	
Manual Training 8.....	Draw.	5	36	1	
Manual Training 9.....	Draw.	5	36	1	

COMMERCIAL SCHOOL

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Arithmetic.....	Rec.	5	36	2. G	Bookkeeping 1
Bookkeeping 1.....	Rec.	10	36	2. G	
Bookkeeping 2.....	Book.	10	36	2. G	
Civil Government.....	Rec.	5	12	0.7 G	
Commercial Geography.....	Rec.	5	36	2. G	
Commercial Law.....	Rec.	5	12	0.7 G	
English and Spelling.....	Rec.	5	36	2. G	
Finance.....	Rec.	5	12	0.7 G	
Penmanship.....	Writ.	5	36	0.5 M	
Stenography 1.....	Rec.	5	36	1. M	
Stenography 2.....	Dict.	5	36	1. M	Stenography I
Typewriting.....	Type.	5	36	0.5 M	

TABULAR ARRANGEMENT OF SUBJECTS

ACADEMY

M or G in "Credit" column indicates whether the subject earns Manual (M) or General (G) credits.

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Algebra	Rec.	5	36	2. G	
Botany	Lab. Rec.	10	36	2. G	
Chemistry I.....	Lab. Rec.	7 3	36	2. G	Algebra and Geometry English 2
Clay Modeling 1.....	Shop	10	36	2. M	
Clay Modeling 2.....	Shop	10	36	2. M	Clay Modeling 1
Cooking	Shop	10	36	2. M	
Dressmaking	Shop	10	18	1. M	Plain Sewing, F. Draw'g 2
Elocution	Rec.	5	36	1. G	
English 1.....	Rec.	5	36	2. G	
English 2.....	Rec.	5	36	3. G	English 1
English 3.....	Rec.	5	36	2. G	English 2
English 4.....	Rec.	5	36	2. G	English 3
Forging	Shop	10	36	2. M	Wood Work
F. H. Drawing 1.....	Draw.	5	18	0.5 M	
F. H. Drawing 2.....	Draw.	5	18	0.5 M	Freehand Drawing 1
F. H. Drawing 3.....	Draw.	5	36	1. M	Freehand Drawing 2
F. H. Drawing 4.....	Draw.	5	36	1. M	Freehand Drawing 3
French 1.....	Rec.	5	36	2. G	
French 2.....	Rec.	5	36	2. G	French 1
French 3.....	Rec.	5	36	2. G	French 2
German 1.....	Rec.	5	36	2. G	
German 2.....	Rec.	5	36	2. G	German 1
German 3.....	Rec.	5	36	2. G	German 2
Higher Algebra.....	Rec.	5	18	1. G	Algebra
History 1.....	Rec.	5	36	2. G	
History 2.....	Rec.	5	36	2. G	
History 3.....	Rec.	5	36	2. G	
History 4.....	Rec.	5	24	1.3 G	English 3
History 5.....	Rec.	5	12	0.7 G	History 4
Latin 1.....	Rec.	5	36	2. G	
Latin 2.....	Rec.	5	36	2. G	Latin 1
Latin 3.....	Rec.	5	36	2. G	Latin 2
Machine-shop Practice I.....	Shop	10	18	1. M	Pattern-shop Practice I
Machine-shop Practice II.....	Shop	10	18	1. M	Machine-shop Practice I
Mech. Drawing 1.....	Draw.	5	18	0.5 M	
Mech. Drawing 2.....	Draw.	5	18	0.5 M	Mechanical Drawing 1
Mech. Drawing 3.....	Draw.	5	36	1. M	Mechanical Drawing 2
Mech. Drawing 4.....	Draw.	5	36	1. M	Mechanical Drawing 3
Millinery.....	Shop	10	18	1. M	Freehand Drawing 1
Pattern-shop Practice I.....	Shop	10	18	1. M	Forging and Pl. Geometry
Pattern-shop Practice II.....	Shop	10	18	1. M	Pattern-shop Practice I
Physical Culture.....	Gym.	5	36	1. M	
Physical Geography.....	Rec.	5	36	2. G	
Physics 1.....	Lab. Rec.	7 3	36	2. G	Algebra and Geometry English 2
Plain Sewing.....	Shop	10	36	2. M	Freehand Drawing 1
Plane Geometry.....	Rec.	5	36	2. G	
Solid Geometry.....	Rec.	5	18	1. G	Plane Geometry
Spanish 1.....	Rec.	5	36	2. G	
Spanish 2.....	Rec.	5	36	2. G	Spanish 1
Trigonometry.....	Rec.	5	18	1. G	Algebra and Solid Geom'y
Wood Carving 1.....	Shop	10	36	2. M	
Wood Carving 2.....	Shop	10	36	2. M	Wood Carving 1
Wood Work.....	Shop	10	36	2. M	
Zoology.....	Lab. Rec.	10	36	2. G	

LIST OF STUDENTS

1905-1906

COLLEGE

Bettannier, Eugene L.	Tropico
Buffington, Charles S.	Los Angeles
Burnham, Roderick Deane.	Pasadena
Cleland, Thomas Edward.	Florence
Cohn, Charles.	Los Angeles
Endres, Anthony.	Akron, O.
Gaylord, John Clarence.	Pasadena
Hastings, Ira Ballou.	St. Johnsbury, Vt.
Hyde, George McDonnell.	Pasadena
Jones, Morris Shelley.	Pasadena
Landon, William Emerson.	Pasadena
Lewis, Stanley Morton.	Herbst, Ind.
Line, Arthur Wilfred.	Edgbaston, Birmingham, Eng.
Maxson, Edgar.	Montebello
McDonald, Bert.	Alhambra
Miller, James Collins.	Pasadena
Nichols, Louise Churchill, A. B., University of Michigan.	Pasadena
Norton, Frank Edward.	Pomona
Ogier, Edward Hahn.	Pasadena
Otis, Arthur Sinton.	Pasadena
Pimental, Rafael.	Oaxaca City, Oaxaca, Mex.
Urquhart, Helen Caroline.	Chehalis, Wash.
Wood, Hilda.	Glendora

NORMAL

Abbott, Anna Mackay.	Lordsburg
Archibald, Bessie Mildred.	Colton
Brownson, Gladys.	Pasadena
Crooks, Grace.	Boone, Ia.
Davenport, Ethel Vere.	Los Angeles
Denzer, Jennie.	Bucyrus, O.
Dickey, Florence Ivah.	Pasadena
Diffenbacher, Lulu Arnold.	Los Angeles
Ellis, Bertha Alma.	Pasadena
Fordyce, Grace.	Altadena
Freeman, Agnes Eva.	Riverside
Hawley, Josephine.	South Pasadena
Hill, Viola Caroline.	Santa Ana
Howard, Grace Irene.	Mondovi, Wis.
Judson, Helen.	Bostonia
Junkin, Annie M.	Los Angeles
King, Della.	Whittier
Lamb, Jennie Merritt.	Los Angeles
Linendoll, Mildred.	Altadena
McRae, Sarah.	Everett, Wash.
Moore, Nevada.	Pasadena
Nickel, Nettie.	Waupaca, Wis.
Paulding, Christina Wood.	Pasadena
Pearson, Leo Earl.	Los Angeles
Pope, Florence.	Du Quoin, Ill.
Rice, Meta Cleora.	Sierra Madre
Stuhler, Kate.	Monticello, Ia.
Swerdfeger, Geneva May.	Lordsburg
Willits, Louie Kooser.	Pasadena
Woodbury, Fred Ralls.	Pasadena
Yates, Lethe Darne.	Pasadena

ACADEMY

Allison, Donald Cameron.....	Mexico City, Mex.
Amsden, Lorenzo.....	Pasadena
Archibald, Charles Henry.....	Los Angeles
Bacon, Francis Romayne.....	Los Angeles
Bailey, Le Roy Harrison.....	Los Angeles
Baird, James Rogers.....	Pasadena
Baldwin, Eugene Irving.....	Pasadena
Barker, Huntington.....	Pasadena
Barker, Parrish.....	Pasadena
Barndollar, Gladys.....	Long Beach
Bassett, Winona Campbell.....	Chicago, Ill.
Beals, Dean Joseph.....	Plano
Beck, Clarence.....	Chino
Beeson, Veva Odetta.....	Los Angeles
Behr, Ernst Edward.....	Pasadena
Belford, Andrew Alexander.....	Chicago, Ill.
Bixby, Florence Lydia.....	Sierra Madre
Bland, Serena Lois.....	Pasadena
Blattner, Helen Harland.....	Pasadena
Bowen, Clarence Winthrop.....	Pasadena
Bowers, Nathan Abbott.....	Preston
Bowman, Eunice Wright.....	Pasadena
Boynton, Ralph Henry.....	Los Angeles
Braden, Agnes Emma.....	Pasadena
Braden, Arthur Claude.....	Pasadena
Bray, Leon Arthur.....	Wolseley, Sask., Can.
Brooks, Donald Beresford.....	Pasadena
Brown, Leroy Gregg.....	Los Angeles
Brown, Norma Ina.....	Pasadena
Brugman, Vega Amend.....	Pasadena
Bryan, Harry Francis.....	Pasadena
Burnham, William Henry.....	Orange
Burger, Florence Eula.....	South Pasadena
Buxton, Jay Russell.....	Rialto
Cameron, Claire Vernon.....	McDonald, Pa.
Canterbury, Harry Horton.....	Redlands
Case, Carlos Cyrus.....	Pasadena
Cattell, Lura Marie.....	Pasadena
Champion, Clyde Walter.....	Alhambra
Clapp, Margaret Avice.....	Los Angeles
Clark, Mary Ethel.....	Wahiawa, Oahu, Hawaii
Clay, Henry Harrison.....	Pekin, Ill.
Cleveland, Bertrand Landson.....	Los Angeles
Cole, Harry Maulsby.....	Plano
Coman, William Meriam.....	Pasadena
Conant, Francis Heath.....	Santa Barbara
Cook, Inez Whiting.....	Glendora
Coolidge, Rachel Abbie.....	Pasadena
Cooper, Mary Louise.....	Pomona
Cooper, Reuel.....	Corona
Cordiner, Alexander.....	Los Angeles
Crowley, William Lucas.....	St. Louis, Mo.
Culver, Lucile.....	Pasadena
Dake, Benjamin Frank.....	Pasadena
Daley, Albert Cowles.....	Pasadena
Davis, Charles Merritt.....	Pasadena
Dickey, Ziska M.....	Dinuba

Dickinson, Grace.....	Pasadena
Dickinson, Helen.....	Pasadena
Dixon, Joseph.....	Escondido
Donnatin, George.....	Los Angeles
Donnell, Walter Blangeres.....	Pasadena
Douglass, Benjamin Kaime.....	Los Angeles
Dryden, Rex James.....	Los Angeles
Dunning, Arche Muller.....	Pasadena
Dunning, Arthur Earle.....	Pasadena
Earley, Alice.....	Pasadena
Edmonds, Elizabeth Clarke.....	Santa Monica
Edwards, Alfred Williams.....	Puente
Edwards, Noel Condiff.....	Prospect Park
Eliel, Paul.....	Los Angeles
Ely, Helen Elizabeth.....	Phoenix, Ariz.
Emerson, Breck.....	Chelmsford, Mass.
Enger, Thorbjorn Kjus.....	Christiania, Norway
English, Jay.....	Pasadena
Evans, Russel.....	Loara
Feuerborn, Ralph Daniel.....	Los Angeles
Fillmore, Hugh Hamilton.....	Los Angeles
Freeze, Herman.....	Los Angeles
French, John Bedford.....	Pasadena
Frey, Elmer Ernest.....	Pasadena
Frohman, Philip Hubert.....	Pasadena
Gabriel, Arthur Corydon.....	Pasadena
Garland, Eldon Addison.....	Nordhoff
Gaylord, Ruth Louise.....	Pasadena
Gerberding, Thomas.....	Hueneme
Gerhart, Ray.....	Santa Ana
Gibson, Merrill Essington.....	Los Angeles
Giddings, Blanche Elsie.....	Pasadena
Gile, Rexford Roberts.....	Long Beach
Glass, Dudley Richard.....	Redlands
Grace, Victor Felix.....	Chicago, Ill.
Graham, Myrtle Inez.....	Covina
Grant, Lillian Hoagland.....	Los Angeles
Graves, Marcia Lee Howard.....	Pasadena
Green, Thomas Edward.....	South Pasadena
Guerrero, Carlos T.....	Mexico City, Mex.
Guillou, Rene.....	Pasadena
Guillou, Victor.....	Pasadean
Hallowell, Lyman Earle.....	Ventura
Hamilton, Marian Manley.....	Pasadena
Hammons, Harry Valentine.....	Ventura
Hanks, Mabelle Laura.....	Minneapolis, Minn.
Harrison, Benjamin Demas.....	Pasadena
Hansen, Edwin Rudolf.....	Escondido
Harris, Madelein Mary.....	Pasadena
Harsha, Robert Van Tuyl.....	Seattle, Wash.
Hay, Francis Haynes.....	Los Angeles
Hayes, Ben.....	El Monte
Hayes, Marshall Crane.....	Pasadena
Hayes, Oliver Bliss.....	Pasadena
Henck, George Daniel.....	Los Angeles
Herries, James Archibald.....	Pasadena
Hertel, Anita Marion.....	Pasadena
Hester, George Knight.....	Pasadena
Hill, Bruce Maxwell.....	Pasadena

Holton, Robert Goodyear.....	Los Angeles
Hornby, Lloyd Gibson.....	Pasadena
Horrell, William Amos.....	Pasadena
House, Frank Edwin.....	Duluth, Minn.
Hovey, Chester Raymond.....	South Pasadena
Hunt, LeRoy.....	Santa Barbara
Hunt, Randolph.....	Los Angeles
Hunter, Paul Mallers.....	Chicago, Ill.
Hunter, Robert Edward.....	Pasadena
Huntoon, Jesse R.....	Pasadena
Jackson, Andrew Clifford.....	St. Louis, Mo.
Jahraus, Joseph.....	Laguna Beach
Jones, Harriett Elizabeth.....	Pasadena
Jones, Louis Hollister.....	Iowa Falls, Ia.
Jones, Lawrence Mortimer.....	Joliet, Ill.
Judd, Harriet Stewart.....	Pasadena
Kelsey, Lynn Holbrook.....	Garvanza
Kinney, Thornton.....	Venice
Kling, David George.....	Pasadena
Kohl, John Peter.....	Chicago, Ill.
Komoda, Henry Hanjero.....	Pasadena
Kraft, Edward Louis.....	Pasadena
Larralde, John Alfred.....	Los Angeles
Lee, Scott Mortimer.....	Los Angeles
Leistikow, Fred William.....	Grafton, N. D.
Lewis, Clifford K.....	Long Beach
Lewis, Guy Edward.....	Camarillo
Lewis, Harriet.....	St. Paul, Minn.
Lewis, Henry.....	Camarillo
Lifur, Frances.....	Shorb
Lisk, Anson.....	North Pasadena
Lockerby, Arnold G.....	Grand Rapids, Mich.
Lucas, Henry Laurence.....	Ontario
Ludy, Clarence Chester.....	Pasadena
Macaulay, Clara Evelyn.....	Los Angeles
MacDonald, Leroy Fischer.....	Seattle, Wash.
MacDonald, James Frederick.....	Seattle, Wash.
Macomber, Laurence.....	Somerville, Mass.
Macready, George Alexander.....	Los Angeles
Manly, Harold Patterson.....	Pasadena
Marshall, Kenneth Irving.....	Los Angeles
Martin, Frank Lownes.....	Highland
McKibben, Vinton Moore.....	Pasadena
McMaster, Gertrude Elanor.....	Pasadena
Meek, Blanche Frances.....	Los Angeles
Melvin, John Merle.....	Pasadena
Miller, Lloyd Rudolph.....	Pasadena
Miller, Robert Bruce.....	Redlands
Mills, Hollis Bell.....	Cedar Rapids, Ia.
Moffatt, Howard.....	Rialto
Monks, Howard Irvin.....	Watertown, S. D.
Moody, Graham Blair.....	Los Angeles
Moody, Wilbur Ladde.....	Los Angeles
Mooney, Wallace.....	Pasadena
Moore, Grace Risley.....	Los Angeles
More, Lawrence.....	Santa Barbara
Morris, Samuel Brooks.....	Pasadena
Muller, Josephine Marie.....	East San Gabriel
Murray, Hamilton.....	Lamanda
Murray, Mabel.....	Lamanda

Murray, Virginia.....	Lamanda
Nash, Earle Reuben.....	Santa Monica
Newton, Lyman Alman.....	Globe City, Ariz.
Nichols, George Page.....	Pomona
Nichols, Ross Martin.....	Pasadena
Nichols, Vernon Garrett.....	Pasadena
de Normandie, Harold.....	Los Angeles
Northrop, Lowell Edwin.....	Los Angeles
Oneal, Charles Herbert.....	Pasadena
Owen, Harry S.....	Los Angeles
Parker, Elizabeth.....	Los Angeles
Parker, Pauline.....	Los Angeles
Peabody, Dora Mildred.....	Pasadena
Pinger, Philip.....	Los Angeles
Pinkham, Francis Colburn.....	Brooklyn, N. Y.
Pittenger, Walter Ralph.....	Fallbrook
Poindexter, Robert Wade.....	Los Angeles
Potter, Charles Guy.....	Beaver, Pa.
Prizer, John Alfred.....	Corona
Proctor, James Machell.....	Pasadena
Randals, Charles Russ.....	Pasadena
Reilley, Frank John.....	Los Angeles
Reppy, John Henry.....	Ventura
Ridenour, Charles.....	Hackberry, Ariz.
Rudel, Amelia.....	San Gabriel
Seargeant, Elizabeth Cordelia.....	Phoenix, Ariz.
Schermerhorn, Robert J.....	Redlands
Sharpe, Nathan.....	Pasadena
Shute, Sidney Ferguson.....	San Gabriel
Shutt, Herbert Abrom.....	Pasadena
Slavin, Sara.....	Pasadena
Smith, Clark.....	Pasadena
Smith, Kate.....	Pasadena
Smith, Warren.....	Pasadena
Spahr, John.....	Pasadena
Stambach, Elise.....	Pasadena
Starkweather, Susan Pierson.....	Tulare
Steinberger, Harvey Hogan.....	Sierra Madre
Steinberger, James Milton.....	Sierra Madre
Stewart, Colin.....	Pasadena
Stiles, Wilbur Henry.....	Ventura
Stokes, Frank.....	Alhambra
Sturdevant, Harvey Robert.....	Los Angeles
Sweeley, Frank Merriman.....	Pasadena
Tantau, George Blake.....	Pasadena
Taylor, Fletcher Brandon.....	Pasadena
Taylor, Marian Harriet.....	Pasadena
Taylor, Raymond Wheeler.....	Pasadena
Taylor, Walter Penn.....	Pasadena
Thompson, Laurence Kimball.....	Los Angeles
Thompson, Samuel Halsey.....	Pasadena
Thornburg, Hix.....	Sierra Madre
Traylor, Mary E.....	Pasadena
Twycross, Convers Lilly.....	Sierra Madre
Tyler, Sidney William.....	Pasadena
Vail, William Banning.....	Los Angeles
Van Scoyoc, Lloyd.....	Los Angeles
Waddingham, Reynold.....	Los Angeles
Wadsworth, Katharine.....	Pasadena

Wadsworth, Mary Manter.....	Pasadena
Wakeham, William Helmor.....	Santa Ana
Waldron, Grace.....	Pasadena
Warren, Charles Mavro.....	Glendora
Warren, Herbert Clifton.....	Glendora
Wheeler, Charles Arlington.....	San Francisco
White, Donald.....	Pasadena
White, Mary Hazel.....	Olympia, Wash.
White, Natalie.....	Pasadena
Whitney, Margaret Ware.....	Pasadena
Williams, Ralph Sargent.....	Pasadena
Williams, Thomas Grover.....	Sandy, Nev.
Williamson, William Roy.....	Los Angeles
Wilson, John Encell.....	Pasadena
Wilson, Lucian Hornbrook.....	Pasadena
Wilson, Robert Penrose.....	Riverside
Wood, Herbert Sydney.....	Los Angeles
Wood, Marjorie.....	Terminal
Wood, William Stanley.....	Brooklyn, N. Y.
Wood, Willard Selwyn.....	Glendora
Wood, Winifern.....	Glendora
Woodbury, Greenleaf Moores.....	Pasadena
Wotkyns, Margaret Prudentia.....	Pasadena
Wright, Adaline.....	Pasadena

COMMERCIAL

Beals, William Moore.....	Plano
Bischoff, William Henry.....	Pasadena
Blakeslee, Laura Genevieve.....	Upland
Brandt, Emil C.....	Pasadena
Burbaw, John.....	Pasadena
Cadioux, Mary Elma.....	Detroit, Mich.
Cadwallader, Jesse.....	East Highland
Carrithers, Walter Adley.....	Lamanda
Cattell, Eva.....	Pasadena
Chatters, William White.....	Pasadena
Clark, Mabel Clair.....	San Jacinto
Dixon, James Benjamin.....	Escondido
Elliot, Leslie Lockerby.....	Pasadena
Fitch, Florence L.....	Pasadena
Fry, Annie Harriet.....	Pasadena
Gooding, Ralph Homes.....	Kingman, Ariz.
Haddock, Ray Everett.....	Pasadena
Harris, Mildred Ada.....	Copenhagen, N. Y.
Heck, Julia Louise.....	Pasadena
Herard, Minnie.....	Pasadena
Hoff, Charles.....	Benson, Ill.
Irvine, Lillian.....	Pasadena
Kenyon, Myrtle May.....	Globe, Ariz.
Kirkham, John Lee.....	Tropico
La Plont, Pauline Gertrude.....	Pasadena
Lieberg, Harvey.....	Pasadena
Mathis, Gene Autman.....	Kansas City, Mo.
May, Ernest Crawford.....	Pasadena
McIntire, Augustus.....	Pasadena
Mercer, Robert Oaklev.....	Pasadena
Ramsay, Henrietta Mackey.....	San Luis Rey
Sewall, Edna.....	Alhambra
Sparks, Pauline Victoria.....	Pasadena
Spencer, Alice Clare.....	Pasadena

Stone, Archibald Ernest.....	Pasadena
Taylor, Archie Allerton.....	Sully, Ia.
Tyler, Annie Jennella.....	Pasadena
Veeder, Nina.....	Pasadena
Weatherton, Edward Kintchlow.....	Pasadena
Weiser, Daisy Edith.....	Wellman, Ia.
White, Mary Maude.....	Rome, N. Y.
Wynkoop, George Henry.....	Pasadena
Young, Harry Martin.....	Waterloo, Ia.

ELEMENTARY

Anderson, Cyrus Barnhart.....	Pasadena
Atterbury, Boudinot Bakewell.....	Pasadena
Bailey, Clifford, Sherwood.....	Pasadena
Barry, Edmund Driman.....	Pasadena
Barton, Amelia Page.....	Chicago, Ill.
Beaman, Selwyn Singer.....	Nordhoff
Beebe, David Chapin.....	Syracuse, N. Y.
Beebe, Dwight Sawyer.....	Syracuse, N. Y.
Birlew, Paul Egbert.....	Pasadena
Bishop, Ruth.....	Long Beach
Bixby, Leland Harmon.....	Pasadena
Blackstock, Edward Migh.....	Ventura
Blow, Charlotte.....	Pasadena
Blow, Richard Tunstall.....	Pasadena
Boorman, Sherman.....	Pasadena
Borden, Harry Marmaduke.....	Alhambra
Bowles, Stanley Lloyd.....	Pasadena
Boyle, James Lee.....	Los Angeles
Brainard, Ralph Stoddart.....	Altadena
Brown, Frederick Walton.....	Pasadena
Brown, Louise Boyd.....	Pasadena
Brown, Marian.....	Pasadena
Bump, Earl.....	Bairdstown
Butterworth, Harold Hunter.....	Pasadena
Buxton, Benjamin Butler.....	Rialto
Cadwallader, Stella.....	East Highland
Chapin, Ralph Owen.....	Pasadena
Chamberlain, Florence.....	Pasadena
Clapp, Mary Elizabeth.....	Evanston, Ill.
Clapp, James Norton.....	Evanston, Ill.
Clemm, Eugene Charles.....	Los Angeles
Compton, Fauntleroy Langstroth.....	Pasadena
Cook, Edward Thayer.....	Pasadena
Crandall, Bessie Palmer.....	Pasadena
Crittenden, Ralph.....	Pasadena
Crumb, Rowell Hanford.....	Pasadena
Cummings, Edwin Booth.....	Pasadena
Currier, Le Roy Sanborn Becker.....	Pasadena
Danforth, Russell Elihu.....	Grand Rapids, Mich.
Davidson, Dorothea.....	Lafayette, Ind.
Dellinger, Otto.....	Los Angeles
Dodds, Paul Drennon.....	Los Angeles
Donnelly, Raymond Paul.....	South Pasadena
Doonz, Harold Lewis.....	Philadelphia, Pa.
Dougherty, John Frank.....	San Diego
Dunham, Ahwood.....	Pasadena
Dutton, Horace Mryton.....	Pasadena
Earley, George Curtis.....	Pasadena
Eliel, Leon.....	Los Angeles

Ellinwood, Cornelia.....	Prescott, Ariz.
Ellinwood, Ralph Everett.....	Prescott, Ariz.
Ely, Willard Morris.....	Pomona
Engels, Basil Beard.....	Pasadena
Evans, Harold Howell.....	Pomona
Forden, Marion Rickert.....	Los Angeles
Glasscock, Bernard Charles.....	Pasadena
Gleason, Rutherford Erwin.....	Los Angeles
Godbe, Raymond.....	Los Angeles
Gosney, Lois.....	Flagstaff, Ariz.
Gosney, Tyrene Gladys.....	Flagstaff, Ariz.
Green, Allen Wilbur.....	Pasadena
Grimes, Zillah.....	Pasadena
Hawley, Harold De Witt Clinton.....	Pasadena
Hawley, Merwin Spencer.....	Pasadena
Heckman, Luther Ray.....	Dixon, Ill.
Herlihy, Harold Walter.....	Pasadena
Honey, Crawford L.....	Orange
Hunt, Frances Leo.....	Pasadena
Johnson, Ruth.....	Pasadena
Jones, Ralph.....	Pasadena
Judd, George Thomas.....	Pasadena
Kee, Lew Y.....	Pasadena
Keese, Richard Abbott.....	Los Angeles
Keller, Robert Lindsay.....	Pasadena
Kendall, Charles Harrison.....	Pasadena
Kendall, Frances Ella.....	Pasadena
King, William Campbell.....	Pittsburg, Pa.
Kinney, Sherwood.....	Venice
Kirk, John Balderstone.....	Pasadena
Kirkpatrick, Lola Emiline.....	Rushford, Minn.
Lavagnino, Gerald Angelo.....	Pasadena
Lavagnino, John Francis.....	Pasadena
Lavagnino, Mary Louise.....	Pasadena
Lewis, Guy C.....	Pasadena
Lowther, Alexander Neal.....	Los Angeles
Lowther, George Chambliss.....	Los Angeles
Lummis, Turbese.....	Los Angeles
Lynch, Viva Elinda.....	Pasadena
McCament, Jessie Maude.....	Pasadena
McCormick, William Merrill.....	Pasadena
McCurdy, Howard Percival.....	Pasadena
Meek, Chester Irving.....	Los Angeles
Meinecke, Irwin Adolph.....	Los Angeles
Merriam, Robert Clizbe.....	Pasadena
Miller, Robert Ellsworth.....	Pasadena
Morrison, Florence Catherine.....	Pasadena
Morton, St. Clair.....	Santa Barbara
Mumford, Henry Hume.....	South Pasadena
Osborne, Harry.....	Pasadena
Palmateer, Selden Dow.....	Pasadena
Parker, Ola Alice.....	Pasadena
Partridge, Frank.....	Pasadena
Pedley, Eric Leader.....	Riverside
Pedley, Lionel Evered.....	Riverside
Peter, Clyde Herman.....	Pasadena
Pike, Ruthven Wedgwood.....	Chicago, Ill.
Porter, Charles Winthrop.....	South Pasadena
Porter, Herbert Hugh.....	Pasadena

Prentiss, Dorothy Loomis.....	Winona, Minn.
Prentiss, Frances Laird.....	Winona, Minn.
Proctor, Gilbert.....	Pasadena
Ragsdale, Addie May.....	Sierra Madre
Risdon, Edward Hamilton.....	Pasadena
Rudel, Edward.....	San Gabriel
Rudel, Walter.....	San Gabriel
Scott, Annie Eugenie.....	Pasadena
Scott, Ida May.....	Pasadena
Scott, Lester Freemont.....	Los Angeles
Senour, Roy Raymond.....	Pasadena
Sharpe, Allan.....	Chicago, Ill.
Shlaudeman, Harry.....	Altadena
Shlaudeman, Mildred Draper.....	Altadena
Slavin, Matthew, Jr.....	Pasadena
Smith, Lucy Marceline.....	Pasadena
Smith, Worthington Charles.....	Pasadena
Spangler, Etherington.....	Pasadena
Stambach, George Mahlon.....	Pasadena
Stearns, Helen Lindsay.....	Pasadena
Stiles, Milton Philip.....	Ventura
Strieff, Roberta Florence.....	Pasadena
Taylor, Edward Winslow.....	Germantown, Pa.
Taylor, William Henry.....	Wilmington, Del.
Thralls, Ernest Ora.....	Pasadena
Tompkins, De Ronde.....	Pasadena
Torrey, Marguerite.....	Pasadena
Treadwell, Edward.....	Pasadena
True, Cedric.....	Pasadena
Van Dam, Peter A.....	Pasadena
van Rossem, Adriaan Joseph.....	Pasadena
van Rossem, Walter Johannes.....	Pasadena
Wadsworth, Joseph Hilton.....	Pasadena
Waller, Encil Bower.....	Pasadena
Watson, James Milton.....	La Crescenta
White, Laurence Taggart.....	Pasadena
Whitney, Joseph Ware.....	North Pasadena
Wickman, Claude James.....	Los Angeles
Wiggins, Clarissa Leland.....	Springfield, Ill.
Wilkins, Harold Leslie.....	Anaheim
Wilson, Bessie Katherine.....	Long Beach
Wright, Edward Prescott.....	Pasadena
Wright, Howard Walter.....	Pasadena
Wynkoop, Jesse Coover.....	Pasadena
Young, George Beaumont.....	North Pasadena

SPECIAL.

Allin, Alice.....	Pasadena
Armstrong, Margaret.....	Altadena
Carter, Philip.....	Sierra Madre
Delano, Iretta.....	San Francisco
English, Achsah.....	Pasadena
Giddings, Joe.....	Pasadena
Harnett, Anne Hutchinson.....	Long Beach
Hewitt, Ecka Mazuka.....	Chicago, Ill.
Jones, Alma Blakeman.....	Sierra Madre
Linendoll, Mildred.....	Altadena
McGrath, Nellie.....	Los Angeles
Overman, Myrtle.....	Cedar Falls, Ia.
Ramsbaugh, Ernest.....	Los Angeles

Simmers, J., Estella.....	Pasadena
Smith, Clara A.....	Altadena
Sturges, Caroline Margaret.....	Oak Park, Ill.
Swigart, Laura Kathryn.....	Pasadena
Townsend, Mildred M.....	Howell, Mich.
Van Schaack, Byford Correllius.....	Chicago, Ill.
Vedder, Grace.....	Pasadena
Veth, Alice.....	Pasadena
Wheaton, Clare E.....	Pasadena

	SUMMARY	Male	Female	Total
College	20	3	23	
Normal School	2	29	31	
Academy	195	64	259	
Commercial School.....	21	21	42	
Elementary School.....	118	35	153	
Special	4	18	22	
	<hr/>	<hr/>	<hr/>	
Duplicates	360	170	530	
	<hr/>	<hr/>	<hr/>	
	360	169	529	

GRADUATES

1895.

NORMAL SCHOOL.

Daniels, Esther C. (Mrs. Turner).....	Teacher of Sloyd, Los Angeles
Gower, Hattie F.....	Teacher of Sloyd, Los Angeles
Harris, Caroline E.....	Teacher of Sloyd, Los Angeles
Miller, Charles M.....	Teacher of Manual Training, Los Angeles
Simcoe, Benjamin F.....	Teacher of Manual Training, San Francisco

ACADEMY.

Allen, Robert S.....	Pasadena
Carlton, Don W.....	Banking, First National Bank, Los Angeles
Doty, George F. (A. B. T. P. I.,) Cashier Merchants' National Bank	Santa Monica
Ferguson, Clarence, Vice-President, Los Angeles Leather & Finding Co., L. A.	

1896.

COLLEGE.

Haynes, Diantha M., A. B.....	Teacher Public Schools, Azusa
Doty, George F., A. B.....	Cashier, Merchants' National Bank, Santa Monica

NORMAL SCHOOL.

Beckwith, Kate B. (Mrs. Thos. E. Everett)	Tulare
Burkhead, Ada H. (Mrs. Hale Weaver).....	Los Angeles
Chamberlain, Arthur H. (B. S. and A. M., Columbia Univ.) Dean and	
Professor of Education, T. P. I.....	Pasadena
Johnson, Annette.....	Teacher of Sloyd, Los Angeles
Keyes, Mrs. Helen B.....	Hartford, Ct.
Matthews, Amanda.....	Los Angeles
McLaren, Jennie.....	Teacher, Alameda
Riggins, Ara, Teacher and Missionary in Colegio Palmore, Chihuahua, Mex.	

ACADEMY.

Arnold, Ralph, (Ph. D., L. S. Jr. Univ.) Geologist and Paleontologist	
U. S. Geologic Survey,	Washington, D. C.
Conger, Lulu N.....	Pasadena

Gray, Roy W., Division Construction Foreman, Pacific States Telephone and Telegraph Company.....San Francisco
 Menner, Ivy (Mrs. John Taggart).....Pasadena
 Morrison, Margaret L.....Compton
 Snyder, Blanchard M., Head Chemist and Assayer, British Columbia Copper Company.....Greenwood, B. C.
 Winslow, Edward F., Chief Train Dispatcher, C. R. & P. Ry., Estherville, Ia.

1897.

COLLEGE.

Grinnell, Joseph, A. B. (A. M., L. S. Jr. Univ.)....Prof. of Biology, T. P. I.
 NORMAL SCHOOL.

Batchelder, Lizzie.....Teacher of Sloyd, Los Angeles
 Blanchard, Ada F.....Teacher of Sloyd, Los Angeles
 Cleveland, Ada C.....Teacher, Public Schools, Pasadena
 Cook, Mary A.....Edina, Mo.
 Coombs, Sara C.....Teacher, Visalia
 Fisher, Pearl B.....Instructor in French and Drawing, T. P. I.
 Holbrook, Lucy M.....Teacher, Worcester, Mass
 Mellish, Ida.....Instructor in Design and Drawing, T. P. I.
 Smith, Mary M. (Mrs. Weld).....Riverside
 Wright, Charles H.....Architect, Boulder, Colo.

ACADEMY.

Baker, Calvin.....Pasadena
 Baker, Ruth Ellen.....Pasadena
 Barker, James Edmund (S. B., Mass. Inst. of Technology) manager of Ventura Water, Light and Power Co.,.....Ventura
 Blick, Kate Fay, Dentist's Assistant.....Pasadena
 Conger, Lyda Drowne (Mrs. Richard A. Vose)....Oklahoma City, Oklahoma
 Conger, Ray Everett, Insurance and Real Estate, Oklahoma City, Oklahoma
 Farnsworth, John Arthur.....Bookkeeper, Los Angeles
 Jewett, Frank Baldwin, (Ph. D., Univ. of Chicago) with American Telephone & Telegraph Company.....Boston, Mass.
 * Johnston, Blanche.
 McQuilling, William.....Secretary, Pasadena Land & Water Co.
 Polkinhorn, Edwin J.....In business, City of Mexico, Mex.
 Reed, John O.....Sugar Boiler, Beet Sugar Factory, Los Alamitos
 Russell, Emma (Mrs. Frank C. Heath).....Berkeley
 Stimson, Charles W.....Lumber business, Seattle, Wash.
 Vose, Richard A—Manufacturer of Cotton Seeds Products, Oklahoma City, Oklahoma

1898.

COLLEGE.

Blackman, Roy Beebe, A. B., Supt. of Schools, Mangaldan, Philippine Islands
 Jewett, Frank Baldwin, A. B., (Ph. D., Univ. of Chicago) with American Telephone & Telegraph Company.....Boston, Mass.

NORMAL SCHOOL.

Elleau, Jeannete Marcelle (Mrs. Harold Simpson).....Pasadena
 Elleau, Pauline Margaret (Mrs. Frederick Rhoades).....Seattle, Wash.
 Faithful, Claude A., Teacher of Drawing, Los Angeles Polytechnic High School
 Hannah, Lillian.....Ontario
 Hunt, Genie A.....Manual Training Teacher, Harvard School, Los Angeles
 Jordan, Mabel (Mrs. Charles F. Denison).....Pasadena
 *Olson, Albert L. (A. B., T. P. I.)
 Russell, Emma (Mrs. Frank C. Heath).....Berkeley
 Sanders, M. Frances.....Teacher of Sloyd, Los Angeles
 Shields, Mrs. Alice.....Teacher of Sloyd, Los Angeles

*Deceased.

Webber, Marie Bambrick.....Highgrove

ACADEMY.

Beery, Mary Ellen.....South Pasadena

Folsom, Harry G. (S. B., Mass. Inst. of Technology) Electrician with
Pacific Electric Railway Company.....Los Angeles

Gaylord, Horace Amidon, (D. D. S., Baltimore Dental College).....
Dentist, Pasadena

Gaylord, Jas. Mason (B. S., T. P. I.)....Student Mass. Inst. of Technology

Menner, Lottie Ethel (Mrs. Jas. D. Sheckler).....Pasadena

Monroe, Grace Ellen (Mrs. John O. Reed).....Los Alamitos

*Olson, Albert L. (A. B., T. P. I.)

Poindexter, Charles Lawrence.....Mining Engineer, Wickensburg, Ariz.

Sterrett, Roger Jordan, Head of Drawing Department, Los Angeles High
SchoolLos Angeles

Wright, Rachel Edna (Mrs. Delos Jones).....Pasadena

1899.

NORMAL SCHOOL.

Barker, Katherine K.....Teacher of Domestic Science, Los Angeles

Blanford, May.....Teacher of Domestic Science, Los Angeles

Burnett, Grace (Mrs. Carl Raleigh).....Los Angeles

De Yoe, Mrs. Rose J.....Teacher of Domestic Science, San Francisco

Fordyce, Mabel.....Altadena

Haller, Dora.....Kindergarten Teacher, Los Angeles

Jordan, Mabel (Mrs. Chas. F. Denison).....Pasadena

Read, Archie L.....Denver, Colo.

Sabin, Jessie MacFarland.....Pasadena

Southwick, Clara.....Instructor in Elementary School, T. P. I

ACADEMY.

Bixby, William F.....Student Rensselaer Polytechnic Institute, Troy, N. Y.

Clark, Adeline Orilla (Mrs. Lowrie B. Nevin).....Waialua, Oahu, H. I.

Davidson, Leonard (B. S., T. P. I.) Teacher of Manual Training,
Public Schools.....San Francisco

Fordyce, Mabel.....Altadena

Raleigh, Carl.....Los Angeles

Wood, Clifford H. (M. D., U. S. C.) Physician.....San Francisco

1900

COLLEGE.

Harris, Irving, A. B., Foreman of Machine Shop, Edison Electric
Company.....Los Angeles

*Olson, Albert, A. B.

NORMAL SCHOOL.

Anderson, Lucy J.....Chicago

Brooks, Ada M.....Teacher of Kindergarten, Pasadena

Davidson, Leonard E. (B. S., T. P. I.) Teacher of Manual Training

Public Schools.....San Francisco

Dobbs, Ella V.....Instructor in Manual Arts, Elementary School, T. P. I.

Gower, Mary L.....Housekeeper, Los Angeles

Holton, Lola N., Special Teacher of Music and Drawing, Public Schools
Long Beach

Lyde, Louise.....Teacher of Domestic Science, Oakland

Martin, Walter W.....Instructor in Woodworking, T. P. I.

Metcalf, Stella (Mrs. H. S. Knapp).....Bertrand, Neb.

Moore, Nellie.....Teacher, Long Beach City Schools

Morgan, Mabel V.....Teacher of Domestic Science, Los Angeles

Peabody, Sallie.....Bookkeeper, Newport Beach

Pearce, Mrs. Susan.....Teacher of Domestic Economy, Los Angeles

*Deceased.

Toll, Mabel E.....Baldwinsville, N. Y.
 Van Hook, Kate.....Teacher of Sloyd, Hiawatha, Kan.

ACADEMY.

Jerauld, Edwin W.....Haydenhill
 Jewett, Pauline.....Pasadena
 Richards, Bessie E. (Mrs. V. Whitehead).....Artist, Pasadena
 Strong, Robert M., (M. E., Columbia Univ.), Instructor in Mechanical
 Engineering, Columbia University.....New York City

1901.

COLLEGE.

Davidson, Leonard E., B. S., Teacher Manual Training, Public Schools,
 San Francisco

NORMAL SCHOOL.

Beckett, Alice M.....Anaheim
 Getchell, Mary E.....Tropico
 Gibson, Annette M.....Teacher of Sloyd, Los Angeles
 Glick, Naomi.....Terre Haute, Ind
 Gooch, Mrs. Emma A.....Teacher, Sebastopol
 Hazzard, Mrs. Jessica C.....Teacher, State Normal School, Los Angeles
 Johnson, Mrs. Carrie.....Teacher of Sloyd, Los Angeles
 Little, Mrs. Lulu P.....Los Angeles
 Miller, Ada J.....Teacher of Sloyd, Los Angeles
 Moore, Nellie.....Teacher, Long Beach City Schools
 Nicholson, Maude L. (B. S., T. P. I.).....Doctor of Osteopathy, Pasadena
 Parsons, Ellen N.....Teacher, Bonsall
 Ross, Donald A.....Supervisor of Manual Training, Pasadena Public Schools
 Stevens, Elizabeth.....Lincoln Park

ACADEMY.

Burt, Dodge.....Student L. S. Jr. Univ.
 Daggett, Maud.....Pasadena
 Eddy, Nathaniel N.....Student, University of California, Berkeley
 Fassett, John G.....With N. Ontario Packing Co., Los Angeles
 Holcomb, John Delaney (D. D. S., U. S. C.).....Dentist, Globe, Ariz
 Poage, Leland S.....Student, Pomona College
 Wood, Helen.....Draughtsman, Pasadena

COMMERCIAL SCHOOL.

Erwin, Hattie B.....Los Angeles
 Giddings, Joe.....Student, T. P. I., Pasadena
 Giddings, Levi W., Superintendent of Mountain View Cemetery....Pasadena
 Hartley, Ethel (Mrs. A. P. Smith).....Pasadena
 Menner, Lottie (Mrs. Jas. D. Sheckler).....Pasadena
 Pierce, Rollin W.....Bookkeeper, Wilcox, Ariz.
 Richardson, Allen
 Stonehouse, Nellie M.....Bookkeeper, Pasadena

1902.

COLLEGE.

Dyer, Kirk Worrell, B. S.,.....Student, Mass. Inst. of Technology
 Gaylord, James Mason, B. S.....Student, Mass. Inst. of Technology
 Nicholson, Maude Louise, B. S.....Doctor of Osteopathy, Pasadena

NORMAL SCHOOL.

Gooch, Mrs. Emma A.....Teacher of Sloyd, Los Angeles
 Gould, Marie Augusta.....Pasadena
 Holton, Lola N.....Teacher of Music and Drawing, Long Beach
 Junkin, Mary.....Teacher of Sloyd, Los Angeles Public Schools

Richards, Bessie Everett (Mrs. V. Whitehead).....Artist, Pasadena
 Ross, Donald A....Supervisor of Manual Training, Pasadena Public School
 Ross, Minnie Elizabeth.....Teacher of Sloyd, Los Angeles Public School
 Seegmiller, Frances Caroline.....Teacher, Whittier

ACADEMY.

Braddock, Fred Blackman.....Druggist, Pasadena
 Case, James Ovington, in Testing Department, Gen. Electric Co., Lynn, Mass.
 *Erickson, John August.
 Giddings, Lawson Henry.....L. H. Giddings Co., Pasadena
 Gould, Judson Porter.....Law Student, Los Angeles
 Haskell, Beulah.....Pasadena
 Hoose, James Harmon, Jr.,.....Student L. S. Jr. Univ.
 Jerauld, Rodman Ernest.....With Gaylord, Blick & Vore, Pasadena
 Lescher, Royal William. Sup't of Construction, Continental Engineering
 & Contracting Company.....Buffalo, N. Y.
 Linde, Eva (Mrs. Howard Thomas).....Los Angeles
 Paul, Albert...Bookkeeper, Los Angeles Farming & Milling Co., Los Angeles
 Phillips, Virginia.....Pasadena
 Sidwell, Chester Clarence.....In Automobile business, Redlands
 Tweedy, James Knox.....Downey
 Webster, Mabel (Mrs. John Fassett).....Los Angeles
 Wood, Hilda.....Student, College T. P. I.
 Woodbury, Fred Ralls.....Student, T. P. I.

COMMERCIAL SCHOOL.

Bonner, Ella Louise (Mrs. Schmuck).....Pasadena
 Cole, Karl Jay.
 Gammon, Harry Elder.....Poultry Raiser, Pasadena

1903.

COLLEGE.

Shoemaker, Richard Woolsey, B. S., Electrical Engineer for Federal
 Lead Company.....Flat River, Mo.

NORMAL SCHOOL.

Blanchard, Estelle (Mrs. Elmer D. Cowan).....Los Angeles
 Colyer, Gertrude (Mrs. L. O. Atwood).....Middleborough, Mass.
 Fish, Carrie May.....Pasadena
 Greening, Susie Amanda.....Teacher of Domestic Science, Los Angeles
 Hahn, Ida.....Pasadena
 Heald, Oscar Leslie, Instructor in Drawing and Mechanics, California
 Polytechnic School,.....San Luis Obispo
 Howard, Celia Eleanora.....Teacher, Long Beach
 Wakeham, Blanche,....Assistant Instructor in Domestic Economy, T. P. I.

ACADEMY.

Bandini, Ralph.....Student Leland Stanford Jr. Univ.
 Bland, Rose Florence.....Pasadena
 Blankenhorn, George Stevens.....Student Univ. of Wisconsin
 Blankenhorn, Louis McLaughlin....Brokerage and Investments, Los Angeles
 Cartwright, Alexander Benjamin.....Student, Leland Stanford Jr. Univ.
 Chase, Arthur Lo. Manager Water, Light and Power Plants, Cleburne, Texas
 Crane, Elliott Simeon.....Shingle Manufacturer, Seattle, Wash.
 Davis, Paul McDonnell.....Student, Leland Stanford Jr. Univ.
 Doolittle, Harold Lukens.....Student, Cornell Univ.
 Fussell, Edwin Briggs.....Stenographer, Pasadena
 Gaylord, John Clarence.....Student, College, T. P. I.
 Gosnell, Ira.....Coshocton, Ohio
 Hampton, Charles.....Student, Mass. Inst. of Technology, Boston, Mass.

*Deceased.

Haskell, Edward Eben.....	Student, Leland Stanford Jr. Univ.
Heald, Oscar Leslie, Instructor in Drawing and Mechanics, California Polytechnic School.....	San Luis Obispo
Hill, Roland Varian.....	Pasadena
Hornby, Ralph Walter, Student, Leland Stanford Jr., University....	Palo Alto
Lacey, Clara Louise.....	Los Angeles
Mosteller, Roy William.....	Teller, American Bank and Trust Co., Pasadena
Mueller, Earl Walter.....	Bank Clerk, Central Bank, Los Angeles
Niles, Porter Howe.....	Vaughn
Price, Jacob Meday.....	Student, Leland Stanford Jr. Univ.
Scudder, Jessie Ingram (Mrs. Arthur Lo Chase).....	Cleburne, Tex.
Squire, Guy Oliver, Clerk.....	Downey
Squire, Roy Ellis, Bookkeeper and Stenographer, Los Angeles Ice and Cold Storage Company.....	Los Angeles
Story, Henry Amos.....	Los Angeles
Wyckoff, Ralph Fenton.....	Student, Cornell Univ.

1904.

COLLEGE.

*Beardslee, James Louis, B. S.	
McCutchan, Henry Chester, B. S....	Wholesale Electrical Supplies, Los Angeles

NORMAL SCHOOL.

Adams, Gertrude.....	Los Angeles
Babcock, Martha Maud.....	Pasadena
Guillou, Alfred.....	Pasadena
Haskell, Beulah.....	Pasadena
Nyce, Ida May.....	Pasadena
Parry, Geraldine.....	Los Angeles
Simpkins, Mary Emily.....	Teacher of Sloyd, Los Angeles

ACADEMY.

Baker, Thomas Childrey.....	Student, Leland Stanford Jr. Univ.
Belknap, Fred Roland.....	La Cañada
Brackett, Ross Dudley.....	Student, Leland Stanford Jr. Univ.
Brackett, William Franklin.....	Student, Leland Stanford Jr. Univ.
Breer, Carl.....	Student, Leland Stanford, Jr. Univ.
Brigden, Dwight.....	Lamanda Park
Cline, George Thomas.....	Los Angeles
Daggett, Ethel Elizabeth.....	Oak Park, Ill.
Dickey, Florence Ivah.....	Student, T. P. I.
Fordyce, Grace.....	Student T. P. I.
Hawley, Josephine.....	Student, Normal School, T. P. I.
Koontz, John Andrew.....	Student, Leland Stanford Jr. Univ.
Leahy, Richard Armstrong....	Draughtsman, Baker Iron Works, Los Angeles
MacNeil Adela Robey.....	Student, Los Angeles College of Fine Arts
Marshall, Hugh Gibson.....	Student, Leland Stanford Jr. Univ.
Mason, Edgar Elwin.....	with Auto Vehicle Co., Los Angeles
Maxwell, Guy Floyd.....	
Morris, Charles Shoemaker.....	Student, Leland Stanford Jr. Univ.
Pearson, Leo Earl.....	Student, T. P. I.
Root, Virginia Vannette.....	Covina
Ryus, David Denslow, Jr.....	Los Angeles
Saline, Clara Elizabeth.....	Student, Normal School, San Francisco
Schrock, Charles Irvin, Assistant in Optical Work, Solar Observatory, Pasadena	
Sherman, Henry Lancey.....	Student, Mass. Inst. of Technology
Stehman, John Miller.....	Student, Univ. of Ill., Champaign, Ill.
Wakeham, Margaret.....	Santa Ana

*Deceased.

Ward, Nellie Alexandra.....Acting Instructor in Wood Carving, T. P. I.
 Waterhouse, Melicent Eda.....Student Oberlin College
 Wood, Helen Beulah.....Pasadena

COMMERCIAL SCHOOL

Boston, Flora Catherine.....Pasadena
 Brown, Anna Thelma.....Union Savings Bank, Pasadena
 Twinting, Bertha.....Pasadena

1905

NORMAL SCHOOL

Diffenbacher, Lulu Arnold.....Teacher of Sloyd, Los Angeles
 Frost, Lillian.....Teacher of Sewing, Girls' Collegiate School, Los Angeles
 Marsh, Mabel.....Los Angeles
 Miller, James Collins.....Assistant Instructor in Manual Arts, T. P. I.
 Moore, Laura Phebe.....Teacher of Sewing, Y. W. C. A., Los Angeles
 Mosher, Mary Stratton.....Berkeley
 Nyce, Ida May.....Pasadena
 Snell, Harry Murton.....Manual Instructor, Winnipeg, Manitoba, Canada
 Story, Estelle Cornelia Teaching Domestic Science, Whittier Union
 High School.....Whittier

ACADEMY

Bettannier, Eugene.....Student, College, T. P. I.
 Burnham, Roderick Deane.....Student, College, T. P. I.
 Clark, Dora Mabel.....Clerk, Diamond Realty Co., Pasadena
 Coonradt, Arthur Chapin.....Student, Leland Stanford Jr. Univ.
 Downing, Kathryn Leonora.....Pasadena
 Frink, Clarence Harlow.....Banking, Santa Barbara
 Goodspeed, Bessie May.....Pasadena
 Hall, Mary Lou.....Pasadena
 Hyde, George McDonnell.....Student, College, T. P. I.
 Marsh, Mabel.....Pasadena
 McDonald, Bert.....Student, College, T. P. I.
 Painter, Robert Alden, Student in U. S. C. Law School.....Los Angeles
 Phelps, Robert William.....Student, Univ. of Cal.
 Sinclair, Arthur Wells.....Student, Cornell Univ.
 Swerdfeger, Geneva Mae.....Calixicc
 Swigart, Laura Kathryn.....Student, T. P. I.

COMMERCIAL SCHOOL

Ainsworth, Vivian Mabel
 Beals, Delbert Samuel.....First National Bank, Pasadena
 Crowley, Frank Langston
 Frink, Clarence Harlow.....Banking, Santa Barbara
 Gillmor, James Henry.....Edison Electric Co., Pasadena
 Goodspeed, Bessie May.....Pasadena
 Morse, Anna Belle.....Pasadena
 Nichols, Kittie Agnes
 Ray, Birdie May.....Pasadena
 Russell, Franklin Jason.....Pasadena
 Ward, Nellie Alexandra, Acting Instructor in Wood Carving.....T. P. I.
 Guirada, Neta.....Pasadena

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INDEX

A

Academy, courses of study.....	48
Academy, requirements for admission.....	47
Academy, subjects and methods of instruction.....	49
Accrediting	11
Admission to Academy, requirements for.....	II, 47
Admission to College, requirements for.....	II, 32
Admission to Commercial School, requirements for.....	II, 65
Admission to Elementary School, requirements for.....	II, 68
Admission to Normal School, requirements for.....	II, 40
Algebra	34, 49
Alumni, officers of.....	92
Applied Art.....	59
Arithmetic, Commercial School.....	67
Arithmetic, Elementary School.....	68
Assaying	38
Athletics	12

B

Biological Laboratory.....	28
Biology, Academy.....	53
Biology, College.....	33, 36
Biology, Normal School.....	44
Board	15
Boarding hall for boys.....	14
Bookkeeping	65
Botany	54
Buildings	16

C

Calendar	Inside of front cover
Chemical Laboratories.....	22
Chemistry, Academy.....	54
Chemistry, College.....	33, 37
Civics	50
Civil Government.....	67
Clay Modeling, Normal School.....	45
Clay Modeling, Academy.....	61
Clay Modeling Room.....	29
College, courses of study.....	33
College, requirements for admission.....	32
College, subjects and methods of instruction.....	33
Commercial Geography.....	68
Commercial Law.....	67
Commercial School, courses of study.....	65
Commercial School, requirements for admission.....	65
Commercial School Room.....	28
Commercial School, subjects and methods of instruction.....	65
Cooking	43, 64
Cooking Room.....	22
Courses of Study, Academy.....	48
Courses of Study, College.....	33
Courses of Study, Commercial School.....	65

Courses of Study, Elementary School.....	68
Courses of Study, Normal School.....	40
Credits	74

D

Diploma fees.....	14
Discipline	11
Domestic Art, Academy.....	62
Domestic Art, department of.....	20
Domestic Art, Normal School.....	44
Domestic Science, Academy.....	64
Domestic Science, department of.....	22
Domestic Science, Normal School.....	43
Drawing, Academy.....	55
Drawing, Elementary School.....	70
Drawing, Normal School.....	45
Dressmaking	44, 62

E

East Hall.....	25
Education	41
Electrical Engineering, courses in.....	33, 38
Electrical Engineering Laboratory.....	25
Eldridge M. Fowler Fund.....	10
Elementary School, courses in.....	68
Elementary School, Drawing Room.....	20
Elementary School, requirements for admission.....	68
Elementary School, room.....	25
Elocution	50
English, Academy.....	50
English, College.....	35
English, Commercial School.....	68
English, Elementary School.....	69
Evening School.....	15
Exhibition Day	12

F

Faculty	3
Fees	13, 14
Finance	67
Forging, course in.....	59
Forging Shop	18
Founder	2
Freehand Drawing, Academy.....	55
Freehand Drawing, Elementary School.....	70
Freehand Drawing, Normal School.....	45
Freehand Drawing Rooms.....	29
French	52

G

General Information.....	9
Geography	69
Geometry	49
German	52
Graduates	86
Gymnasium	9, 31

H

Historical	9
History, Academy.....	50
History, Elementary School.....	70
Hours	11

J

John Wadsworth Professorship Fund.....	10
--	----

L

Laboratory fees.....	13
Lathe Room.....	17
Latin	51
Libraries	11
List of Students.....	77
Location	10
Locker fees.....	14
Lunch Room.....	15

M

Machine Shop.....	17
Machine Shop Practice.....	61
Manual Arts, Elementary School course in.....	71
Manual Arts Room, Elementary Grades.....	19
Manual Arts Room, Normal School.....	19
Manual Training, Academy courses in.....	59
Manual Training, Normal School courses in.....	42
Mathematics, Academy courses.....	49
Mathematics, College courses.....	33
Mechanical Drawing, Academy.....	55
Mechanical Drawing, Normal School.....	43
Mechanical Drawing, Rooms.....	20
Millinery	44, 62
Mineralogy	38
Music	72

N

Normal School, courses of study.....	40
Normal School, requirements for admission.....	40
Normal School, subjects and methods of instruction.....	41
Nurses' Course	45

O

Olive Cleveland Fund.....	10
Organizations	12

P

Pattern Making.....	59
Pattern Shop.....	17
Pedagogy	41
Physical Geography.....	53
Penmanship	67
Physical Culture.....	64
Physical Laboratory.....	25
Physics, Academy.....	54
Physics, College.....	38

Plan of Grounds.....	8
Polytechnic Hall.....	16
Prizes	13
Psychology	41
Publications	12

R

Reports	11
Requirements for admission, Academy.....	47
Requirements for admission, College.....	32
Requirements for admission, Commercial School.....	65
Requirements for admission, Elementary School.....	68
Requirements for admission, Normal School.....	40

S

Scholarships	12
Schools	10, 32
Science, Elementary School.....	70
Sewing	44, 62
Sewing Room.....	20
Shop Fees.....	13
Shopwork	59
Society Hall.....	29
Socio Economics.....	36
Spanish	53
Spelling	68
Steam Engineering.....	40
Stenography	66
Stickney Memorial Building.....	9, 29
Subjects and methods of instruction, Academy.....	49
Subjects and methods of instruction, College.....	33
Subjects and methods of instruction, Commercial School.....	65
Subjects and methods of instruction, Elementary School.....	68
Subjects and methods of instruction, Normal School.....	41
Summary of students.....	86
Surveying	34

T

Tabular arrangements of subjects, Academy.....	76
Tabular arrangements of subjects, College.....	74
Tabular arrangements of subjects, Commercial School.....	75
Tabular arrangements of subjects, Normal School.....	75
Throop Hall.....	31
Textbooks	15
Tool Room.....	19
Trigonometry	50
Trustees	2
Tuition	13
Typewriting	66

W

Wood carving, Academy.....	61
Wood carving, Normal School.....	43
Wood carving room	20
Wood Shop.....	16
Wood Work.....	59

Z

Zoology	54
---------------	----

