THIRTEENTH ANNUAL CATALOGUE

THROOP POLYTECHNIC INSTITUTE

PASADENA, CALIFORNIA, 1904-1905

CALENDAR

1904-1905

Annual Meeting Board of Trustees, Tuesday, September 13, 1904
Registration ..Monday and Tuesday, September 26 and 27, 1904
Fall Term begins .....Wednesday, September 28, 1904
Thanksgiving Vacation,Thursday and Friday,Nov.24 and 25, 1904
Founder's Day.... .. ..Thursday, December 8, 1904
Quarterly Meeting Board of Trustees ....Tuesday, Dec. 13, 1904
Fall term ends.... .. ..Friday, December 23, 1904

CHRISTMAS VACATION

Winter Terms begins..... .. ..Wednesday, January 4, 1905
End of the first half-year..... ..Friday, February 10, 1905
Washington's Birthday.. .... ..Wednesday, February 22, 1905
Quarterly Meeting Board of Trustees..Tuesday, March 14, 1905
Winter Terms ends... ....Friday, March 24, 1905

SPRING VACATION

Spring Terms begins.. .. ..Monday, April 3, 1905
Memorial Day .....Tuesday, May 30, 1905
Baccalaureate Sunday .. ..June 4, 1905
Geo. H. Coffin Prize Contest ..Monday evening, June 5, 1905
Graduating Exercises, Grammar School Tues. morn'g., June 6, '05
Alumni Reunion .. ..Tuesday evening, June 6, 1905
Commencement .. ..Thursday evening, June 8, 1905
Exhibition Day and End of Term..... ..Friday, June 9, 1905
Quarterly Meeting Board of Trustees...Tuesday, June 13, 1905

THIRTEENTH ANNUAL CATALOGUE

OF

THROOP POLYTECHNIC INSTITUTE

PASADENA, CALIFORNIA

1904 — 1905

APRIL 1904
PUBLISHED BY THE INSTITUTE

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	"	1907
E. E. SPALDING, A. M.	"	1905
NORMAN BRIDGE, M. D.	"	1904
JOHN WADSWORTH	"	1904
CHARLES D. DAGGETT	"	1908
A. R. METCALFE	"	1903
WILLIAM STANTON	"	1906
MRS. CLARA B. BAKER BURDETTE	"	1905
HIRAM W. WADSWORTH, A. B.	"	1906
JAMES H. MCBRIDE, M. D.	"	1905
S. HAZARD HALSTED	"	1907
JOHN S. CRAVENS, A. B.	"	1906
ARTHUR H. FLEMING	"	1908
MICHAEL CUDAHY	"	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

Executive Committee of the Board

NORMAN BRIDGE, *Chairman ex-officio* — C. D. DAGGETT

JOHN WADSWORTH — A. R. METCALFE

WILLIAM STANTON

FACULTY

1903-1904

(Arranged in groups in order of appointment)

WALTER ALISON EDWARDS, President

Professor of Ancient Languages

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 Principal 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 Slöjdlärare-seminarium, Nääs, Sweden; Teachers' College Scholar, 1902-03; 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.

47 W. Colorado St.

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.

33 N. Euclid Ave.

MRS. JENNIE COLEMAN

Professor of English and History; Librarian

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

149 S. Madison Ave.

BONNIE BUNNELLE

Principal of Grammar School

Graduated P. W. Search Normal Training School, Sidney, O., 1891; student in Pueblo Industrial School, Pueblo, Colo., 1892-4; Instructor Public School, Pueblo, Colo., 1891-4.

252 S. Madison Ave.

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* Commencing school year 1904-5.

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

NORVAL GIBSON FELKER

Principal 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.

Alhambra

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, Académie Colarossi, Paris, France, 1900.

221 N. Euclid 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.

44 S. 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.

431 N. Fair Oaks Ave.

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 Grammar 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.

256 S. Madison Ave.

* PAUL BOEHNCKE

Instructor in German, Spanish and Latin

Student Frederich Wilhelm Gymnasium, Stettin, Germany, 1878-80; student Omaha High School, 1885-8; student University of Southern California, 1889-90; Architectural Draughtsman and Superintendent of Construction, 1893-7; student Boynton Normal, Los Angeles, 1898; Teacher, Public School, Elizabeth Lake, California, 1898-1900.

431 N. Fair Oaks Ave.

* * CLARA SOUTHWICK

Instructor in Grammar School Subjects

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

385 S. Euclid Ave.

ENOS J. NORRISH

Instructor in Mathematics

Graduate and Medallist Collegiate Institute, St. Catherine's, Ontario, Canada, 1883; graduated Ottawa Normal School, 1884; Principal Rockwood Public Schools, 1885-6; Teacher High School, Brockville, Ontario, 1887; Teacher St. Catherine's Collegiate Institute, 1888-94; Teacher Santa Ana Grammar and High Schools, 1895-1900; Holder Life High School Diploma, Ontario, Canada.

400 Kensington Place.

CLARA FRANCENA RANDALL

Instructor in Elocution and English

Graduated Boston University, Boston, Mass.; Instructor in Elocution and English, Leland and Grey Seminary, Townshend, Vermont, 1879; Instructor in Elocution, Vermont Female College and Conference Seminary, Montpelier, Vermont, 1879-81; Instructor in Elocution and English Literature, High School, Peoria, Illinois, 1881-89; Instructor in English Literature, High School, Rockford, Illinois, 1889-1901.

401 Oakland Ave.

HENRY HERBERT KLAMROTH

Instructor in Singing

B. S. and L. L. B., University of the City of New York, 1888 and 90; pupil of Carl Prox in Voice Culture, Harmony, etc., 1887-93; Choirmaster All Saints' Protestant Episcopal Church, Pasadena, 1899—.

373 S. Euclid Ave.

ANNIE HOLMES

Instructor in Grammar School Subjects

Student-teacher, National School, Holyhead, Wales, 1885-6; student in Normal Training Department, San Diego Commercial College, 1893-5; student, University of California, 1898-9; Instructor in San Diego County Schools, 1895-8 and 1899-1902.

60 S. Euclid Ave.

ERNEST ALLEN BATCHELDER

Instructor in Grammar School Drawing and Manual Arts

Graduated Massachusetts Normal Art School, 1899; Director of Drawing, Public Schools, Adams, Mass., 1899-1902; Instructor in Theory of Design, Harvard University, Summer Session, 1901.

335 N. Fair Oaks Ave.

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* Absent on leave, school year 1903-4, studying at Leland Stanford Jr. University.

* * Absent on leave, school year 1903-4.

HARRIET HOWELL

Instructor in Domestic Art

Graduated Decatur, Illinois High School; student Pratt Institute, 1893-4; Superintendent Domestic Art, Mechanics Institute, Rochester, N. Y., 1894-6; Superintendent Domestic Art, Kansas State Agricultural College, 1897-1902.

376 N. Raymond Ave.

JOSEPH GRINNELL

Instructor in Natural Science; 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. Marengo Ave.

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.

221 N. Euclid Ave.

* GEORGE LLOYD

Instructor in Physical Culture

B. L., Wheaton College, 1900; A. B., University of Illinois, 1902; Instructor in Physical Culture, High School, Fort Atkinson, Wisconsin, 1902-3.

CHITA KRAFT

Acting Instructor in Spanish and German

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

423 Lincoln Ave.

GRACE BALL

Acting Instructor in Grammar School Subjects

Graduated Los Angeles Normal School, 1902; Teacher in Public Schools, San Bernardino, 1902-3.

223 N. Raymond Ave.

HARRY TRUMBULL CLIFTON

Instructor in Mechanical Drawing and Physics

Ph. B., Sheffield Scientific School, Yale University, 1895; post graduate, Yale University, 1895-6; in Operating Department, New York Telephone Co., 1897-1900.

739 Yolo Ave.

WINIFRED WILSON

Instructor in Latin

Student Lake Erie College, 1896; Instructor in Latin, Lodi, Ohio, High School, 1896-9; Instructor in Latin, Sidney, Ohio, High School, 1899-1902.

274 N. Raymond Ave.

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* Resigned December, 1903.

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., San Francisco, Cal., 1903; student in General Gymnastics with M. C. O'Brien, San Francisco, Cal., 1902-3; member American Physical Directors.

Cor. Belvidere St. and El Molino Ave.

FRED RALLS WOODBURY

Assistant Instructor in Wood Working

Graduated Academy, Throop Polytechnic Institute, 1902.

425 S. Euclid Ave.

IDA MAY NYCE

Assistant Instructor in Manual Arts

Graduated High School, Reading, Pa., 1896; graduate student same, 1896-7; graduated Philadelphia Training School for Kindergartners, 1901; Assistant Kindergartner in Settlement Work, Philadelphia, Pa., 1901-2.

1347 Garfield Ave.

EDWARD SPAULDING WARREN

Musical Director Mandolin and Guitar Club

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

351 Congress St.

FACULTY COUNCIL

W. A. EDWARDS, Chairman

BONNIE BUNNELLE	R. E. FORD
A. H. CHAMBERLAIN	W. K. GAYLORD
MRS. JENNIE COLEMAN	L. H. GILMORE

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* Appointed December, 1903.

EAST HALL

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 to students of both sexes and of all religious opinions a liberal and practical education, which, while thoroughly Christian, should be absolutely non-sectarian in character. A clause of the charter provides that a majority of the Board of Trustees "shall not belong to any one religious denomination or sect, and the institution shall be maintained and administered as an undenominational and non-sectarian school."

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.

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 Grammar School, the Academy, the Commercial School, the Normal School and the College.

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 Institute is included in the list of schools accredited by the State University. The Leland Stanford Jr. University accepts 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 4:10 in the afternoon, with an intermission from 12:10 to 1:15. 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 students from the Institute whose work is unsatisfactory by reason of lack of diligence.

ATHLETICS

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

The athletic grounds include a basket-ball court, three tennis courts, a field for baseball and foot ball and an eight-lap training track.

SOCIETIES

A literary society, the Gnome Club, is maintained by the students of the Institute with the co-operation of the Faculty, and is doing good work. It affords an opportunity for training in debating, essay writing, declamation, extempore speaking, parliamentary practice, etc.

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

PUBLICATIONS

The Institute publishes each year a Catalogue, a Summer School Circular, and the Reports of the President of the Board of Trustees, the President of the Institute and the Secretary. Any of these may be obtained free of charge on application to the Secretary. 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.

OLIVE CLEVELAND FUND

Upon the death of Miss Olive Cleveland last year 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 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.

PRIZES

A first prize of ten dollars and a second prize of five dollars, offered by Mr. Geo. H. Coffin, are awarded each year to the first and the second best in a contest in declamation, held in commencement week, the contestants being selected from the students in the Academy. In 1903 the first prize was won by Walter Pittenger and the second by Lawrence Hampton.

TUITION

The tuition fee, the same in all departments, is $75 a year, payable in advance at the beginning of each term, as follows:

First term $30
Second term $30
Third term $15

Students in attendance less than a school year pay as follows: $30 per term for each entire term, and a proportionate share of $30, 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 a term.

No refund is made in the tuition of any student who may leave school before the end of the term for which he has paid.

Those taking but one period of study per day pay $12.50 per term; those taking but two periods per day are charged $25 a term. Full rates are charged for those who take more than two periods per day.

SHOP AND LABORATORY FEES

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

Chemistry	$5 00
Clay Modeling	1 25
Cooking, Academy	6 00
Coking, Grammar School	3 50
Cooking, Normal	6 00
Electrical Engineering	1 25
Forging	4 00
Free-hand Drawing and Painting, either or both	50
Manual Arts, Grammar Grades	1 50
Manual Arts, Normal	3 00
Natural Science	1 00
Pattern and Machine Shop	2 50
Physics	1 00
Sewing and 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.

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

DIPLOMA FEES

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

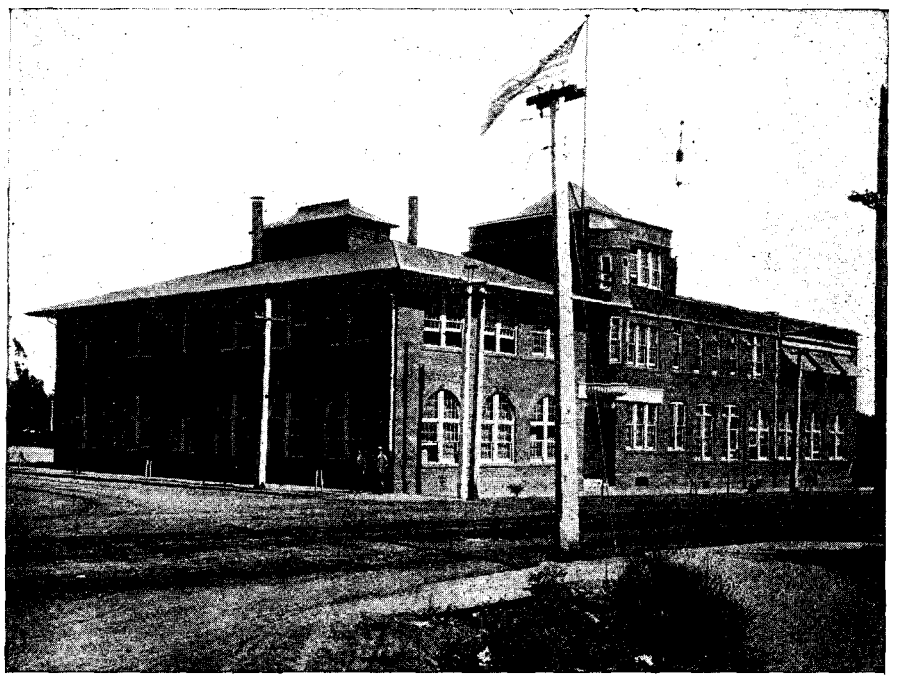
BOARD

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

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

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.



POLYTECHNIC HALL

BUILDINGS

POLYTECHNIC HALL

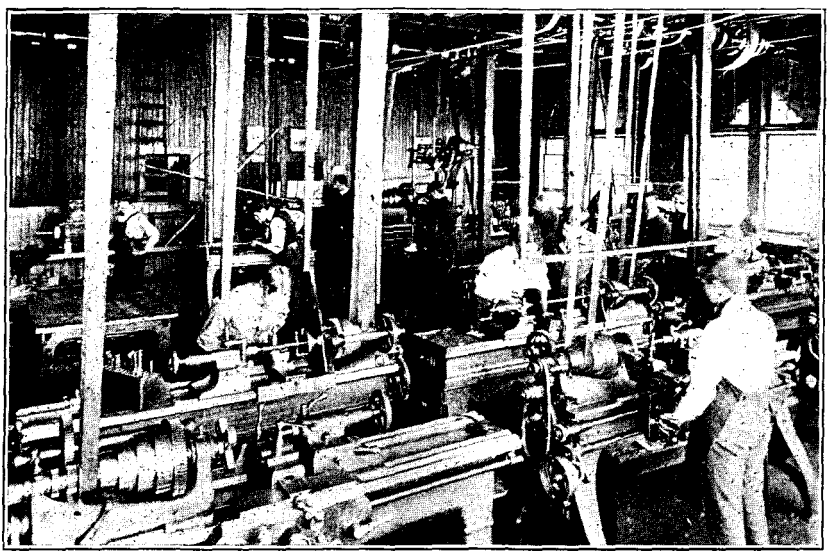
Polytechnic Hall is a two-story brick building with a front-

age of 148 feet on Fair Oaks avenue and 80 feet on Chestnut street. It contains the rooms described below:

WOOD SHOP

The wood shop, located on the second floor, is provided with twenty benches and turning lathes. The shop is also supplied with a large band saw, a fine jig-saw, a sand-papering machine for polishing surfaces, and a three-arbor circular saw built by the students in the several shops. Each bench has also a set of tools for general use.

Each student is provided with a locker, in which are kept the individual tools used in joinery and turning.



MACHINE SHOP

The machine shop is situated in a large room on the first floor and is finely equipped for elementary and advanced machine practice. It is fitted with the following machines of the latest style: Planer, shaper, drills, milling machine, emery grinder and a large number of lathes of various sizes. The tool room has a large assortment of general tools.

The power to run the different shops is furnished by a twenty horse-power motor, located in this department.

PATTERN SHOP

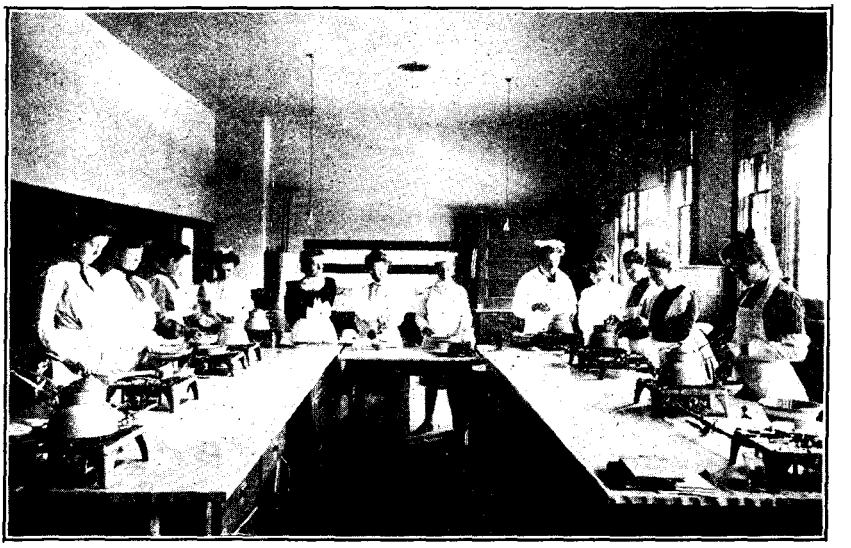
The pattern shop adjoins the wood shop, and has an equipment of lathes, etc., needed in making large and small patterns.

To increase the facilities of the pattern-shop a medium-sized brass furnace and a number of moulding benches are maintained,

enabling students to test their patterns by casting in brass or softer metals.

FORGING SHOP

The forging shop, situated on the first floor, is equipped for twenty-three pupils. The furnishings consist of five sets of Buffalo quadruple forges and three single forges, double emery grinders and drills, all operated by power. The anvils are furnished with all necessary tools for individual use and in addition there are sets of special tools for general use and for vise work.



COOKING ROOM

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

MANUAL ARTS ROOM, GRAMMAR GRADES

The grammar grade pupils have a commodious room, fitted with eighteen benches and the necessary hand tools for woodwork.

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.

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 the other art rooms of the institute.

LABORATORY OF GENERAL CHEMISTRY

MECHANICAL AND ARCHITECTURAL DRAWING ROOM

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

CHEMICAL LABORATORIES

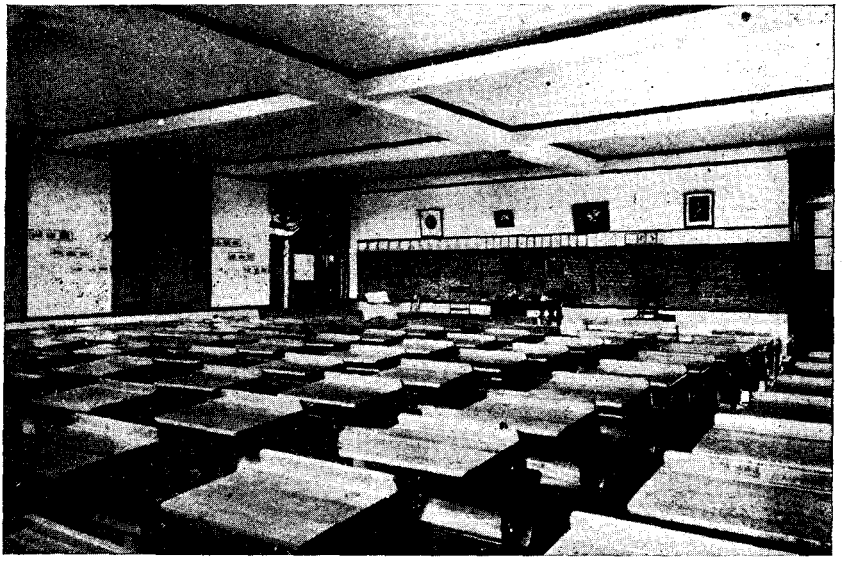
The laboratory for general chemistry is situated on the second floor and is furnished with the usual desks, hood, etc. The analytical laboratory is on the first floor, and contains commodi-

ous desks for ten students, well arranged for convenient work in qualitative and quantitative analysis.

Both laboratories are supplied with a good assortment of apparatus and chemicals, which are loaned to the students without charge, payment being required for the cost of articles not returned in good condition.

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



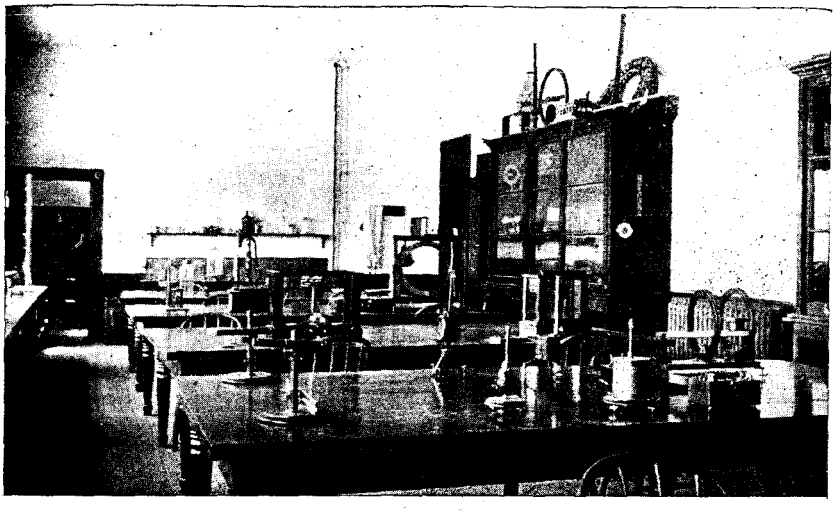
GRAMMAR SCHOOL

The entire lower floor of the west wing of East Hall is devoted to the Grammar 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.

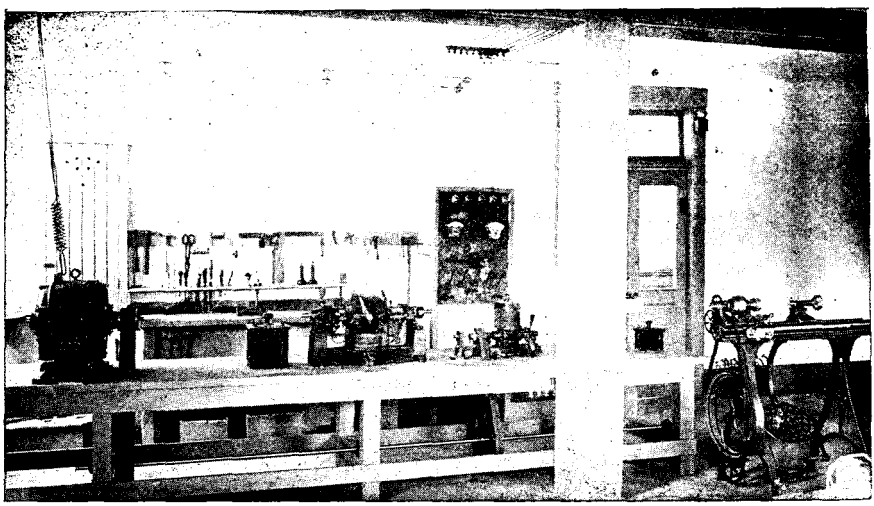
The Electrical Engineering Laboratory is a large room with cement floor, heavy piers of brick and cement, work-benches and cases. It is piped for gas and water and is wired for electric light and power. Here are found the facilities for precise work in advanced physics and electricity, in the solid foundations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



PHYSICAL LABORATORY

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, slidemeter 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 electra-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 for use in photometry adjoins the Electrical Engineering Laboratory.



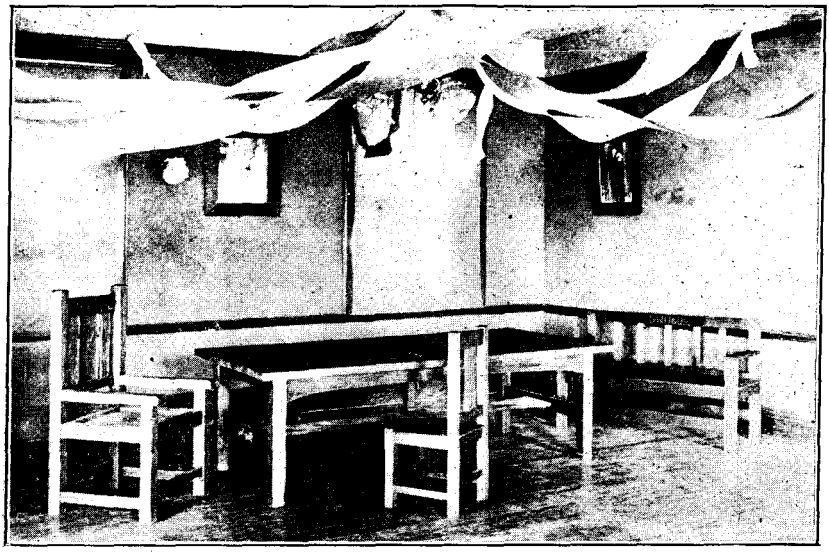
CORNER IN ELECTRICAL ENGINEERING LABORATORY

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

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.



FURNITURE DESIGNED AND BUILT BY STUDENTS

NATURAL SCIENCE LABORATORY

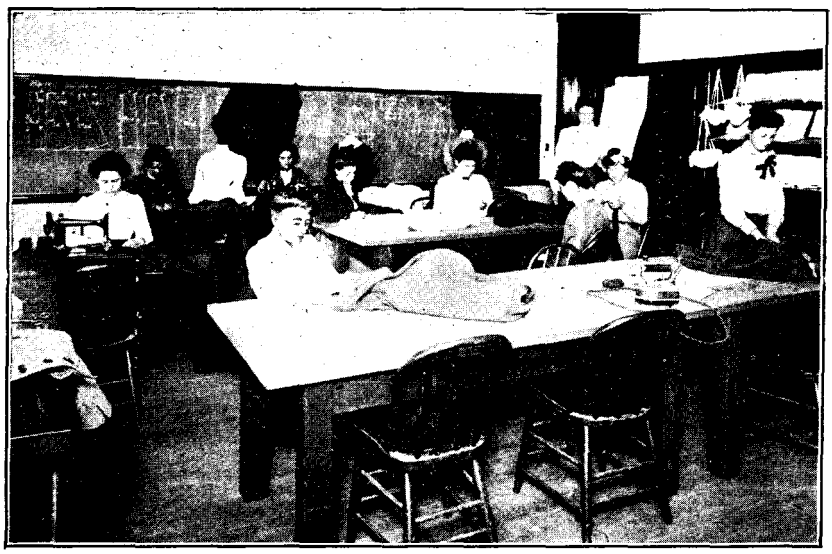
The Natural Science Laboratory is on the second floor. It faces the north and is lighted by large windows. There are tables, lockers, five glass aquaria, two observatory bee-hives, book-cases and shelves, with other accommodations necessary for the use of students in the different fields of natural science. Each table is supplied with its own gas burner.

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

There are good collections in mineralogy, botany, zoology and archaeology, mostly adapted to practical use of students and available for comparison and study. A large increase has lately been made by the purchase of the collection of the late Dr. John Dickinson of Los Angeles. Many books and specimens of the late Dr. E. W. Claypole have been added to the collections, most of which are arranged for reference in special sets of cases and drawers.

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.



SEWING ROOM

The sewing and garment-making room is well lighted, and is equipped with large tables, sewing machines, electric iron and pressing-board. Along two sides of the room are tables containing drawers for the individual use of the students in this department.

FREE-HAND DRAWING, PAINTING AND DESIGNING ROOMS

These rooms are fully equipped with all necessary appointments. The equipment is as follows: Adjustable desks, which can be transformed into tables or easels, at any angle desired; a large table with water connection adapted for mounting designs and grinding colors; blackboards for class demonstrations of perspective principles; a full line of wooden models, type solids from which first lessons in perspective are given; a case of bric-a-brac and objects of still-life furnishing material for sketches; a complete set of charts used in study of historic ornament and design;

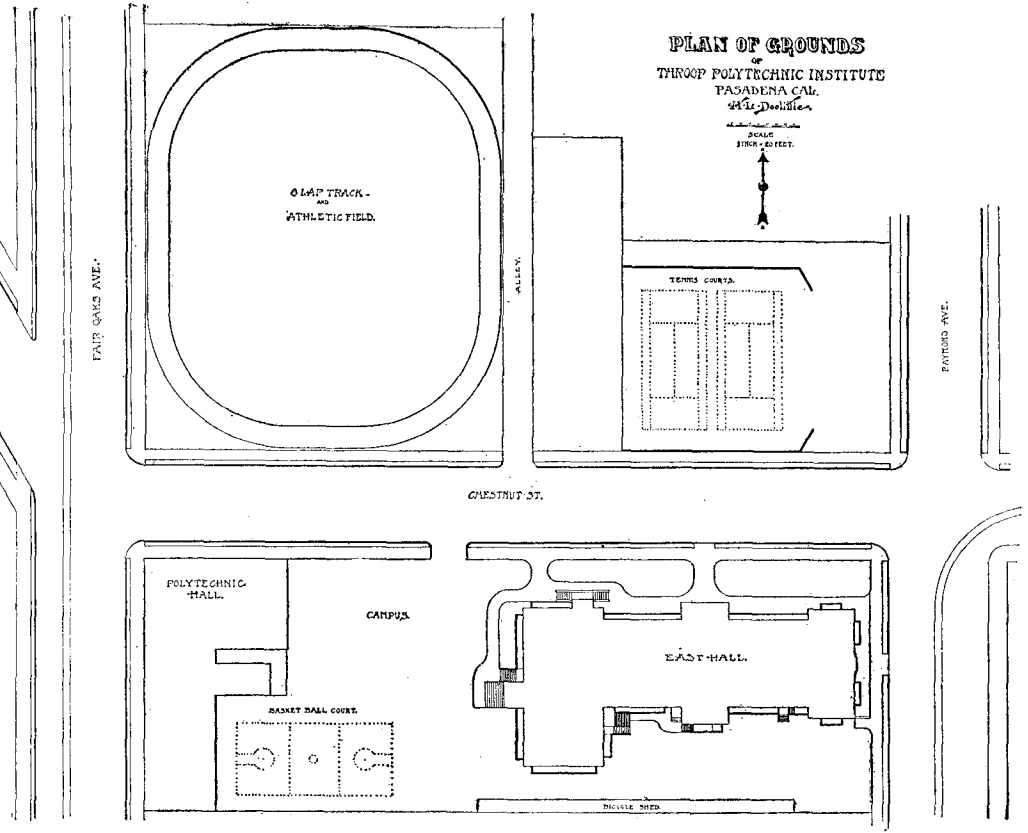
plaster casts of historic ornament, natural leaf forms, masks, heads and full-length figures which serve as models in the rendering of light and shade in charcoal drawings.

CLAY MODELING ROOM

The modeling room, located opposite the drawing room, is well equipped with models, casts of fruit, ornament, heads and full-length figures. Students are provided with revolving stands which are indispensable in the building up of a statuette in the round. Lockers are also provided for the preservation of students' work in clay.

GYMNASIUM

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



PLOTTED AND DRAWN BY STUDENT

SCHOOLS

GRAMMAR SCHOOL

REQUIREMENTS FOR ADMISSION

Pupils are admitted to this School who have completed the usual third year of the public school. All pupils not bringing certificates from other schools are required to pass an examination before being classified. The work, as arranged, consists of two lines—the ordinary book work and the manual work.

SCHEDULE OF WORK

PREPARATORY

Arithmetic. Fundamental operations. Walsh's Elementary Arithmetic.

English. Language lessons from The Mother Tongue, Book I, supplementary reading.

Geography and History. Elementary work with modeling.

Science. Elementary work in natural science.

Free-hand Drawing, Clay Modeling and Designing.

Writing. Vertical.

Manual Work. Cardboard construction, wood work.

Music. Vocal, theory and sight-reading.

FIFTH GRADE

Arithmetic. Review of fundamental operations, factoring, greatest common divisor, least common multiple, simple work in fractions. Wentworth's Practical Arithmetic.

English. Language lessons in The Mother Tongue, Book I Miss Harrison's In Story Land, supplementary reading, Rice's Speller.

Geography and History. Tarr and McMurry's Geography, First Book, with map drawing and modeling; Montgomery's The Beginner's American History.

Science. Elementary work in natural science.

Free-hand Drawing, Clay Modeling and Designing.

Writing. Vertical.

Music. Vocal, theory and sight-reading.

Manual Work. Cardboard construction, wood work and mechanical drawing.

SIXTH GRADE

Arithmetic. Fractions, denominate numbers completed. Wentworth's Practical Arithmetic.

English. Language lessons in The Mother Tongue, Book II, The Song of Hiawatha, Frank Carpenter's Geographical Reader, Rice's Speller.

Geography and History. Tarr and McMurry's Geography, Second Book, with map drawing and modeling; Montgomery's The Beginner's American History completed.

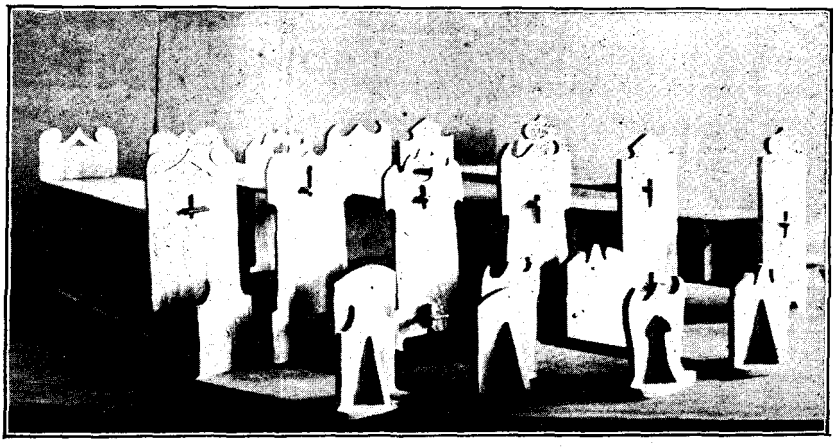
Science. Elementary work in natural science.

Free-hand Drawing, Clay Modeling and Designing.

Writing. Vertical.

Music. Vocal, theory and sight-reading.

Manual Work. Bench work and mechanical drawing, clay and pottery, sewing.



SLOYD WORK FROM ORIGINAL DESIGN, SEVENTH GRADE

SEVENTH GRADE

Arithmetic. Applications of percentage, proportion, powers and roots, using the algebraic equation. Wentworth's Practical Arithmetic completed.

English. Language lessons in The Mother Tongue, Book II, Evangeline, Chas. Dudley Warner's A Hunting of the Deer, Rice's Speller.

Geography. Geography completed with map drawing and modeling. Tarr and McMurry's Geography, Third Book.

Science. Elementary work in chemistry.

Free-hand Drawing, Clay Modeling and Designing.

Writing. Vertical.

Manual Work. Bench work and mechanical drawing, cooking, sewing, wood-carving.

EIGHTH GRADE

Arithmetic. Arithmetic reviewed, using the algebraic equation and introducing elementary geometry. Walsh's Higher Arithmetic.

English. Elements of grammar and analysis. Reed and Kellogg's Higher Lessons in English, Lady of the Lake, Six Selections from Sketch Book, Rice's Speller.

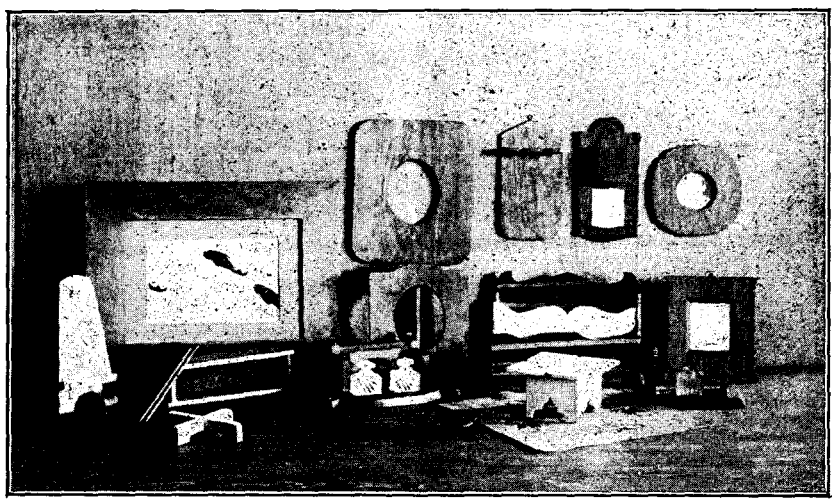
History. American history completed. Montgomery's The Leading Facts of American History.

Science. Elementary work in physics.

Free-hand Drawing and Designing.

Writing. Vertical.

Manual Work. Bench work and mechanical drawing, cooking, sewing, wood-carving.



EXAMPLES OF SLOYD WORK; FIFTH, SIXTH AND SEVENTH GRADES

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

Instruction in French by the conversational method may be elected by pupils in the seventh and eighth grades.

Systematic work in physical culture is given; all girls are required to take this course unless excused for cause.

The pupils of the preparatory, fifth and sixth grades spend forty-five minutes daily in manual work, the seventh and eighth grades, ninety minutes.

Each pupil's supplies, including those for book, art and manual work, need not cost over five dollars; those for manual work will be useful later in the Academy.

ACADEMY

REQUIREMENTS FOR ADMSSSION

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 I Plane Geometry I Latin 1 { Drawing, Free-hand { and Mechanical Manual Training	English 1 Algebra I Plane Geometry I { German 1, French 1, { or Latin 1 { Drawing, Free-hand { and Mechanical Manual Training	English 1 Algebra I Plane Geometry I Physical Geography { Drawing, Free-hand { and Mechanical Manual Training
SECOND YEAR	English 2 Algebra II Plane Geometry II Latin 2 { Drawing, Free-hand { and Mechanical Manual Training	English 2 Algebra II Plane Geometry II { German 2, French 2 { or Latin 2 { Drawing, Free-hand { and Mechanical Manual Training	English 2 Algebra II Plane Geometry II 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, or { French 1 Chemistry 1 Drawing Manual Training
FOURTH YEAR	History 3 and 4 { Zoology, Botany, { Chemistry 1, or { Physics 1 Latin 4 Drawing Manual Training	History 3 and 4 { Zoology, Botany, { Chemistry 1, or { Physics 1 { German 2, or { French 2 Drawing Manual Training	History 3 and 4 Mathematics 3 and 6 Physics 1 { German 2, or { French 2 Drawing

Arabic and Roman numerals in the above table refer to subjects outlined on pages 28 and 40.

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.

Work in physical culture is required of all girls and they are expected to provide themselves with suits for this purpose, which may be done at small expense.

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 56. Credits earned by college subjects will not be accepted toward graduation from the academy.

SUBJECTS AND METHODS OF INSTRUCTION IN THE ACADEMY

MATHEMATICS

1. Algebra I. Fundamental operations, simple equations, factors, fractions. Text-book: Hall and Knight's Algebra for Col-

leges and Schools. Three periods per week throughout the year.

2. Algebra II. Simultaneous equations, involution, evolution, theory of indices, surds, quadratic equations. Text-book as above. Three periods per week throughout the year.

3. Higher Algebra. Indeterminate equations of the first degree, inequalities, ratio, proportion, variation, arithmetical, geometrical and harmonical series, permutations and combinations, proof of binomial theorems for any index, logarithmic calculations, convergency and divergency of series, undetermined coefficients, continued fractions, summation of series, theory of equations with solution of cubics and biquadratics having commensurable roots, determinants. Text-book: Hall and Knight's Elementary Algebra, edition 1900, or Algebra for Colleges and Schools. Five periods per week first half year.

4. Plane Geometry I. Books I and II in Beman and Smith's New Plane and Solid Geometry. Two periods per week throughout the year.

5. Plane Geometry II. Books III, IV and V of text given above. Two periods per week throughout the year.

6. Solid Geometry. Course as given in Beman and Smith's New Plane and Solid Geometry. Five periods per week second 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 Con-

ciliation, 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

Four courses in history are offered; courses 3 and 4 are required of all students before graduating.

1. Ancient History. Eastern Nations, Greece and Rome, with special reference to the development of the institutions, and the growth and influence of the arts and literature of each. Text-book: Botsford, with collateral assigned reading. Five periods per week throughout the year.

2. Mediaeval and Modern History. Particular attention paid to institutional growth and social life of the people. Text-book: Adams' Mediaeval and Modern History, with reading of Emerson's Introduction to the Middle Ages, and Seebohm's Era of the Protestant Reformation. Five periods per week throughout the year.

3. American History. Special attention to development of the Constitution. Text-book: Montgomery's History of the United States. Five periods per week first two terms.

4. Civics. Text-book: John Fiske's Civil Government in the United States. 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. Collar and Daniell's First Latin Book. Five periods per week throughout the year.

2. Introduction To Roman Literature. The readings comprise selections from the Viri Romae, Cornelius, Nepos and 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 Grammar, Rolfe and Denison's Junior Latin Book, Dodge and Tuttle's Prose 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 New Cicero. Five periods per week throughout the year.

4. Vergil's Aeneid. Structure of the poem, with the theory and practise 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 der deutschen Sprache; Wenckebach's Glükauf. Five periods per week throughout the year.

2. Second Year Work. Exercises throughout the year in conversation, translation and composition. Text-books: Joynes-Meissner's German Grammar. Reading of standard German literature. 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: Whitney's Practical French Grammar. Guerber's Contes et Légendes. Five periods per week throughout the year.

2. Second Year Work. Special study of the syntax and idioms and practice in French conversation. Text-books: French Syntax and Composition, Bouvet; Abbé Constantin, Ludovic Halévy; Le Voyage de Monsieur Perrichon, Labiche and Martin; Les Trois Mousquetaires, Dumas. Five periods per week throughout the year.

3. Third Year Work. Reading, composition and conversation. Text-books: French Syntax and Composition, Bouvet; Columba, Prosper Mérimée; Pecheur d'Islande, Pierre Loti; La Chute, Victor Hugo; Le Cid, Corneille; selected plays of Racine and Moliere. Five periods per week throughout the 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: Garner's Spanish Grammar, Worman's Spanish Readers. 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. Five periods per week throughout the year.

NATURAL SCIENCE

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, crayfish, 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

1. 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.

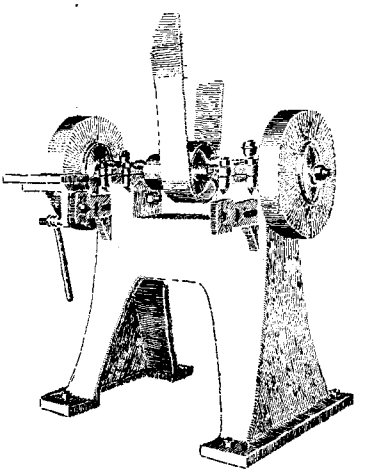
Text-books: Hessler and Smith's Essentials of Chemistry and Laboratory Manual. Preparation required: Algebra I, Plane Geometry I, English 1. Students are strongly advised to defer beginning chemistry until the third year of their academy course.

PHYSICS

1. 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 reqired: Algebra I and II, Plane Geometry I and II. 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.



DRAWN BY STUDENT

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. Five periods per week throughout the year.

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 perspectives; application of simple shadows. Five periods per week first or second half-year.

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.

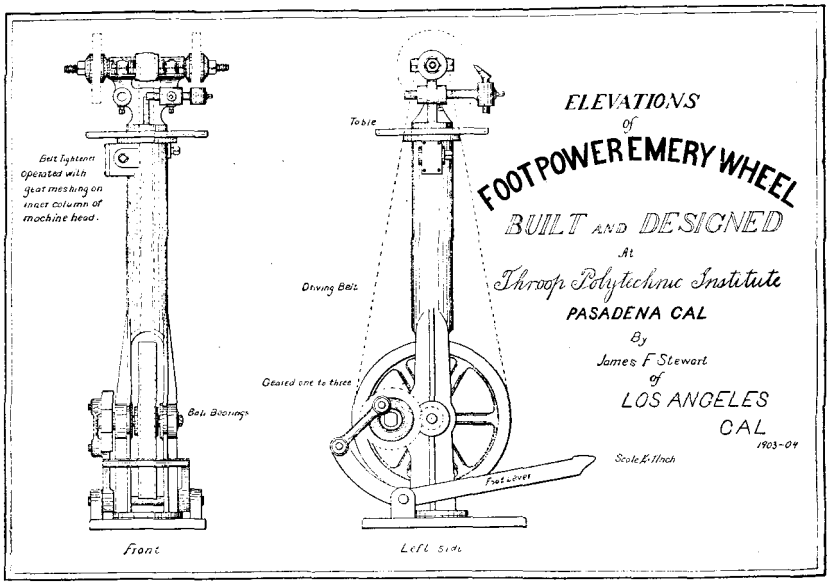
4. Kinematics. Mechanical movements, external and internal epicycloidal and involute gears, spur gears, bevel gears cams, eccentrics and useful geometric problems in connection therewith. Five periods per week throughout the year.

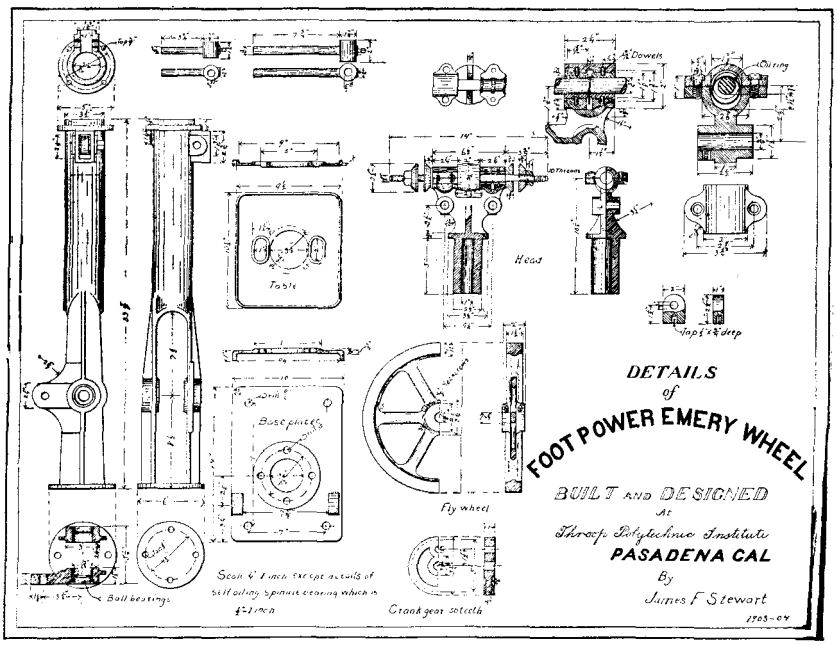
Special courses may be planned to meet the needs of advanced students.

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.

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





DRAWINGS BY STUDENT

TYPICAL MODELS IN WOOD-WORKING

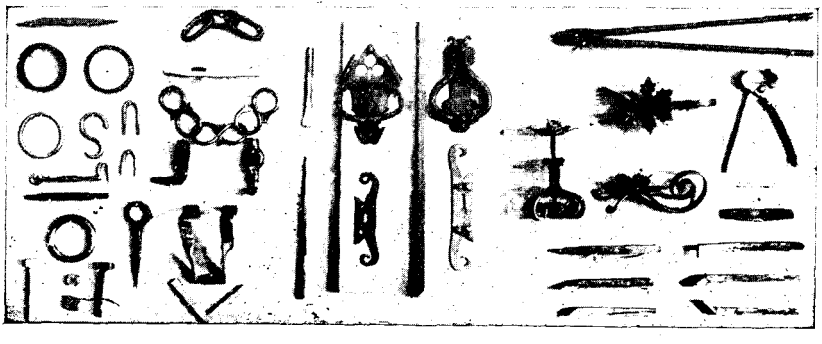
The course in turning consists of progressive exercises involving center, face-plate, chuck-work and inside turning. Ten periods per week throughout the year.

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

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



TYPICAL MODELS IN FORGING

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 or 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 brought into the course during the year, preparatory to the more elaborate piece made at the close of the year. Preparation required: Wood Work, Algebra I, and Plane Geometry I. 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.

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 and brass furnace. Some work in molding is required of every student.

Preparation required: Algebra I and II, Plane Geometry I and II, 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 and Machine-shop Practice I. Ten periods per week first term.

5. Machine-shop Practice I. In bench and vise 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

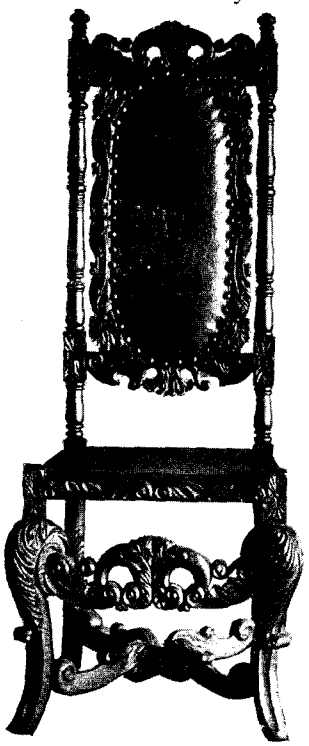
themselves with calipers and scale. Preparation required: Pattern-making I. Ten periods per week last two terms.

6. Machine-shop Practice II. This course and Pattern-making II continue the work begun in the previous courses, and embrace exercises illustrating more complicated processes and a large amount of practical work an 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: Pattern-making II. Ten periods per week last two terms.

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.



STUDENT'S WORK IN WOOD-CARVING

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 fruits, flowers and sprays of foliage from nature and cast; different styles of historic ornament from cast, and original designs; portrait relief from cast; mask and head from cast; animals, such as Barye's lions and

panthers. Ten periods per week throughout the year.

2. Advanced Modeling. Modeling portrait busts from cast; full-length figure from cast; portrait busts from life; lectures on antique and modern sculpture. Ten periods per week throughout the year.

STUDENT MODELING—DRAWN BY STUDENT

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 pupil is required to keep a note-book in which she records a description of the work accomplished.

1. Plain Sewing. The pupil makes a book of models, covering the full course in hand sewing and consisting of basting, *hemming, gathering, darning, patching, machine practice,* drafting, cutting and making underskirts and drawers; drafting, fitting and making dress without lining and shirt waist; cutting from paper patterns and making corset cover and night dress. The materials for the models are furnished by the school. Materials for the garments are furnished by the pupil, who makes the garments for herself. Free-hand Drawing 1 must be taken either previous to this course or in the same year with it. Ten periods per week throughout the year.

2. Dressmaking. The use of a dress-cutting system is taught, and each pupil will be required to draft, cut, and make a woollen dress for herself. Preparation required: Plain Sewing. Free-hand Drawing 2 must be taken previous to Dressmaking or in the same year with it. Ten periods per week first half year.

3. Millinery. Renovating felt and straw hats, velvets, silks, and ribbons; trimming and wiring hats; cutting and putting on facings, both plain and shirred; fold and bow making; practice trimming; making wire and buckram frames, sewing straw, making and trimming final hat. Pupils will be expected to bring in two old hats, one felt and one straw, for practice work. Preparation required: Plain Sewing. Ten periods per week second half year.

DOMESTIC SCIENCE

3. 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, luncheons, and dinners.

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

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

Special lectures on Chemistry of Cookery and on Bacteriology.

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

1. 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 and general athletics. Most of this work is given in the open air.

There are separate classes for girls and for boys, and all girls are required to take the course unless excused for cause. Ample time is allowed for change of costume.

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

COMMERCIAL SCHOOL

REQUIREMENTS FOR ADMISSION

Students having passed in the studies of the eighth grade are admitted to the courses of 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 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. Type-writing and penmanship may be taken either in the first or second year of the course.

FIRST YEAR	Bookkeeping 1 English and Spelling Arithmetic 1 Penmanship 1 Stenography 1	SECOND YEAR	Bookkeeping 2 Stenography 2 History Civil Government Commercial Law 1 Finance 1 Typewriting 1

SUBJECTS AND METHODS OF INSTRUCTION IN THE COMMERCIAL SCHOOL.

BOOKKEEPING

1. 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, and auxiliary books in retailing and wholesaling.

(c) Conducting 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 the beginning is inducted into and practices the duties of an office accountant. Five periods per week throughout the year.

2. Special Bookkeeping. (a) Single entry, retailing changed to double-entry books and continued in use of customer's ledger.

(b) Commission books, most modern form.

(c) Manufacturing books, voucher system.

(d) Banking, a full set of books, papers and vouchers illustrating a first-class national bank, in all its daily routine, with settlements with other banks through the clearing house. During the course the student devotes some time to the practical work of banking before taking up our ideal set of bank books.

Ten periods per week throughout the year.

STENOGRAPHY

1. Amanuensis Stenography. (a) Class and private instruction in the principles of shorthand writing.

(b) Writing from dictation, and reading the notes.

Text-book: Manual of Phonography, Pittman and Howard. Five periods per week throughout the year.

2. General Stenography and Court Reporting. (a) Writing from dictation and reading notes.

(b) Special speed drill, to acquire the ability to write rapidly and read readily.

(c) Drill in amanuensis work.

(d) Drill in court and general reporting.

Ten periods per week throughout the year.

TYPEWRITING

1. Theoretical and Practical Typewriting. (a) Thorough drill in the touch method.

(b) Drill in business and legal forms, manifolding, etc.

(c) Drill in doing the work of the various teachers of the Institute and the incidental work of the school.

Five periods per week throughout the year.

CIVIL GOVERNMENT

1. Introduction to the Study of Commercial Law. Text-book: Fitch's New Civil Government. Five periods per week during the first term.

COMMERCIAL LAW

1. Elementary Commercial Law. Text-book: Parkinson. Five periods per week during the second term.

FINANCE

1. Finance. Text-book: First Lessons in Finance, Cleveland. Five periods per week during the third term.

ARITHMETIC

1. 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.

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

PENMANSHIP

1. Plain Penmanship. (a) Study of the science.

(b) Practice of plain penmanship, from blackboard illustrations and written copies, for ease, uniformity, legibility and speed.

(c) Writing from copies and from dictation, bills, invoices, etc.

Five periods per week throughout the year.

ENGLISH AND SPELLING

1. 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, Williams and Rogers. Five periods per week throughout the year.

HISTORY

5. United States History. This course is arranged with a view to meeting the special needs of Commercial students. 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.

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.

COURSES OF STUDY IN THE NORMAL SCHOOL

		MANUAL TRAINING	DOMESTIC ECONOMY	FREE-HAND DRAWING AND DESIGNING
FIRST YEAR	FIRST HALF	Psychology Free-hand Drawing 5 Mechanical Drawing 5 Manual Training 1	Psychology Free-hand Drawing 6 Mechanical Drawing 5 Applied Biology Cooking II Sewing I Physical Culture	Psychology Free-hand Draw. 6 and 7 Mechanical Drawing 5 Clay Modeling 3 Physical Culture
	SECOND HALF	Psychology Free-hand Drawing 5 Mechanical Drawing 5 Manual Training 1 Clay and Pottery 5	Psychology Free-hand Drawing 6 Applied Biology Cooking II Sewing I Physical Culture	Psychology Free-hand Draw. 6 and 7 Mechanical Drawing 5 Clay Modeling 3 Physical Culture
SECOND YEAR	FIRST HALF	Pedagogy Free-hand Drawing 7 Manual Training 2 and 3 Theory and Methods Practice Teaching	Pedagogy Free-hand Drawing 7 Cooking III Sewing II Theory and Methods Practice Teaching Physical Culture	Pedagogy Free-hand Drawing 8 Clay Modeling 4 Theory and Methods Practice Teaching Physical Culture
	SECOND HALF	History of Education Manual Training 3 and 4 Wood Carving 3 Theory and Methods Thesis	History of Education Free-hand Drawing 7 Cooking III Sewing II Theory and Methods Practice Teaching Physical Culture Thesis	History of Education Free-hand Drawing 9 Clay Modeling 4 Theory and Methods Practice Teaching Physical Culture Thesis

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, practical work, and lectures.

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.

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. Theory and Methods. Methods of teaching the special subjects in the department in which the student is working. Organization, equipment and management of departments and schools, etc. Investigation of schools and methods.

5. Practice Teaching. Practice is given in teaching pupils of the various primary and grammar grades, under the supervision of the department directors and the principal of the Normal School. About sixty public-school pupils attend the Institute a part of the day and constitute the practice school.

FREE-HAND DRAWING

5. Pure and Applied Design. This course will give practice in the elements of pure design (first term) to be followed (second term) by applied design in working out problems for elementary wood construction, wood carving, iron work, etc., also design problems suitable for pottery forms. The aim throughout will be to show a natural correlation between design upon the one hand and the various constructive problems upon the other.

6. Design and Composition. The principles of design and composition as applied to straight and curved line designs; landscape composition; surface patterns; book covers; wood, metal and textile designs.

DRAWN BY STUDENT

7. Principles of Perspective. Drawings and sketches artistically rendered to illustrate the principles of cylindric, rectangular and oblique perspective; model and blackboard drawing; brush work; charcoal; designing; history of art; lectures on historic ornament, sculpture and painting.

8. Drawing in Charcoal. Still-life and cast; head and full-length figure from cast; pose drawing, thirty-minute sketches from life.

9. Water Color. Studies of flowers and still life, also applied design; history of art; lectures on the history of architecture, sculpture, painting and ornament.

MECHANICAL DRAWING

5 General Course. Principles of working drawings, plans, elevations, sections, scales; orthographic and isometric projections; perspective; architectural drawing; domestic architecture; tracing, lettering and blue-printing.

DOMESTIC SCIENCE

3. Cooking II. Foods. History of food products, practical work in cooking and serving breakfast, dinner and luncheons. Applied Biology and Cooking II must be taken in the same year.

4. Cooking III. (a) Chemical and physiological classification of foods; evolution of the home; dietaries; a study of national foods; home and public hygiene.

(b) Bills of fare; the dish and table decoration; dietaries; food adulterations.

DRAWN BY STUDENT

DOMESTIC ART

4. Plain Sewing. The pupil makes a book of models covering the full course in hand sewing, and consisting of basting, hemming, gathering, darning, patching, machine practice, drafting, cutting and making underskirt and drawers; drafting, fitting and making dress without lining and shirt waist; cutting from paper patterns and making corset cover and night dress. The materials for the models are furnished by the school. Materials for the garments are furnished by the pupil, who makes the garment for herself. Free-hand Drawing 1 must be taken either previous to this course or in the same year with it. Ten periods per week throughout the year.

5. Dressmaking. The use of a dress-cutting system is taught, and each pupil will be required to draft, cut and make a woollen dress for herself. Preparation required: Plain Sewing. Ten periods per week first half year.

6. Millinery. Renovating felt and straw hats, velvets, silks and ribbon; trimming and wiring hats; cutting and putting on

facings, both plain and shirred; fold and bow making; practice trimming, making wire and buckram frames, sewing straw, making and trimming final hat. Pupils will be expected to bring in two old hats, one felt and one straw, for practice work. Preparation required: Plain Sewing. Ten periods per week second half year.

NATURAL SCIENCE

12. Applied Biology. This course is required of first-year students in Domestic Science and is planned to give a broad and thorough foundation for the special chemistry, physiology, and other sciences studied in connection with the advanced work.

The course is divided into three parts: Zoology, Botany, and Physiology, one term being devoted to each subject. In the Zoology it is wished to give a good knowledge of the fundamental structure of the animal body with its many different forms. Special consideration will be paid to the feeding and other habits of animals that fit or unfit them for food.

In the Botany there is a similar aim, and those phases of plant life are dealt with that will give an intelligent understanding of the special economic points to be considered later. Besides a brief consideration of fungi, the course will include a few weeks of practical Bacteriology, largely a study of the causes and conditions of fermentation and decomposition.

In the third term the details of structure learned will be applied to a study of the human body with special reference to its action as a most complex delicate machine, including experiments in digestion and nutrition. The work will occupy two periods a day for the year.

MANUAL TRAINING

1. Elementary Manual Training. Work suitable for the Primary Grades. Paper construction; weaving and textiles; basketry with raffia, reed, and native materials; wire work; thin wood processes. Constant reference will be made to the design and thought sides as well as to the constructive phases. The connection of the work with the problems of real life will be discussed.

2. Work for Grammar Grades. This course deals mainly with the problem of bench work in wood. Cardboard work, bent iron work and decorative carving will be taken up. A number of suggested models are made, such as are suitable for the grammar grades, and in addition each student designs and constructs original models.

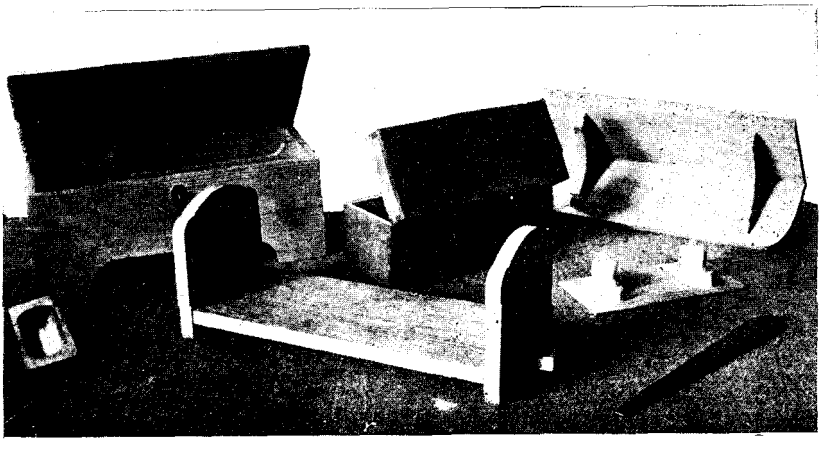
3. Advanced Course. This is a special course in secondary school-work, comprising advanced work in joinery and cabinet making, inlaying, veneering, wood turning, forging and finishing.

4. History, Philosophy, and Methods in Manual Training. This course will run parallel with the practical work taken up and will consider the object and place of manual training; relative value of the different phases and processes of hand work and their adaptability to the various grades of the elementary school; the organization, equipment, and supervision of departments and schools.

DRAWN BY STUDENT

WOOD CARVING

3. Normal Course. Elementary work in exercises and small articles 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.



TYPICAL MANUAL TRAINING MODELS—NORMAL SCHOOL

CLAY MODELING

3. Normal Modeling I. Modeling of fruits, flowers, etc., from nature and cast; ornament and plant forms; head from cast

in relief and in the round.

4. Normal Modeling II. Modeling full-length figure from cast; portrait bust from life.

5. Clay Modeling and Pottery. Dealing with natural forms, fruits, etc. The industrial and art sides brought out through the more common pottery forms; work both by hand and at the wheel.

PHYSICAL CULTURE

2. Physiology of Exercise and Work in Gymnasium. Consideration of organs of work, local and general fatigue, breathlessness, muscle stiffness, overwork and its effects, power of resisting fatigue, effects of different kinds of exercise, office of brain and nervous system in muscle work, etc.

Practical talks will be given to students on class drill in calisthenics, remedial and corrective gymnastics, history of physical training, and classified exercises.

In addition to theory, students will also be given such practice as will enable them to do light work in teaching and the prescription of exercise.

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 27; 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 2, and any ten of the following subjects, as outlined on pages 28 to 33: 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 3 and 6. 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 or Manual, earned by each subject are indicated in the tabulated statements on pages 56 and 58.

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, pages 28 to 40 and 50 to 55.

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

	CHEMISTRY	ELECTRICAL ENGINEERING	NATURAL SCIENCE
FIRST YEAR	Chemistry 1 Mathematics 7, 8 English 4 French 1, or German 1	Physics 2 Mathematics 7, 13 English 4 Drawing—Mechanical Shop-work 1	Vertebrate Anatomy and Physiology Physics 1, or Chem. 1 French 1, or German 1 English 4
SECOND YEAR	Chemistry 2, 3, 4 Physics 2 Mathematics 9 French 2, or German 2	Electrical Engineering 1 Mathematics 9 Chemistry 2, 3, 4 Drawing—Mechanical Shop-work 2	Vertebrate Embryology Chemistry 2, 3, 4 French 2, or German 2
THIRD YEAR	Chemistry 5, 6, 7 Mathematics 10 Mineralogy	Electrical Engineering 2, 3 Mathematics 10 Drawing—Mechanical Shop-work 3, 4	Systematic Vertebrates Entomology Mineralogy
FOURTH YEAR	Chemistry 8, 9, 10	Electrical Engineering 4, 5 Mathematics 14	Geology Ecology Ornithology Bacteriology

SUBJECTS AND METHODS OF INSTRUCTION IN THE COLLEGE

MATHEMATICS

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

7. 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.

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

(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.

(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.

9. Analytic Geometry. Analytic Geometry of two dimensions, Analytic Geometry of three dimensions. Five periods per week throughout the year.

10. Calculus. Differential and Integral Calculus. Five periods per week throughout the year.

11. 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. Alternating Currents. Mathematical theory of alternating currents in electricity. Five periods per week throughout the year.

13. Descriptive Geometry. Five periods per week throughout the year.

14. 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 II Spenser's Faerie Queen, Bacon's Essays, Lodge's Rosalind, Thayer's Best Elizabethan Plays (except Duchess of Malfi), Pilgrim's Progress, Milton's Paradise Lost—Books I and II, Sheri-

dan's Rivals. Preparation required: English 4. Five periods per week throughout the year.

LATIN

1, 2, 3 and 4, as outlined on pages 30 and 31.

GERMAN

1 and 2, as outlined on page 31.

FRENCH

1, 2 and 3, as outlined on page 31.

EDUCATION

1, 2 and 3, as outlined on pages 44 and 45.

NATURAL SCIENCE

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

4. Vertebrate Anatomy and Physiology. This course requires a detailed study, by dissection, of the anatomy of selected vertebrates, such as the skate, frog, bird and cat. Experiments are made to ascertain the functions of the various animal 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: Courses 1, 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 value. The important relation of birds to agriculture is investigated 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 1, 2. 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, 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 effects 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, 3. Five periods per week throughout the year.

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

11. Geology. This course deals first with the surface features of the earth and the great agents of construction and destruction now going on. Later in the year a study of the geological succession of rocks and the plants and animals represented, is undertakin. The work is carried on in the recitation room, laboratory and field. Preparation required: Courses 1, 2, Physics 1, Chemistry 1. Five periods per week throughout the year.

CHEMISTRY

1. Course outlined on page 32.

2. Qualitative Analysis. Qualitative analysis is reviewed and completed in the second year. The work consists of the analysis of unknowns of fairly complicated nature, including minerals and industrial products. The laboratory work is accompanied by critical study of the processes used. Text-book: A. A. Noyes' Qualitative Chemical Analysis. Students are also advised to procure Prescott and Johnson's Qualitative Analysis. Preparation required: Chemistry 1 and Physics 1. Ten periods per week for twenty-four weeks.

3. Inorganic Preparations. Method of preparation and purification of inorganic chemicals, starting with raw materials. Tests for impurities. Discussion of reactions. Preparation required: Chemistry 2. Eight periods per week for twelve weeks.

4. Theoretical Chemistry. Important points of the theories of chemistry. Text-book: Remsen's Theoretical Chemistry. Preparation required: Chemistry 2. Two 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-books: Remsen's Organic Chemistry, Noyes and Mulliken's Class Reactions of Organic Compounds. Preparation required: Chemistry 2, 4. Two periods per week throughout the year. Laboratory work eight periods per week for eighteen weeks.

6. Quantitative Analysis I. Typical determinations in gravimetric and volumetric analysis. Discussion of methods and solution of stoichiometrical problems. Text-book: Talbot's Quantitative Analysis. Preparation required: Chemistry 2. Ten periods per week for eighteen weeks.

7. Assaying. Fire assay for gold, silver and lead. Volumetric assay for copper and silver. Preparation required: Chemistry 6. 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 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: Natural Science 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.

Theory of Physics by Ames, 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

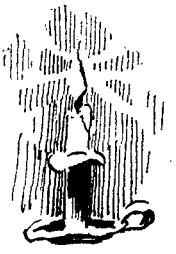
course to give a thorough grounding in the principles of electricity and magnetism to serve as a foundation for the following courses in electrical engineering. Instruction is given by study of the text with references to books in the library and by work in the laboratory comprising chiefly such experiments as determination of horizontal components of the earth's magnetism and galvanometer constants; measuremnt 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 7. Ten periods per week throughout the year.

2. Power Measurements. Theory and use of steam engine indicator, cradle dynamometer and Prony brake; efficiency tests of dynamos and motors photometry. Text-book: A Laboratory Manual of Physics and Applied Electricity, Nichols, Vol II, Part I. Preparation required: Electrical Engineering 1. Ten periods per week first half year.

3. Dynamo Design: The derivation and practical application of the formulas used in the design of dynamos and motors. Text-book: Dynamo Electric Machines, Wiener. Preparation required: Electrical Engineering 1. 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. Text-books: Alternating Currents, Franklin and Williamson; A Laboratory Manual of Physics and Applied Electricity, Nichols, Vol. II, Part II. Preparation required: Calculus and Electrical Enginering 3. Ten periods per week first two terms.

5. Electrical Transmission and Distribution of Power. 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 engaged in commercial electrical work. Preparation required: Electrical Engineering 4. Ten periods per week last term.



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 I	Rec.	3	36	1.3 G	
Algebra II	Rec.	3	36	1.3 G	Algebra I
Higher Algebra	Rec.	5	18	1. G	Algebra II
Plane Geometry I	Rec.	2	36	1. G	
Plane Geometry II	Rec.	2	36	0.7 G	Plane Geometry I
Solid Geometry	Rec.	5	18	0.7 G	Plane Geometry II
Trigonometry	Rec.	5	18	1. G	Alg. I and Solid Geom.
English 1	Rec.	5	36	2. G	
English 2	Rec.	5	36	2. G	English 1
English 3	Rec.	5	36	2. G	English 2
English 4	Rec.	5	36	2. G	English 3
Elocution					
History 1	Rec.	5	36	2. G	
History 2	Rec.	5	36	2. G	
History 3	Rec.	5	24	1.3 G	English 3
History 4	Rec.	5	12	0.7 G	History 3
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
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
Spanish 1	Rec.	5	36	2 G	
Spanish 2	Rec.	5	36	2. G	Spanish 1
Physical Geography	Rec.	5	36	2. G	
Zoology	Lab. / Rec.	10	36	2. G	
Botany	Lab. / Rec.	10	36	2. G	
Chemistry 1	Lab. / Rec.	7 / 3	36	2 G	Algebra I, II, Geom. I, II, English 2
Physics 1	Lab. / Rec.	7 / 3	36	2. G	Algebra I, II, Geom. I, II, English 2
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
Mech. Drawing 1	Draw.	5	18	0.5 M	
Mech. Drawing 2	Draw.	5	18	0.5 M	Mech. Drawing 1
Mech. Drawing 3	Draw.	5	36	1. M	Mech. Drawing 2
Mech. Drawing 4	Draw.	5	36	1. M	Mech. Drawing 3
Wood Work	Shop	10	36	2. M	
Forging	Shop	10	36	2. M	Wood Work
Pattern-shop Practice I.	Shop	10	18	1. M	Forging and Pl. Geom. II
Pattern-shop Practice II.	Shop	10	18	1. M	Machine-shop Prac. I
Machine-shop Practice I.	Shop	10	18	1. M	Pattern-shop Prac. I
Machine-shop Practice II	Shop	10	18	1. M	Pattern-shop Prac. II
Plain Sewing	Shop	10	36	2. M	Freehand Drawing 1
Dressmaking	Shop	10	18	1. M	Plain Sew., F. Draw. 2
Millinery	Shop	10	18	1. M	Freehand Drawing 1
Cooking	Shop	10	36	2. M	
Clay Modeling 1	Shop	10	36	2. M	
Clay Modeling 2	Shop	10	36	2. M	Clay Modeling 1
Wood Carving 1	Shop	10	36	2. M	
Wood Carving 2	Shop	10	36	2. M	Wood Carving 1
Physical Culture	Gym.	5	36	1. M	Required of all girls

1. Com. Geog + 2
2. Com. Law + 2
3. Arithmetic + 2
4. U.S. Hist + 2
5. } Book Keeping + 2/10
6. }
7. } Study.
8. }

COMMERCIAL SCHOOL

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

NORMAL SCHOOL

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Psychology	Rec.	5	36	2. G	English 3, History and 4
Pedagogy	Rec.	5	18	1. G	Psychology
History of Education	Rec.	5	18	1. G	Pedagogy
Theory and Methods	Rec.	5	36	2. G	Psychology and Pedagogy
Practice Teaching	Teach.	5	36	2. G	
Freehand Drawing 5	Draw.	5	18	0.5 M	
Freehand Drawing 6	Draw.	10	36	2. M	
Freehand Drawing 7	Draw.	10	36	2. M	
Freehand Drawing 8	Draw.	15	18	1.5 M	
Freehand Drawing 9	Draw.	5	18	1.5 M	
Mechanical Drawing 5	Draw.	5	36	1. M	
Applied Biology	Lab. Rec.	10	36	2. G	
Cooking II	Rec. Cook.	13	36	2.6 M	
Cooking III	Rec. Cook.	8	36	1.6 M	
Sewing I	Sew.	10	36	2. M	
Sewing II	Sew.	10	36	2. M	
Manual Training 1	Shop	18	36		
Manual Training 2	Shop	15	36	3. M	
Manual Training 3	Shop				
Manual Training 4	Shop				
Wood Carving 3	Shop	10	18	2 M	
Clay Modeling 3	Shop	8	36	1.6 M	
Clay Modeling 4	Shop	8	36	1.6 M	
Clay Modeling 5	Shop	5	18	0.5 M	
Physical Culture 2	Rec. Gym.	2	36	0.5 M	

COLLEGE

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Surveying	Field / Rec.	10	36	2. G	Trigonometry
Analytic Geometry	Rec.	5	36	2. G	Trigonometry
Calculus	Rec.	5	36	2. G	Analytical Geometry
Differential Equations	Rec.	5	36	2. G	Calculus
Descriptive Geometry	Rec. / Draw.	5	36	2. G	Solid Geometry
Mechanics	Lab. / Rec.	10	36	2. G	Calculus
English 5	Rec.	5	36	2. G	English 4
Vertebrate Anatomy and Physiology	Lab. / Rec.	10	36	2. G	Nat. Science 2, Physics 1
Vertebrate Embryology	Lab. / Rec.	10	36	2. G	Nat. Science 4, Chem. 1
Systematic Study of Vertebrates	Lab. / Rec.	5	36	2. G	Natural Science 1, 2
General Ornithology	Lab. / Rec.	10	36	2. G	Natural Science 1, 2
Economic Entomology	Lab. / Rec.	5	36	2. G	Natural Science 2, 3
Plant and Animal Ecology	Lab. / Rec.	5	36	2. G	Natural Science 1, 2, 3
Bacteriology	Lab. / Rec.	10	36	2. G	Nat. Science 2, 3, 9, Chemistry 1, Physics 1
Geology	Lab. / Rec.	5	36	2. G	Nat. Science 1, 2, Chemistry 1, Physics 1
Qualitative Analysis	Lab. / Rec.	8 / 2	24	1.3 G	General Chemistry, Physics 1
Inorganic Preparations	Lab.	8	12	0.5 G	Qualitative Analysis
Theoretical Chemistry	Lect. / Rec.	2	12	0.2 G	Qualitative Analysis
Organic Chemistry	Lab. / Rec.	8 / 2	18 / 36	2. G	Theoretical Chemistry
Quantitative Analysis I	Lab. / Rec.	8 / 2	18	1. G	Qualitative Analysis
Assaying	Lab. / Rec.	8 / 2	12	0.3 G	Quantitative Analysis I
Quantitative Analysis II	Lab. / Rec.	20 / 2	18	2. G	Quantitative Analysis I
Industrial Chemistry	Read. / Rec.	5	18	1. G	Qualitative Analysis
History of Chemistry	Read. / Rec.	1		0.2 G	Theoretical Chemistry Organic Chemistry
Mineralogy	Lab. / Rec.	5	6	2. G	Natural Science 1, Chemistry 1
Physics 2	Lab. / Rec.	7 / 3	36	2. G	Physics 1, Chemistry 1
Electricity and Magnetism	Lab. / Rec.	10	36	2. G	Physics 2, Mathematics 7
Power Measurements	Lab. / Rec.	10	18	1. G	Electricity and Magnetism
Dynamo Design	Draw. / Rec.	10	18	1. G	Electricity and Magnetism
Alternating Currents	Lab. / Rec.	10	24	1.7 G	Mathematics 10, Dynamo Design
Transmission and Distribution of Power	Lab / Rec.	10	12	0.3 G	Alternating Currents

PUBLIC LECTURES

Free lectures, usually on popular scientific subjects, by members of the Faculty and others are given at the Institute about every two weeks. The following is a list of such lectures for the calendar year ending April, 1904:

1903

Oct. 15 DR. ERNEST B. HOAG, Pasadena—*Ancient Ideas in Regard to Disease.* With lantern illustrations.

Oct. 26 GEORGE B. SUDWORTH, U. S. Forestry Department —*Forestry.*

Nov. 5 JOSEPH GRINNELL, T. P. I.—*Birds in Relation to Horticulture.*

Nov. 19 DR. C. D. LOCKWOOD, Pasadena—*Physical Basis of Character.*

Dec. 1 PROF. F. W. KELSEY, University of Michigan—*The House of the Vettii.* With lantern illustrations.

Dec. 17 MISS FRANCES STERRETT, T. P. I.—*Madonnas.* With lantern illustrations.

Dec. 23 PRES. DAVID STARR JORDAN, Leland Stanford Jr. University—*Samoa.* With lantern illustrations.

1904

Jan. 28 PROF. GEORGE HALE, Yerkes Observatory—*Evolution of the Stars.* With lantern illustrations.

Feb. 11 LUCIEN H. GILMORE, T. P. I.—*Evolution of the Lamp.* Illustrated with apparatus.

Feb. 25 Several papers presented on bird study by members of the Cooper Ornithological Club.

Mar. 7 LIEUT. GODFREY L. CARDEN, R. C. S.—*Industrial Exhibits at the St. Louis Fair.* With lantern illustrations.

Mar. 24 MISS FRANCES STERRETT, T. P. I.—*Sculpture of the Three World's Fairs, Chicago, Paris, and St. Louis.* With lantern illustrations.

Apr. 14 ROBERT E. FORD, T. P. I.—*How We Get Our Iron and Steel.* With lantern illustrations.

Apr. 28 WALLACE K. GAYLORD, T. P. I.—*Radio-active Substances.* With lantern illustrations.

LIST OF STUDENTS

1903-1904

COLLEGE

Beardslee, James Louis ..... Azusa
Benchley, Frank Keith ..... Fullerton
Deyo, Sarah Elizabeth ..... Pasadena
Gaylord, John Clarence ..... Pasadena
Grinnell, Elizabeth ..... Pasadena
Ijams, Sheldon ..... Safford, Ariz.
Jameson, Joy Gilbert ..... Corona
Jess, George Benjamin ..... Pomona
King, Harold Lee ..... Oberlin, O.
Mapel, Charles Elliott ..... Pasadena
McCutchan, Henry Chester ..... Long Beach
Mueller, Earl Walter ..... Los Angeles
Treat, Henry Alexander ..... Redondo
Stafford, Edward Sattley ..... Santa Fe Springs
Wood, Hilda ..... Glendora

NORMAL SCHOOL

Adams, Gertrude ..... Tustin
Babcock, Martha Maud ..... Boston, Mass.
Brouse, Nora Eva ..... Covina
Butler, Jessie Elizabeth ..... Pasadena
Darling Evalyn ..... Hartland, Vt.
Diffenbacher, Lulu Arnold ..... Los Angeles
Frost, Lillian ..... Los Angeles
Guillou, Alfred ..... Hueneme
Haskell, Beulah ..... Pasadena
Heck, William Harry ..... New York City
Marsh, Mabel ..... Los Angeles
Martin, Maude Fellows ..... Pasadena
Miller, James Collins ..... Regina, N. W. T., Can.
Moore, Laura Phebe ..... Los Angeles
Mosher, Mary Stratton ..... Los Angeles
Nyce, Ida May ..... Pasadena
Parry, Geraldine ..... Los Angeles
Reynolds, Phebe ..... Edmonds, Wash.
Simpkins, Mary Emily ..... Durand, Wis.
Story, Estelle Cornelia ..... Rivera
Yates, Lethe Darne ..... Pasadena

ACADEMY

Allen, Lois Celeste ..... Los Angeles
Alsbach, Theron Beatty ..... Los Angeles
Andrews, Donald ..... Carpinteria
Archibald, Charles Henry ..... Buena Park
Ashdown, Dot ..... Pasadena
Austin, Jesse Prosper ..... Pasadena
Axelson, Delbert Fred ..... Los Angeles
Ayers, Robert Charles ..... Petaluma
Baker, Thomas C. ..... Los Angeles
Baldwin, Eugene Irving ..... Pasadena
Ballard, Mertes Hildreth ..... Pasadena
Barker, Huntington ..... Pasadena
Barker, Parrish ..... Pasadena
Barndollar, Gladys Ashcam ..... Long Beach
Barnwell, Reginald Huntington ..... Alhambra
Beardsley, Robert Le Roy ..... Los Angeles
Beck, Clarence ..... Chino
Beecher, Sumner Howard ..... Kingman, Ariz.
Beesemyer, Arthur William ..... Hollywood
Beeson, Veva Odetta ..... Los Angeles
Behr, Elsa ..... Pasadena
Behr, Ernst Edward ..... Pasadena
Belknap, Fred Roland ..... Kernville
Benton, Irving Wright ..... Pasadena
Bettannier, Eugene ..... Tropico
Bixby, Allen Bigelow ..... Pasadena
Bixby, Florence Lydia ..... Sierra Madre
Bland, Serena Lois ..... Pasadena
Brackett, Ross Dudley ..... Pasadena
Brackett, William Franklin ..... Pasadena
Breer, Carl ..... Los Angeles
Brigden, Dwight ..... Lamanda
Brooks, Donald Beresford ..... Evanston, Ill.
Brown, Arad Beach ..... Pasadena
Brown, Leroy ..... Los Angeles
Caddagan, Donald Cornelius ..... Los Angeles
Calkins, Frederic ..... Los Angeles
Cameron, Claire Vernon ..... Los Angeles
Canfield, Ford Levi ..... Pasadena
Canfield, Frank Southerland ..... Los Angeles
Cannell, Thomas Arthur ..... Los Angeles
Canterbury, Harry Horton ..... Redlands
Cargill, Margaret ..... Minneapolis, Minn.
Carr, Vernon Albert ..... Alhambra
Clapp, Margaret Avice ..... Los Angeles
Clark, Dora Mabel ..... Pasadena

Cleminson, Hugh Delbert ..... Pasadena
Cline, George Thomas ..... Los Angeles
Cline, William Henry ..... Los Angeles
Coman, William Meriam ..... Pasadena
Comer, Fred J. ..... Los Angeles
Conrad, Delmar Roscoe ..... Pasadena
Coolidge, Rachel Abbie ..... Pasadena
Coonradt, Arthur Chapin ..... Yuma, Ariz.
Cooper, Mary Louise ..... Pomona
Crowley, Frank Langston ..... Newbury Park
Crowley, William Lucas ..... St. Louis, Mo.
Culver, Lucile ..... Pasadena
Daggett, Ethel Elizabeth ..... Pasadena
Dake, Benjamin Frank ..... Pasadena
Daley, Albert Cowles ..... Pasadena
Darch, Florence ..... Los Angeles
Day, Loring Leete ..... Elsinore
Dickey, Florence Iva ..... Pasadena
Dickinson, Grace ..... Pasadena
Dixon, Joseph Scattergood ..... Escondido
Dodson, Harvey ..... Selma
Donnatin, George ..... Los Angeles
Doolittle, Florence Letitia ..... Pasadena
Douglass, Benjamin Kaime ..... Los Angeles
Douglass, Francis Archibald ..... Los Angeles
Downing, Kathryn Leonora ..... Pasadena
Dunn, Warren Kellogg ..... Pasadena
Dunning, Archie Muller ..... Pasadena
Dunning, Arthur Earl ..... Pasadena
Earley, Alice ..... Pasadena
Edmond, Elizabeth Clarke ..... Santa Monica
Elliott, Karl B. ..... Pasadena
Ferris, Katherine Post ..... Pasadena
Ferris, Oscar Coles ..... Pasadena
Feuerborn, Ralph Daniel ..... Los Angeles
Ford, Henry Morton ..... Pasadena
Fordyce, Grace ..... Pasadena
Frampton, Guy Earnest ..... Pasadena
Freer, Wallace James ..... El Monte
Frey, Elmer Ernest ..... Riverside
Frohman, Philip Hubert ..... Pasadena
Fullerton, Emmons Peter ..... Paterson, N. J.
Gabriel, Arthur Coridon ..... Pasadena
Garland, Eldon Addison ..... Nordhoff
Gates, Harrison Mead ..... Milwaukee, Wis.
Gaylord, Ruth Louise ..... Pasadena
Gibson, Merrill Essington ..... Los Angeles

Giddings, Blanche ..... Pasadena
Giddings, Joe ..... Pasadena
Giddings, Levi Warren ..... Pasadena
Gird, Edith ..... Colgrove
Graffen, Adolph ..... Alhambra
Guillou, Alfred Victor ..... Hueneme
Guthrie, Edward A. ..... Pasadena
Hagan, Harold Raymond ..... Pasadena
Hall, Mary Lou ..... Pasadena
Hanson, Lloyd Chester ..... Pasadena
Harrington, Hazel Mercy ..... Delevan, Ill.
Harrison, Benjamin Demas ..... Pasadena
Haskell, Edward Eben ..... Pasadena
Haskell, Verna Gene ..... Los Angeles
Hawley, Josephine ..... South Pasadena
Hay, Francis Leader Haynes ..... Los Angeles
Healy, Earl Thompson ..... Pasadena
Henck, George Daniel ..... Los Angeles
Hertel, Anita Marion ..... Pasadena
Hill, Walter Ormsby ..... St. Louis, Mo.
Hopkins, Howard Clare ..... Pasadena
Hudson, Thomas Eardley ..... Hollywood
Hunt, Le Roy ..... Santa Barbara
Hunter, Robert Edward ..... Chicago, Ill.
Hyde, George McDonnell ..... Pasadena
Ives, Amelia ..... Pasadena
Jaeger, Eddie Joseph ..... Los Angeles
Johnson, Bert Claud ..... Pasadena
Johnson, Earl ..... Pasadena
Kennedy, Louis Calvin ..... Los Angeles
Kirkham, John Lee ..... Tropico
Koontz, John Andrew ..... Aztec, New Mexico
Larralde, John Alfred ..... Los Angeles
Leahy, Richard Armstrong ..... South Pasadena
Leet, Leighton Allison ..... New York, N. Y.
Lewis, Chester Marion ..... Pasadena
Lewis, George McDowell ..... Glendora
Lockwood, Jack Alvin ..... Payson, Arizona
Lowe, Harry Leo ..... Pasadena
Lucas, Henry Laurence ..... Ontario
Ludy, Clarence Chester ..... Yuma, Arizona
Maas, Ida Marie ..... Alhambra
Macdonald, James Frederick ..... Seattle, Wash.
Macdonald, Leroy Fischer ..... Seattle, Wash.
Macneil, Adela Robey ..... Pasadena
Macomber, Laurence Osgood ..... Somerville, Mass.

Macready, George Alexander ..... Los Angeles
Manly, Harold Patterson ..... Pasadena
Marshall, Hugh Gibson ..... Monrovia
Mason, Edgar Elwin ..... Los Angeles
Maxwell, Guy Floyd ..... Tropico
May, Ernest Crawford ..... Pasadena
McAulay, William Calvin ..... Los Angeles
McBride, James Ackley ..... Pasadena
McCormick, William Thomas ..... San Gabriel
McDonald, Bert ..... Alhambra
McIntyre, Minnie Maude ..... Pasadena
McKellar, Florence Lillian ..... Pasadena
McLean, Jennie Elnora ..... Pasadena
Mears, Margaret ..... Pasadena
Mears, Nathan ..... Pasadena
Meek, Blanche Frances ..... Los Angeles
Miller, Charles Allen ..... Pomona
Miller, Ernest L. ..... South Pasadena
Miller, Robert Warren ..... Los Angeles
Moody, Wilbur Ladde ..... Los Angeles
Moreno, Jose Fidel ..... Torreon, Coah, Mex.
Morris, Charles Shoemaker ..... North Pasadena
Morris, Harbron Williams ..... Carpinteria
Morris, Richard Woods ..... Carpinteria
Morris Samuel Brooks ..... North Pasadena
Morrison, Jeanne Breck ..... Pasadena
Morse, Anna Belle ..... Pasadena
Moss, Roscoe ..... Rivera
Nance, Willis ..... Los Angeles
Neiswender, Chester Bernard ..... Los Angeles
Nichols, Vernon Garrett ..... Pasadena
Norris, Stella Lockart ..... Sierra Madre
Northrop, Lowell Edwin ..... Los Angeles
Olsen, Andrew Martin ..... Sierra Madre
Padrick, Arthur Lindsay ..... Los Angeles
Painter, Robert Alden ..... Pasadena
Patterson, Robert Eugene ..... Long Beach
Patton, George Kester ..... West Riverside
Parker, David McKie ..... Los Angeles
Parker, Loren Hervey ..... Los Angeles
Pearson, Leo Earl ..... San Gabriel
Phelps, Robert William ..... Los Angeles
Phillips, Kirk Reading ..... San Diego
Pinger, Philip ..... Los Angeles
Pirie, Robert Edward ..... Nordhoff
Potter, Harlow Beach ..... Los Angeles

Proctor, James Machell ..... Pasadena
Reed, Charles Allen ..... Los Angeles
Reilley, Frank John ..... Denver, Colo.
Rice, Alta Lucile ..... Sierra Madre
Rice, Meta Cleora ..... Sierra Madre
Rickard, Lawrence Edwin ..... Pasadena
Root, Virginia Vannette ..... Covina
Ross, Stella Gwendalyn ..... Etiwanda
Ryus, David ..... Los Angeles
Sadler, Alden Howard ..... Akron, Ohio
Saline, Clara Elizabeth ..... Pasadena
Sandeman, George Faraday ..... Pasadena
Schrock, Charles Irving ..... Pasadena
Schwerdtman, Paul Ernest ..... Los Angeles
Scudder, Ethel Wilton ..... Pasadena
Seargeant, Elizabeth Diehl ..... Phoenix, Ariz.
Seay, Randolph ..... South Pasadena
Seils, Arthur Oscar ..... Los Angeles
Sharpe, Nathan Marble ..... Pasadena
Sherman, Henry Lancey ..... Pasadena
Shumway, Amos Wight ..... Los Angeles
Shutt, Herbert ..... Long Beach
Sickler, Helen G. ..... Pasadena
Sinclair, Arthur Wells ..... Pasadena
Smith, Allan Porter ..... Pasadena
Smith, Kate ..... Pasadena
Smith, Stanley Quay ..... Los Angeles
Smith, Ward Spencer ..... Los Angeles
Staples, Edna Almira Jeannette ..... Sierra Madre
Stehman, John Miller ..... Pasadena
Stevens, Lavina Carter ..... Big Rapids, Mich.
Stewart, James Fitch ..... Los Angeles
Stokes, Frank ..... Pasadena
Stoney, George Allen ..... Los Angeles
Stooksberry, Dakota Charles ..... Los Angeles
Strafford, Jack ..... Pasadena
Sturdevant, Harvey Robert ..... Los Angeles
Surbeck, Arnold ..... Norwalk
Swerdfeger, Geneva Mae ..... Lordsburg
Swerdfeger, Wilmer Amos ..... Lordsburg
Swigart, Laura Kathryn ..... Las Casitas
Swigart, Theresa Louise ..... Las Casitas
Tacquard, George Joseph ..... Ontario
Taylor, Walter Penn ..... North Pasadena
Tear, Harry Clark ..... Pasadena
Theobald, Harrietta Lizzie ..... Chicago, Ill.
Thompson, Laurence Kimball ..... Pasadena

Thornburg, C. Hix ..... Sierra Madre
True, Harley Crump ..... St. Louis, Mo.
Tucker, James ..... Pasadena
Twycross, Convers Lilly ..... Sierra Madre
Urquhart, Dan Ross ..... Duluth, Minn.
Vail, Walter Lennox ..... Los Angeles
Valentine, Katherine Howard ..... Coronado
Vedder, Grace ..... Pasadena
Wadleigh, Fred Henry ..... Newbury Park
Wadsworth, Katherine ..... Pasadena
Wadsworth, Mary Manter ..... Pasadena
Wakeham, Ernest Alfred ..... Santa Ana
Wakeham, Margaret ..... Santa Ana
Waldron, Grace Winifred ..... Pasadena
Ward, Nellie Alexandra ..... Pasadena
Warren, Herbert Clifton ..... Glendora
Warren, Leslie Alexander ..... Glendora
Waterhouse, Melicent Eda ..... Pasadena
Watts, Dan Pike ..... Compton
Whitcomb, Rae Cone ..... Pasadena
White, Paul M. ..... Los Angeles
Wiley, Wade Robert ..... Los Angeles
Williamson, William Roy ..... Los Angeles
Wilson, John Encell ..... Pasadena
Wilson, Lucian Hornbrook ..... Pasadena
Winch, Simeon Reed ..... Pasadena
Wolfskill, John Christian ..... Redondo
Wood, Helen Beulah ..... Pasadena
Woodbury, Greenleaf Moores ..... Pasadena
Woodville, Elizabeth ..... Long Beach
Woodward, Samuel Carl ..... Downey
Wotkyns, Alfred Webster ..... Pasadena
Wright, Adaline ..... Pasadena
Wright, Austin Charles ..... Pasadena
Wright, Sydney Augustus ..... Pasadena
Zander, Lloyd Stover ..... Los Angeles

COMMERCIAL SCHOOL

Ainsworth, Sallie Elizabeth ..... Naco, Ariz.
Ainsworth, Vivian Mabel ..... Naco, Ariz.
Beals, Dean Joseph ..... Plano
Beals, Delbert ..... Plano
Blakeslee, Laura Genevieve ..... Upland
Boston, Flora Catherine ..... Pasadena
Bowers, Elmer Leo ..... Santa Ana
Brown, Anna Thelma ..... Pasadena
Carrithers, Walter Adley ..... Lamanda

Clark, Oliver Cutter ..... Pomona
Frink, Clarence Harlow ..... Santa Barbara
Gault, Enid ..... Los Angeles
Gesme, Elmer Knute ..... Pasadena
Gillmor, James Henry ..... Paterson, N. J.
Goodspeed, Bessie May ..... Pasadena
Gulrado, Neta ..... North Pasadena
Hamlin, Robert ..... Pasadena
Hayes, Mary Madeline ..... Boulder Creek
Henderson, Leona ..... Pasadena
Herard, Eugene ..... Elgin, Kan.
Hobson, Huber Darwin ..... Irving, Ill.
Lynch, Maisie Helen ..... Newburgh, N. Y.
MacDowell, Nell ..... Pasadena
Magee, Paul ..... Pasadena
Mann, Douglass Blanchard ..... Muskegon, Mich.
Merrill, George Charles ..... Pasadena
Parker, Ida ..... Pasadena
Patten, Frank B. ..... Pasadena
Ray, Birdie May ..... Needles
Russell, Franklin Jason ..... Chicago, Ill.
Snow, Ella Christina ..... Provincetown, Mass.
Templeton, Olive Clare ..... Lamanda Park
Twinting, Bertha ..... Pasadena
Waterhouse, Gerald ..... Pasadena
West, Jessie Marie ..... Monon, Ind.
White, Charles Joshua ..... Pasadena
White, Edwin M. ..... Pasadena
Wylie, Mary Scott ..... Perry, New York

GRAMMAR SCHOOL

Allen, Ira Wilder ..... Pasadena
Armstrong, Margaret ..... Altadena
Arnold, Evelyn Elizabeth ..... Chicago, Ill.
Atterbury, Boudinot Blakewell ..... Pasadena
Ball, Earnest Stapleton ..... Los Angeles
Banbury, William Mohr ..... North Pasadena
Barker, Justin Neall ..... Pasadena
Barnwell, Edwin Odin ..... Alhambra
Barry, Edmund Drinan ..... Pasadena
Belford, Andrew Alex ..... Chicago, Ill.
Bent, Ellen ..... Los Angeles
Bloser, Bennie John ..... Los Angeles
Boyle, James Lee ..... Los Angeles
Braden, Agnes Emma ..... Pasadena
Brainerd, Edward Rankin ..... Los Angeles
Brown, Frederick Walton ..... Pasadena

Brugman, Vega Amend ..... Pasadena
Buck, Karl Philip ..... Pasadena
Cadieux, Mary Elma ..... Detroit, Mich.
Case, Carlos Cyrus ..... Pasadena
Cawston, Arthur Hamilton ..... South Pasadena
Champion, Clyde Walter ..... Alhambra
Chapin, Ralph Owen ..... Pasadena
Cleveland, Bertrand Landson ..... Los Angeles
Colton, George Raymond ..... Los Angeles
Cook, Inez Whiting ..... Glendora
Cook, Mary Lucile ..... Edina, Mo.
Cook, Raymon Edward ..... Pasadena
Cope, Laura ..... Pasadena
Cross, Robert Cline ..... Hollywood
Crumb, Rowell Hanford ..... Pasadena
Currier, Leroy Sanborn Becker ..... Pasadena
Daniels, Donald Potter ..... Pasadena
Daniels, George Henry ..... Pasadena
Davis, Charles Merritt ..... Pasadena
Dewey, Robert Sabin ..... Denver, Colo.
Dickinson, Helen ..... North Pasadena
Dobyns, Thomas William ..... El Monte
Earley, George Curtis ..... Pasadena
Edwards, Noel Condiff ..... Hollywood
Engels, Basil Baird ..... Pasadena
Falck, Fred William ..... Los Angeles
Ferris, Caroline Wood ..... Pasadena
Fillmore, Hugh Hamilton ..... Los Angeles
Forbes, Alma May ..... Pasadena
Forbes, Cecelia Ethel ..... Pasadena
French, John Bedford ..... Pasadena
Gilmore, Edward Saxton ..... Los Angeles
Gisler, Joseph ..... El Rio
Grant, Lillian Hoagland ..... Los Angeles
Graves, Dorothy Howard ..... Pasadena
Graves, Marcia Howard ..... Pasadena
Gregg, Gladys Louise ..... Los Angeles
Guillou, Rene ..... Pasadena
Hansen, Elsie Lydia ..... Pasadena
Hayes, Marshall Crane ..... Pasadena
Hayes, Oliver Bliss ..... Pasadena
Herlihy, Harold Walter ..... Pasadena
Herman, Helen Ida ..... Los Angeles
Hill, Bruce Maxwell ..... Pasadena
Hunter, Paul Mallers ..... Chicago, Ill.
Johnson, Harold Ingham ..... Pasadena
Judson, Stanley Llewllyn ..... Los Angeles

Kious, Joseph Smith ..... Los Angeles
Kling, David ..... Pasadena
Kraft, Edward Louis ..... Pasadena
La Fetra, Everett Eads ..... Glendora
Lambert, Louis Pierre Filanc ..... Los Angeles
Lanphar, Manuel ..... Los Angeles
Lavagnino, John Francis ..... Pasadena
Lynch, Viva Linda ..... Pasadena
Macy, Clarence Churchill ..... Pasadena
Marsh, Victor ..... Pasadena
Mills, Faith ..... Pasadena
Mills, Mary ..... Pasadena
Mears, Helen ..... Pasadena
Meek, Chester Irving ..... Los Angeles
Merriam, Robert Clizbe ..... Pasadena
McAdam, Frank ..... Pasadena
McAuslan, Arthur Ashley ..... Pasadena
Moody, Graham Blair ..... Los Angeles
Moorehead, Lee Coddington ..... Delavan, Ill.
Mumford, Henry Hume ..... Pasadena
Murray, Mabel ..... Sierra Madre
Murray, Virginia ..... Sierra Madre
Myrick, Donald ..... Springfield, Mass.
Normandie, Harold de ..... Philadelphia, Pa.
Norrish, Ernest Springwood ..... Pasadena
Oneal, Herbert Charles ..... Pasadena
Palmerlee, Laurence ..... North Pasadena
Payne, Le Roy ..... Los Angeles
Pedley, Lionel Everard ..... Riverside
Peterson, Anna Deacon ..... Pasadena
Post, Gilbert Owen ..... Pasadena
Procter, Gilbert ..... Pasadena
Ramage, Samuel Clayton ..... Pasadena
Randals, Charles Russ ..... North Pasadena
Ray, Arthur Henry ..... North Pasadena
Ridenour, Charles ..... Hackberry, Ariz.
Risdon, Edward Hamilton ..... North Pasadena
Rudel, Amelia ..... San Gabriel
Rudel, Edward ..... San Gabriel
Sanborn, Howard ..... Tustin
Sharp, George Garfield ..... North Pasadena
Slavin, Matthew ..... Pasadena
Smith, Charles Warren ..... Pasadena
Smith, John Stanley ..... Pasadena
Smith, Joshua Clark ..... Pasadena
Smith, Leo Stafford ..... San Gabriel
Smith, Lucy Marceline ..... Pasadena

Smith, Welcome Guy ..... Los Angeles
Spangler, Etherington Thomas ..... Pasadena
Stewart, Colin ..... Pasadena
Sweeley, Frank Merriman ..... Pasadena
Tantau, George Blake ..... Pasadena
Taylor, John Meily ..... Altadena
Taylor, William Henry ..... Altadena
Tebow, Ralph Emmett ..... Pasadena
Thompson, Hiram Smith ..... Los Angeles
Tompkins, De Ronde ..... Pasadena
Treadwell, Eddie ..... Pasadena
Turnbull, Anna Dorothea ..... Cambridge, Mass.
Tyler, Sidney Williams ..... Pasadena
van Rossem, Adriaan Joseph ..... Pasadena
van Rossem, Walter Johannes ..... Pasadena
Waller, Ehrnman Ellsworth ..... Pasadena
Weatherton, Edward Kintchlow ..... Pasadena
Weeks, Ernest Waldo ..... Pasadena
White, Donald ..... Pasadena
White, Laurence Taggart ..... Pasadena
White, Natalie ..... Pasadena
Whiting, Dwight Anson ..... Pasadena
Whiting, George Nathaniel ..... Pasadena
Wickman, Claude James ..... Los Angeles
Williams, Roger Churchyard ..... Buffalo, N. Y.
Willis, Neva Corinne ..... Hollywood
Wilson, Florence Mollie ..... Los Angeles
Woodbridge, Helen Louise ..... Evanston, Ill.
Wotkyns, Margaret Prudentia ..... Pasadena
Wright, Edward Prescott ..... Pasadena
Young, George Beaumont ..... North Pasadena

SPECIAL

Ames, Edith Morison ..... Pasadena
Bassett, Nellie May ..... Pasadena
Behr, Martha Gertrude ..... Pasadena
Bishop, Gilbert Haven ..... Redlands
Browne, Marion Raymonds ..... Pasadena
Dunham, Lulu ..... North Pasadena
Elliott, Hazel Jean ..... Montreal, Can.
Francis, William C. ..... Buffalo, N. Y.
Green, Thirza Nell ..... Pasadena
Guyer, Lillian Sara ..... Altadena
Haines, Martha Roberts ..... Mt. Ephriam, N. J.
Harris, James Eddy ..... Providence, R. I.
Hibbard, Mary ..... Davenport, Ia.
Holmes, Angie Green ..... Pasadena

Johnson, Anne H. ..... Pasadena
Landon, Mabelle A. ..... Pasadena
Lee, Scott Mortimer ..... Los Angeles
Lewis, Elsie Henich ..... Pasadena
McBride, Emily ..... Pasadena
McCullough, Addie Laura ..... Needles
Merritt, Elizabeth Sandilands ..... Pasadena
Morehous, Vera May ..... Pasadena
Myrick, Vira ..... Springfield, Mass.
Rice, Hazel Marguerite ..... Sierra Madre
Schaufele, Sophie Cathern ..... Pasadena
Scudder, Jessie Ingram ..... Pasadena
Senour, Edith Kathryn ..... Pasadena
Sinclair, Marjorie ..... Pasadena
Struble, Grace ..... Toledo, Ia.
Taylor, Marianna ..... Haverford, Pa.
Tower, Elizabeth ..... Pasadena
Wright, Howard Walter ..... Pasadena

SUMMARY

	Male.	Female.	Total.
College	12	3	15
Normal School	3	18	21
Academy	198	69	267
Commercial School	19	19	38
Grammar School	107	34	141
Special	5	27	32
Totals (no duplicates)	344	170	514

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, State Normal, Los Angeles
Simcoe, Benjamin F., Teacher of Manual Training, San Francisco

ACADEMY

Allen, Robert S. .....
..... Proprietor Electric Supply and Fixture Co., Pasadena
Carlton, Don W. .....
..... Paying Teller, 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. .....Student, L. S. Jr. University
Doty, George F., A. B. .....
.....Cashier, Merchants' National Bank, Santa Monica

NORMAL SCHOOL

Beckwith, Kate B. .....Teacher of Sloyd, Tulare
Burkhead, Ada H. (Mrs. Hale Weaver) ...Grand Rapids, Mich.
Chamberlain, Arthur H. (B. S. and A. M., Columbia Univ.)..
.....Prof. 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 ....Student, University of California, Berkeley
Riggins, Ara .....Missionary, Mexico

ACADEMY

Arnold, Ralph (Ph. D., L. S. Jr. Univ.) .....
.....Geologic Aid, U. S. Geologic Survey
Conger, Lulu N. .....Pasadena
Gray, Roy W. .....Division Construction Foreman,
Pacific States Telephone and Telegraph Co., San Francisco
Menner, Ivy (Mrs. John Taggart) .....Pasadena
Morrison, Margaret L.. .....Compton
Snyder, Blanchard M. .....Head Chemist and
Assayer, British Columbia Copper Co., 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.) .....
.....Instructor in Natural Science, T. P. I.

NORMAL SCHOOL

Batchelder, Lizzie .....Teacher of Sloyd, Los Angeles
Blanchard, Ada F. .....Teacher of Sloyd, Los Angeles
Cleveland, Ada C. .....
Cook, Mary A. .....Pasadena
Coombs, Sara C. .....Teacher, Visalia
Fisher, Pearl B. .....Instructor in French and Drawing, T. P. I.
Holbrook, Lucy M. .....Bookkeeper, Worcester, Mass.

Mellish, Ida M. .....Student of Art, Europe
Smith, Mary M. .....
.....Teacher in Art Dept., State Normal School, San Diego
Wright, Charles H. .....Architect, Boulder, Colo.

ACADEMY

Baker, Calvin .....Pasadena
Baker, Ruth Ellen .....Pasadena
Barker, James Edmund (S.B., Mass.Inst. of Technology)...
..Electrical Engineer, Pacific Electric Ry. Co., Los Angeles
Blick, Kate Fay .....Pasadena
Conger, Lyda Drowne (Mrs. Richard A. Vose) .....
.....Oklahoma City, Oklahoma
Conger, Ray Everett .....Oklahoma City, Oklahoma
Farnsworth, John Arthur .....Bookkeeper, Los Angeles
Jewett, Frank Baldwin, (Ph. D., Univ. of Chicago) .....
.....Instructor in Physics, Mass. Inst. of Technology
*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) .....San Francisco
Stimson, Charles W. .....Lumber business, Seattle, Wash.
Vose, Richard A. .....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)....
.....Instructor in Physics, Mass. Inst. of Technology

NORMAL SCHOOL

Elleau, Jeannete Marcelle (Mrs. Harold Simpson)..Los Angeles
Elleau, Pauline Margaret, County Recorder's Office, Los Angeles
Faithful, Claude A. .....Teacher of Sloyd, Los Angeles
Hannah, Lillian .....Ontario
Hunt, Genie A. .....
Sloyd and Drawing 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) .....San Francisco
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 Ry. Co., Los Angeles
Gaylord, Horace Amidon, (D. D. S., Baltimore Dental College) .....Dentist, Pasadena
Gaylord, Jas. Mason (B. S., T. P. I.).....
.....With Edison Electric Co., Los Angeles
Menner, Lottie Ethel (Mrs. Jas. D. Scheckler) .....Pasadena
Monroe, Grace Ellen (Mrs. John O. Reed) .....Los Alamitos
*Olson, Albert L. (A. B., T. P. I.).
Poindexter, Charles Lawrence .....
.....Mining Engineer, Wickemburg, Ariz.
Sterrett, Roger Jordan .....
.....Supervisor of Drawing, City Schools, Riverside
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 .....Pasadena
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 Grammar 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, Mechanic Arts, High School, San Francisco
Fordyce, Mabel .....Pasadena
Raleigh, Carl .....Los Angeles
Wood, Clifford H.. .....Student, Los Angeles Medical College

*Deceased.

1900

COLLEGE

Harris, Irving, A. B. .....
Foreman of Machine Shop, Edison Electric Co., Los Angeles
*Olson, Albert, A. B.

NORMAL SCHOOL

Anderson, Lucy J. .....
...Teacher of Domestic Science, State Normal, Los Angeles
Brooks, Ada M. .....Teacher of Kindergarten, Pasadena
Davidson, Leonard E. (B. S., T. P. I.) ....Teacher of Manual Training, Mechanic Arts, High School, San Francisco
Dobbs, Ella V. .....Supervisor of Manual Training, Public Schools, Helena, Montana
Gower, Mary L. .....Teacher, Fullerton
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 .....Pasadena
Moore, Nellie .....Student, State Normal School, Los Angeles
Morgan, Mabel V. ...Teacher of Domestic Science, Los Angeles
Peabody, Sallie .....Bookkeeper, Santa Ana
Pearce, Mrs. Susan .....
.....Teacher of Domestic Economy, Los Angeles
Toll, Mabel E. .....Baldwinsville, N. Y.
Van Hook, Kate .....Teacher of Sloyd, Hiawatha, Kan.

ACADEMY

Jerauld, Edwin W., Machinist, Union Iron Works, San Francisco
Jewett, Pauline .....Pasadena
Richards, Bessie E. (Mrs. V. Whitehead) .....Artist, Pasadena
Strong, Robert M. .....
.....Student, Columbia University, New York City

1901

COLLEGE

Davidson, Leonard E., B. S. .....Teacher Manual Training, Mechanic Arts, High School, San Francisco

NORMAL SCHOOL

Beckett, Alice M. .....Anaheim
Getchell, Mary E. .....Pasadena
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

*Deceased.

Johnson, Mrs. Carrie .....Pasadena
Little, Mrs. Lulu P. .....Los Angeles
Miller, Ada J. .....Teacher of Sloyd, Los Angeles
Moore, Nellie .....Student, State Normal School, Los Angeles
Nicholson, Maude L. (B. S., T. P. I.) .....
.....Student, Pacific School of Osteopathy, Pasadena
Parsons, Ellen N. .....Los Angeles
Ross, Donald A. .....
...Supervisor of Drawing and Manual Training, Bakersfield
Stevens, Elizabeth .....Lincoln Park

ACADEMY

Burtt, Dodge .....Mining, Placerville
Daggett, Maud .....Student, Art Institute, Chicago, Ill.
Eddy, Nathaniel N. ..Student, University of California, Berkeley
Fassett, John G. .....In business, Los Angeles
Holcomb, John Delaney .....
.....Student, Dental College, Univ. of S. Cal., Los Angeles
Poage, Leland S. .....Student, Pomona College
Wood, Helen .....Draughtsman, Los Angeles

COMMERCIAL SCHOOL

Erwin, Hattie B. .....Los Angeles
Giddings, Joe .....Student, T. P. I., Pasadena
Giddings, Levi W. .....Student, T. P. I., Pasadena
Hartley, Ethel .....Bookkeeper, Pasadena
Menner, Lottie (Mrs. Jas. D. Scheckler) .....Pasadena
Pierce, Rollin W. .....Bookkeeper, Wilcox, Ariz.
Richardson, Allen.
Stonehouse, Nellie M. .....Bookkeeper, Pasadena

1902

COLLEGE

Dyer, Kirk Worrell, B. S. .....
.....Deputy City Treasurer and Tax Collector, Pasadena
Gaylord, James Mason, B. S. .....
.....With Edison Electric Co., Los Angeles
Nicholson, Maude Louise, B. S. .....
.....Student Pacific School of Osteopathy, Pasadena

NORMAL SCHOOL

Gooch, Mrs. Emma A. .....Sebastopol
Gould, Marie Augusta .....Student, Leland Stanford Jr. Univ.
Holton, Lola N. ....Teacher of Music and Drawing, Long Beach
Richards, Bessie Everett (Mrs. V. Whitehead)..Artist, Pasadena
Ross, Donald A. .....
...Supervisor of Drawing and Manual Training, Bakersfield
Ross, Minnie Elizabeth .....Teacher, Public Schools, Chino

Seegmiller Frances Caroline .....Teacher, Whittier

ACADEMY

Braddock, Fred Blackman .....Drug Clerk, Pasadena
Case, James Ovington .....
.....Electrician, Riverside Power Co., Riverside
*Erickson, John August.
Giddings, Lawson Henry .....
.Member of Shoemaker and Giddings Electric Co., Pasadena
Gould, Judson Porter .....
.....Student, Hastings Law School, San Francisco
Haskell, Beulah .....Student, Normal School, T. P. I., Pasadena
Hoose, James Harmon, Jr. ..Student, Leland Stanford Jr. Univ.
Jerauld, Rodman Ernest .....
.....With Pacific Electric Ry. Co., Los Angeles
Lescher, Royal William .....
.....With Pacific Electric Ry. Co., Los Angeles
Linde, Eva .....Los Angeles
Paul, Albert .....
....With Los Angeles Farming & Milling Co., Los Angeles
Phillips, Virginia .....Pasadena
Sidwell, Chester Clarence.
Tweedy, James Knox .....Student, University of California
Webster, Mabel .....Berkeley
Wood, Hilda .....Glendora
Woodbury, Fred Ralls .....
.....Assistant Instructor in Woodworking, T. P. I.

COMMERCIAL SCHOOL

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

1903

COLLEGE

Shoemaker, Richard Woolsey .....
.....With Pacific Electric Ry. Co., Los Angeles

NORMAL SCHOOL

Blanchard, Estelle .... ..Teacher Public Schools, 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 .....Teacher of Domestic Science, Pasadena
Heald, Oscar Leslie .....Instructor in Drawing and
Mechanics, California Polytechnic School, San Luis Obispo
Howard, Celia Eleanora .....Long Beach

*Deceased.

Wakeham, Blanche .....Student, Univ. of California

ACADEMY

Bandini, Ralph .....Student Leland Stanford Jr. Univ.
Bland, Rose Florence .....Pasadena
Blankenhorn, George Stevens .....Student, Cornell Univ.
Blankenhorn, Louis McLaughlin .....
.....Clerk, San Gabriel Valley Bank, Pasadena
Cartwright, Alexander Benjamin .....Alhambra
Chase, Arthur Lo .....Secretary, Amarillo Water, Light and Power Co., Amarillo, Texas
Crane, Elliott Simeon .....Student, Univ. of California
Davis, Paul McDonnell .....
.....With U. S. Geological Survey, Yuma, Ariz.
Doolittle, Harold Lukens .....Student, Cornell Univ.
Fussell, Edwin Briggs .....Pasadena
Gaylord, John Clarence, ...Student, College, T. P. I.
Gosnell, Ira .....Farmer, Ventura
Hampton, Lawrence Charles .....
.....Student, Mass. Inst. of Technology, Boston, Mass.
Haskell, Edward Eben .....Student, College, T. P. I.
Heald, Oscar Leslie .....Instructor in Drawing and Mechanics, California Polytechnic School, San Luis Obispo
Hill, Roland Varian .....
.....In Engineering Dept. Santa Fe Ry., Williams, Ariz.
Hornby, Ralph Walter ...With Baker Iron Works, Los Angeles
Lacey, Clara Louise .....Los Angeles
Mosteller, Roy William .....Pasadena
Mueller, Earl Walter .....Student, College, T. P. I.
Niles, Porter Howe.
Price, Jacob Meday .....Student, Leland Stanford Jr. Univ.
Scudder, Jessie Ingram .....Pasadena
Squire, Guy Oliver .....Downey
Squire, Roy Ellis .....Downey
Story, Henry Amos.
Wyckoff, Ralph Fenton .....South Pasadena

OFFICERS OF THE ALUMNI ASSOCIATION

President, Ralph Wyckoff. Vice-President, Augusta Gould.
Treasurer, Mac Blankenhorn. Historian, Hilda Wood.
Secretary, Richard Shoemaker.

SUMMER SCHOOL OF MANUAL TRAINING

The fifth annual session of the Summer School of Art and Manual Training of Throop Polytechnic Institute will open on August 8, 1904, and close on September 2. The school will be in session five and one-half days each week—from Monday morning until Saturday noon.

The work done will be credited by the Institute for the benefit of those who may hereafter be candidates for a normal diploma, and will be of such a nature as to meet the needs of teachers in the public and private schools. Advanced work will be offered for those who have had experience in any line.

The following courses will be given:

History, Organization and Methods of Manual Training—Arthur H. Chamberlain, Professor of Education and Director of the Summer School, Throop Polytechnic Institute.

Woodworking, for the grades and high school—Arthur H. Chamberlain.

Freehand Drawing, Design and Color Work—Ernest A. Batchelder, Instructor in Drawing and Design, Throop Polytechnic Institute.

Clay Modeling and Pottery—Ernest A. Batchelder.

Elementary Manual Training—Wood, Paper and Cardboard, Basketry, Weaving, Etc.—Ella V. Dobbs, Supervisor of Manual Training, Helena, Montana.

Mechanical Drawing—Arthur H. Chamberlain.

Sewing and Cooking—Mrs. Grace E. Dutton, Director Department of Domestic Science, Throop Polytechnic Institute.

The Announcement of the Summer School, giving detailed information as to courses, terms, lodgings, etc., will be sent on application to

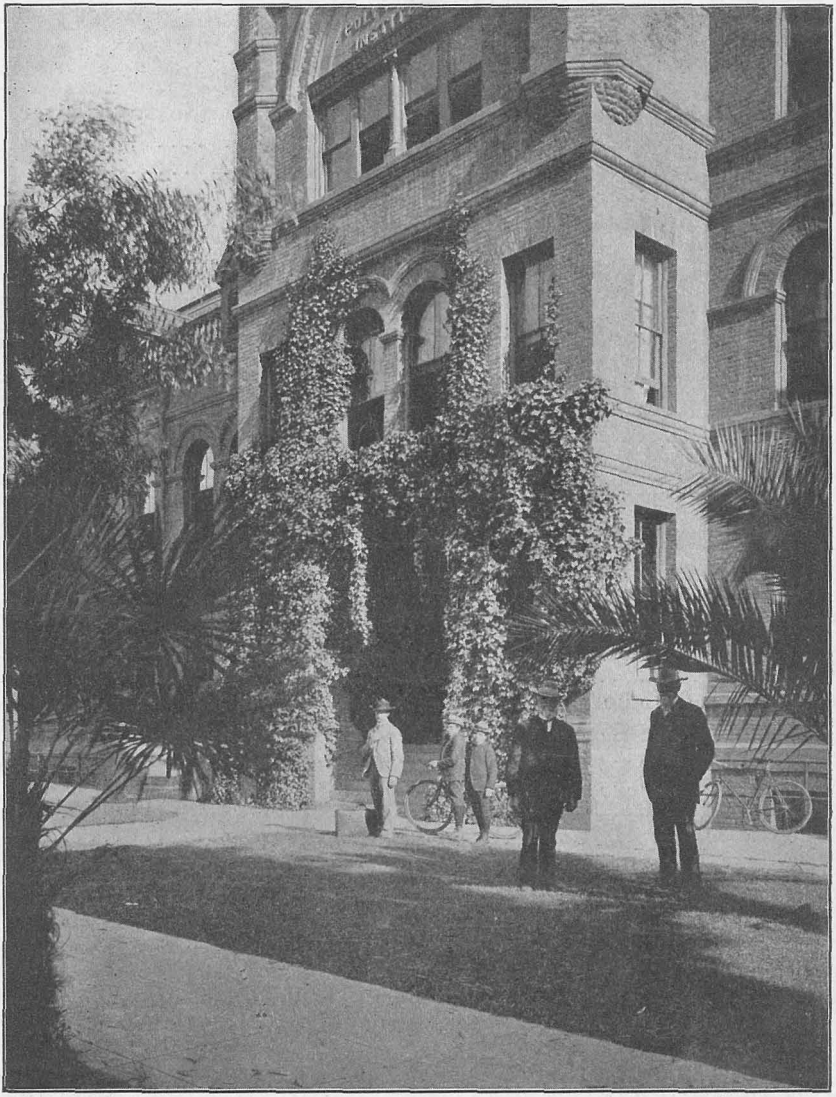
ARTHUR H. CHAMBERLAIN,
Director of the Summer School,

or to Theodore Coleman—Secretary of the Institute.
Throop Polytechnic Institute, Pasadena, Cal.

STUDENTS IN SUMMER SCHOOL OF MANUAL TRAINING

1903

Beckwith, Kate B. ..... Tulare
Boor, Edith R. ..... Santa Paula
Braithwaite, M. G. ..... Fort Mojave, Ariz.
Breen, Mrs. Howard ..... Pasadena
Burt, Ethel ..... Pasadena
Davidson, Mrs. A. ..... San Francisco
Embree, Bessie ..... Monrovia
Guillou, Victor ..... Pasadena
Hamilton, Kate ..... Pasadena
Hartshorn, Kenneth L. ..... Los Angeles
Hicks, Mrs. Alice R. ..... Zimi, N. M.
Hillis, Mrs. E. R. ..... Los Angeles
Holton, Lola N. ..... Whittier
Keese, Mrs. J. W. ..... Pasadena
Klamroth, Wilfried O. ..... Pasadena
Lawrence, Alfred ..... Pasadena
Le Sage, Estrella ..... Los Angeles
Marshall, Hugh ..... Monrovia
McChesny, Alice ..... Mill Valley
McMurray, L. L. ..... Santa Ana
McWhirt, Mrs. Mary C. ..... Springfield, N. M.
Norway, Elior ..... Tucson, Ariz.
Nyce, Ida ..... North Pasadena
Pearman, Clarence ..... Pasadena
Reynolds, James W. ..... Mojave, Ariz.
Ross, Donald A. ..... Bakersfield
Simmons, Mrs. Curtis ..... Pasadena
Stehman, John ..... Pasadena
Stewart, Mary ..... Pasadena
Stone, Eva E. ..... Redlands
Tear, Bessie ..... Pasadena
Tear, James ..... Pasadena
Zumwalt, Edith ..... Tulare



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