Throop Institute Bulletin

NORMAL SCHOOL

Number XXXIV

DECEMBER — 1906

Published Quarterly by

Throop Polytechnic Institute

PASADENA, CALIFORNIA

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

CALENDAR

1907–8

Annual Meeting Board of Trustees, Tuesday, September 10, 1907
Registration.....September 20, 21, 23, and 24, 1907
Fall Term begins.....Wednesday, September 25, 1907
Thanksgiving Vacation, Thursday and Friday, Nov. 28 and 29, 1907
Founder's Day .....Thursday, Dec. 12, 1907
Quarterly Meeting Board of Trustees.....Tuesday, Dec. 10, 1907
Fall Term ends.....Friday, Dec. 20, 1907

CHRISTMAS VACATION

Winter Term begins.....Monday, January 6, 1908
End of the first half-year.....Friday, February 7, 1908
Quarterly Meeting Board of Trustees.....Tuesday, March 11, 1908
Winter term ends.....Friday, March 21, 1908

SPRING VACATION

Spring Term begins.....Monday, March 31, 1908
Memorial Day.....Friday, May 30, 1908
Baccalaureate Sunday.....June 8, 1908
Fitz E. Beach Prize Contest.....Monday evening, June 9, 1908
Graduating Exercises, Grammar School.....
Tuesday morning, June 10, 1908
Quarterly Meeting Board of Trustees.....Tuesday, June 10, 1908
Commencement.....Tuesday evening, June 10, 1908
Alumni Reunion.....Wednesday evening, June 11, 1908
Exhibition Days and Evenings.....
Thursday, June 12, and Friday, June 13, 1908

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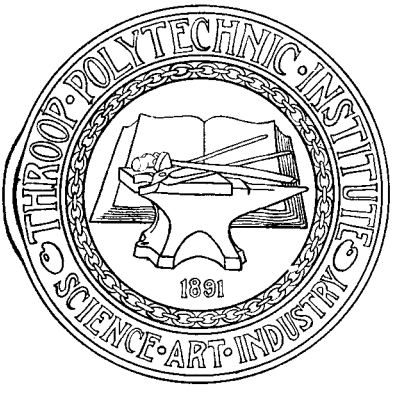

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FOUNDER

HON. AMOS G. THROOP

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

BOARD OF TRUSTEES

(Arranged in the order of seniority of service)

		Term Expires
EVERETT L. CONGER, D. D.	Pasadena	1907
MRS. LOUISE T. W. CONGER	Pasadena	1907
E. E. SPALDING, A. M.	Pasadena	1910
NORMAN BRIDGE, A. M., M. D.	Pasadena	1909
JOHN WADSWORTH	Pasadena	1909
CHARLES D. DAGGETT.	Pasadena	1908
WILLIAM STANTON	Pasadena	1911
MRS. CLARA B. BURDETTE	Pasadena	1910
HIRAM W. WADSWORTH, A. B.	Pasadena	1911
JAMES H. MCBRIDE, M. D.	Pasadena	1910
S. HAZARD HALSTED.	Pasadena	1907
JOHN S. CRAVENS, A. B.	Pasadena	1911
ARTHUR H. FLEMING	Pasadena	1909
MICHAEL CUDAHY.	Pasadena	1908
EDWARD C. BAILEY, B. L., LL. B.	Pasadena	1908

OFFICERS OF THE BOARD

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

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THEODORE COLEMAN, Sec'y. and Business Agent
149 South Madison Avenue

GRACE B. WRIGHT, Assistant Secretary
Residence, 306 Pleasant Street

C. E. BAILEY, ESQ., Attorney

EXECUTIVE COMMITTEE OF THE BOARD

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

JOHN WADSWORTH — E. C. BAILEY

WILLIAM STANTON

FACULTY OF THE NORMAL SCHOOL

1906-1907

(Arranged in groups in order of appointment)

WALTER ALISON EDWARDS, President

A. B., A. M. and LL. D., Knox College, Galesburg, Ill.; Instructor in Latin and Greek, High School, Peoria, Ill., 1883-6; student Universities of Berlin and Tubingen, 1886-9; Principal High School, Decatur, Ill., 1889 90; Principal High School, Rockford, Ill., 1891-5; Instructor Latin and Greek, High School, Pasadena, Cal., 1895-6.

408 S. Orange Grove Ave.

ARTHUR HENRY CHAMBERLAIN, Dean

Professor of Education and Director of Normal School

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

377 N. Los Robles Ave.

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.

ERNEST ALLEN BATCHELDER

Director of Fine Arts

Director of Handicraft Guild, Minneapolis, Minn.

Graduated Massachusetts Normal Art School, 1899, Director of Drawing, Public Schools Adams, Mass., 1899-1901; Instructor in Theory of Design, Harvard University, Summer Session, 1901; studied in Europe, year 1905-6. Author of Principles of Design; Member International Jury of Art, St. Louis Exposition.

467 Summit Ave.

MABEL COWDREY HIMROD

Instructor in Domestic Art

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

79 N. Marengo Ave.

WALLACE KENDALL GAYLORD

Professor of Chemistry; Registrar

S. B. Massachusetts Institute of Technology, 1892; Member American Chemical Society; Member Society of Chemical Industry.

75 N. Hudson Ave.

JOSEPH GRINNELL

Professor of Biology; Curator

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

576 N. Marengo Ave.

* HARRY DAVIS GAYLORD

Instructor in Wood Carving

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

* Absent on leave, school year, 1906-7; studying at Harvard University.

WALTER WILLIAM MARTIN

Instructor in Wood Working

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

754 Locust St.

CLARENCE ARTHUR QUINN

Instructor in Forging

Graduate, Normal Department of the Stout Manual Training School, Menomiuee, Wis., 1897; Instructor in Shops and Mechanical Drawing, same 1898-99; Instructor in Manual Training, Minneapolis, Minn., 1900; Instructor in the Manual Training High School and Director of Manual Training in the grade schools of Eau Claire, Wis., 1901-1902.

60 S. Euclid Ave

HARRY TRUMBULL CLIFTON

Instructor in Mathematics and Mechanical Drawing

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

871 N. Lake Ave.

ELLA VICTORIA DOBBS

Instructor in Manual Arts

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

960 E. Colorado St.

NELLIE ALEXANDRA WARD

Instructor in Wood Carving

Graduated, Academy, Throop Polytechnic Institute, 1904.

53 Pepper St.

JAMES COLLINS MILLER

Assistant Instructor in Manual Arts

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

377 N. Los Robles Ave.

ERNEST BRYANT HOAG

Lecturer in Biology

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

101 N. Los Robles Ave.

GENERAL INFORMATION.

Throop Polytechnic Institute is located in Pasadena, California. It comprises five schools: (1) The College of Technology and Science; (2) the Normal School for the training of teachers of manual training, fine arts and domestic economy; (3) the Manual Training Academy, with full high school and college preparatory courses; (4) the Commercial School, offering a comprehensive and practical preparation for business; and (5) the Elementary School, in which various forms of manual training and art are combined with the usual primary and grammar school studies in a curriculum organized on modern ideas and employing the best methods. Information about the various departments may be obtained by addressing the President or the Secretary. This number of the Bulletin is devoted to the Normal School.

The Normal School was founded for the purpose of training men and women as teachers in the several lines of work offered. No such training school exists in the West and the Institute is constantly asked to furnish instructors for public or private schools. This increasing demand for properly qualified teachers inspired the equipping of the Manual Training Department to prepare teachers to instruct in elementary schools and subsequently the other departments were added. The increased call for men led to the establishment this year of the course in Manual Training for secondary schools.

For some years past it has been impossible to supply the demand for properly trained teachers in the several lines in which the Normal School offers instruction. Many grade or high school teachers find it to their advantage to discontinue their regular work and spend a year or two at the Institute in the department for which they seem particularly qualified. The increase in salary over that offered in regular work is considerable and the training received is such as to render graduates capable of assuming positions as directors and supervisors.

BOARD.

Good board can be obtained at from $6 to $7 per week.

TEXT BOOKS.

The text books used in the classes of the Institute may be purchased at the Institute book store at less than the usual retail prices.

TUITION.

The tuition fee in the Normal School is $85 per year, payable in advance at the beginning of each term as follows:

First Term	$35 00
Second Term	35 00
Third Term (For full year students)	15 00

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

SHOP AND LABORATORY FEES.

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

Biology	$1 00
Chemistry	5 00
Clay Modeling	1 25
Cooking	6 00
Forging	4 00
Free-hand Drawing, Painting and Design	50
Manual Arts	3 00
Sewing or Dressmaking, either or both	50
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.

REQUIREMENTS FOR ADMISSION.

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

COURSES OF STUDY IN THE NORMAL SCHOOL.

Four courses are offered in the Normal School as follows: 1. Manual Training for Elementary Schools; 2. Manual Training

for Secondary Schools; 3. Domestic Economy (Domestic Science and Domestic Art); 4. Fine Arts.

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

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

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

While the school does not guarantee positions to its graduates, it assists them in every possible way. The demand for graduates of the Normal School, both East and West, far exceeds the supply. Already one hundred and seventeen graduates have gone out to teach and almost universal success has marked their careers.

	MANUAL TRAINING FOR ELEMANTARY SCHOOLS	MANUAL TRAINING FOR SECONDARY SCHOOLS	DOMESTIC ECONOMY	FINE ARTS
YEAR First Half	Education 1 Fine Arts 6 Manual Training 2 Manual Training 3 Manual Training 8	Education 1 Fine Arts 6 Manual Training 3 Manual Training 8	Education 1 Manual Training 2 Education 6 Fine Arts 8 Domestic Science 3 Domestic Science 5 Domestic Art 5	Education 1 Fine Arts 6 Fine Arts 7 Fine Arts 8 Fine Arts 9 Manual Training 8
FIRST Second Half	Education 1 Fine Arts 6 Manual Training 2 Manual Training 3 Manual Training 8	Education 1 Fine Arts 6 Manual Training 3 Manual Training 5 Manual Training 8	Education 1 Manual Training 2 Education 6 Fine Arts 8 Domestic Science 3 Domestic Science 5 Domestic Art 5	Eduuation 1 Fine Arts 6 Fine Arts 7 Fine Arts 8 Fine Arts 9 Manual Training 8
YEAR First Half	Education 2 Education 4 Fine Arts 11 Fine Arts 13 Manual Training 3	Education 2 Education 4 Fine Arts 11 Manual Training 4 Manual Training 6 Manual Training 7 Manual Training 9	Education 2 Education 5 Domestic Science 4 Domestic Art 6 Domestic Art 7 Domestic Science 6	Education 2 Education 7 Fine Arts 10 Fine Arts 11 Fine Arts 12 Fine Arts 13 Manual Training 7
SECOND Second Half	Education 3 Education 4 Fine Arts 11 Fine Arts 13 Manual Training 3	Education 3 Education 4 Fine Arts 11 Manual Training 4 Manual Training 6 Manual Training 9	Education 3 Education 6 Domestic Science 4 Domestic Art 6 Domestic Art 7 Domestic Science 6	Education 3 Education 7 Fine Arts 10 Fine Arts 11 Fine Arts 12 Fine Arts 13

SUBJECTS AND METHODS OF INSTRUCTION IN THE NORMAL SCHOOL.

Education.

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

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

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

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

Lectures, reports and practical work.

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

Lectures and assigned topics.

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

organization of work and cost and planning of equipments considered.

Lectures and discussions.

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

Manual Training.

1. See Education 4.

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

Practical work and discussions.

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

Practical work and discussions.

4. WOODWORK FOR SECONDARY SCHOOLS.—A course dealing with wood work processes adapted to high school pupils, involving a number of constructive problems and comprising advanced work in joinery, cabinet making, inlaying, veneering, decorating and finishing. Special attention is given to original work in designing and construction. Study of timber as noted under manual training 3.

5. WOOD TURNING.—Turning at the lathe in hard and soft woods, bringing in the various methods employed commercially, and involving center, face plate, chuck work and inside turning.

This course is closely connected with manual training 4, the completion of certain projects comprising work in both courses.

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

7. Wood Carving.—Elementary work in exercises and small objects to be followed by more elaborate projects, aiming to give a thorough knowledge of the foundation principles and a comprehensive view of the purpose and practice of carving as applied in elementary schools. Course 6 in design will be applied in this work.

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

9. Mechanical Drawing.—Work suited to secondary conditions; cavalier projection; coloring and tinting; perspective; intersections; shadows, elements of architectural drawing.

Domestic Science.

2. See Education 5.

3. Domestic Science Teaching.—The purpose of this course is to present the methods of domestic science teaching in the grades and the high school, together with practical work in cooking. It includes a study of foods, history of food products, traces the raw materials through the various processes of manufacture, comparative food values, study of cooking apparatus and fuels, and a consideration of various cookery processes. Special work in cooking and in serving breakfasts, dinners and luncheons is a part of the course.

Theory, practical work and discussions.

4. Advanced Course in Foods and Cookery.—Chemical and physiological classification and cost, preservation and preparation of foods; dietaries; a study of national foods; relation of food to climate; invalid cookery; food adulterations; bills of fare; the dish and table decoration; home and public hygiene; evolution of the home.

Observation and teaching with practical work and discussions.

5. PHYSIOLOGY AND HYGIENE.—A thoroughly practical course covering—I. The essentials of physiology based on laboratory experiments. II. Hygiene and sanitary science, including such topics as (a) foods, (b) milk supplies, (c) water supplies, (d) contagious diseases, (e) accidents and emergencies, (f) household sanitation, (g) sanitation of public buildings.

6. CHEMISTRY.—The first half year is spent in study of the essentials of chemical theory and in general laboratory practice, followed by a brief consideration of the chemistry of the carbon compounds and a more extended study of the applications of chemistry in the household. Laboratory work forms an important part of the course and full discussions are given in the recitation room.

Domestic Art.

4. See Education 6.

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

Reports and discussions.

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

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

Fine Arts.

5. See Education 7.

6. DESIGN.—The principles of design, rhythm, balance, harmony, as applied to line, form and tone. This course treats of design as a space cutting and space filling art,—straight and curved line compositions, adaptation of insect, animal and plant form motifs, color balance and color harmony, application to practical problems. The course aims to develop creative work.

7. COMPOSITION.—The principles of composition applied to plant form, landscape and figure motifs. Composition is treated as a space breaking art, with a study of the distribution and relation of tones. Work is done in black and white, values and colors, and includes the making of wood block prints after the Japanese methods.

8. APPLIED ART.—This course offers a practical correlation between design and crafts work. Problems are executed in wood construction, tooled leather, copper and enamel. This work is carried on under the direction of the Art Department. Special attention is given the metal crafts, including the construction of boxes, cups, bowls and simple articles of jewelry. The Department possesses a complete equipment for crafts work.

9. REPRESENTATION: THE PRINCIPLES OF PERSPECTIVE.—The aim of this course is to give students a thorough knowledge, in theory and practice, of the basic principles of drawing. It includes work from type solids, still life, and interior views, with pencil, pen and ink, and brush.

10. CHARCOAL.—Study of light and shade, and values, from still life groups, animal and figure poses. Cast drawing from heads and figures.

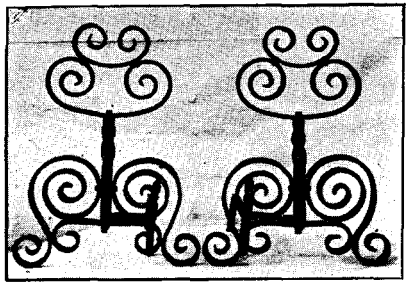
11. PEN AND INK rendering from photographs of figures, landscapes, buildings and street scenes. Studies of form and texture from flowers, leaves and still life groups. Out of door sketches in pen and ink.

12. WATER COLOR STUDIES from flowers, vegetables, insects, still life groups, animal and figure poses. Out of door sketches in color. Sketching from live animals, birds and fowls is a feature of the work in this as well as in the other mediums of expression.

13. CLAY MODELING.—Work from casts of ornaments, fruits, flowers and vegetables, head and figures. Work from natural forms, time sketches from animals, study of figure. Composition and simple problems in creative work.

TABULAR ARRANGEMENT OF SUBJECTS

	KIND OF WORK	PERIODS PER WEEK	NUMBER OF WEEKS	NUMBER OF CREDITS	PREPARATION REQUIRED
Domestic Arts 5	Sew.	10	36	2	
Domestic Arts 6	Sew.	10	18	1	
Domestic Arts 7	Sew.	10	18	1	
Domestic Science 3	Cook.	10	36	2	
Domestic Science 4	Cook.	10	36	2	
Domestic Science 5	Lab	6	36	1	
Domestic Science 6	Lab.	10	36	2	
Education 1	Rec.	3	36	2	English 3, History 4 and 5
Education 2	Rec.	2	18	1	Education 1
Education 3	Rec.	2	18	1	Education 2
Education 4	Rec.	5	36	2	Education 1, Manual Tr'g 2 or 3, Manual Train'g 8. Fine Arts 6
Education 5	Rec.	5	36	2	Educat'n 1, Dom. Science 3
Education 6	Rec.	5	36	2	Educat'n 1, Domest Arts 5
Education 7	Rec.	5	36	2	Education 1, Fine Arts 7 and 8, Manual Train'g 8
Fine Arts 6	Studio	5	36	1	
Fine Arts 7	Studio	10	36	2	
Fine Arts 8	Studio	5	36	1	
Fine Arts 9	Studio	10	36	2	
Fine Arts 10	Studio	5	36	1	
Fine Arts 11	Studio	10	36	2	
Fine Arts 12	Studio	10	36	2	
Fine Arts 13	Studio	10	36	1	
Manual Training 2	Shop	5	36	2	
Manual Training 3	Shop	10	36	2	
Manual Training 4	Shop	10	36	2	
Manual Training 5	Shop	10	18	1	
Manual Training 6	Shop	10	36	2	
Manual Training 7	Shop	10	18	1	
Manual Training 8	Draw.	5	36	1	
Manual Training 9	Draw.	5	36	1	



DESIGNED AND MADE BY STUDENT IN FORGING

INDUSTRIAL TRAINING;—AIMS AND SCOPE.

ARTHUR HENRY CHAMBERLAIN

THE NAME AND THE PURPOSE

Manual training, handwork, motor activity, constructive work, industrial education: these are some of the terms suggested to indicate the work proposed to satisfy the creative tendency in the individual. The term manual training is the one most commonly in use but it is now being argued by many that it does not convey fully, nor correctly, the idea or significance of the processes in question. Manual training implies training of a manual nature only; and at the present time, this is but one of the objects to be sought through the industrial processes. Hence the suggestion of the term, manual or industrial arts.

Of the various reasons advanced for the introduction of handwork into the curriculum, the following may be taken as being of chief importance. It must not be supposed that any individual advocate would advance all of the several reasons here given, because the particular exponent generally has in mind a specific purpose which he hopes to see realized through the introduction of the handwork processes:

First. Manual training, properly directed and carried on, will create in the mind of the individual a love for, and appreciation of the dignity of honest labor, such as can be had in no other way.

Second. The natural activity of the pupil; an activity that is native and that must find expression, is given freer play in the handwork processes than elsewhere in school.

Third. The industrial side of our work-a-day existence, calling to us as it does, from every side, and upon every hand, gains an added clearness in the minds of those boys and girls who engage in manual work in school.

Fourth. The immature mind of the pupil demands rest and recreation from the continuous application to book studies. The introduction of handwork relieves the tension and returns the pupil to his other tasks, quickened and refreshed in body and mind.

Fifth. The physical development of the pupil is brought about by doing such work as calls for bodily strength and action. He stands rather than sits and is enabled to assume healthful positions.

Sixth. The subject being rather concrete than otherwise, and something in which deception cannot readily find a place, the

moral standards of the pupil are raised. Any defect is readily observed by both pupil and teacher, the transparency of the work making it comparatively difficult for sham to be substituted for honest endeavor.

Seventh. Those who pursue work of a constructive nature are likely to possess a general dexterity or handiness, a deftness of hand in execution. The dexterity or ability to use one's hands, to handle materials and master tools is to be considered from the educative side only. In this connection it is not thought of as reaching over into the field of bread winning.

Eighth. Work in the manual training room, of whatever nature it may be or whatever form it may assume, will lay the foundation of a trade that may finally be carried to a more complete development.

Ninth. Since the concrete and the objective appeal to the untrained mind, as the abstract, abstruse conception can not, the books or traditional subjects are made clear where reinforced by the more tangible productions of the manual training room.

Let us examine each of these several propositions in turn and endeavor to discover the strength in each.

DIGNITY OF LABOR

The necessity of a tolerant spirit on the part of those who do not engage in physical labor toward those whose support comes through toil and struggle, is increasingly evident. In these days of capital and labor, of combination of money and union of men, of industrial competition and narrow margins, the dignity of hand labor should be appreciated by every thinking man and woman. According to the last census of the United States the number of those following some gainful occupation was something over twenty-nine millions, of which in round numbers, thirty-five per cent were engaged in agriculture, twenty-four per cent in mechanical and manufacturing lines, nineteen per cent in domestic and personal service, sixteen per cent in trade and transportation, and four per cent in professional pursuits. It will thus be seen that much of the work accomplished is carried on through the physical energies of our people.

Those who have examined most closely into this question affirm that in schools where manual training work is carried on, the sons of the wealthy and the sons of the poor stand side by side at the bench or the forge. The dust of labor covers each alike. The same problems confront the one as do the other; and each in turn has these problems to work out and solve. They sympathize, one with the other in disappointments and failures; and each rejoices with his fellow when success attends him. They touch elbows and there grows up between them a kinship that poverty upon

the one hand and wealth upon the other cannot dispel. There can be no doubt, that, more and more, these conditions are being realized, and people from all walks of life are being advantaged thereby.

THE DEMANDS FOR ACTIVITY

All present day education insists upon the necessity for activity on the part of the child. The philosophy of Plato, the theories of Pestalozzi, and the utterances of Froebel cried out for something in school work that should keep the child free and active and allow him to expand and grow in a normal manner. The necessity for activity in development has, indeed, been appreciated and understood since early times. The developing mind is an active mind. The immature body is a growing body. Building, making, creating, destroying; these are inherent traits in the child and are recognized by the exponents of any rational educational plan. Says Colonel Francis W. Parker, when speaking of manual training as being one of the many modes of expression: "Manual training has done more for the human race than the exercise of any if not all the other modes of expression. It is indispensible to normal physical development; it has had a mighty influence upon brain building."

In doors and out, at school or at home, the normal child expresses himself in terms of movement, of activity. The industrial arts will bring to the child through the various media, opportunity for such activity.

INDUSTRIAL DEMANDS

The complexity of and the deep significance of the industrial processes to every member of society are considerations worthy our attention. The industrial spirit of the day continually demands translation and interpretation at the hands of the child. The "what is it?" and "why?" form of question is ever being put. Contact with the materials of the manual training room, a study of the raw products, and participation in the various processes will assist toward a more complete understanding of our industrial life.

"An education which cultivates the industrial spirit is the best education the school can give; it is the only all round education; it is the only human education; it is the only education based on the self activity of the pupil and is therefore the only education which will satisfy the demands of our day and generation; potent beyond anything we have yet tried, it diminishes pauperism and crime, which are increasing out of all proportion to the growth of population, in spite of our present methods of training."

It is then, perhaps, not too much to say that contact with the actual materials of the shop and laboratory, the kitchen and the garden, will awaken the individual to a consciousness of the value and significance of the many individual phases that touch him on every side and help to shape his very existence.

THE NECESSITY OF CHANGE

No parent or teacher, no one who has studied child nature, but knows how impossible it is for the mind to hold itself to any set task for more than a short time. To realize this difficulty, let the adult, the reader, indeed, endeavor to hold himself to the consideration of a given topic to the exclusion of all else. Only as the mind is concentrated upon the subject in hand, only as the attention is directed toward the desired end is the particular lesson or task being truly considered. After a short period of such attention, the mind will wander and adjust itself to other things, returning, perhaps, to again take up the desired problem. This means that as much may be accomplished in a short period with concentrated effort, as by endeavoring to hold the mind for prolonged reaches of time, only to find the attention wandering and desultory and the ideas vague. Change with the mind as with the body is rest; and if the pupil, when wearied, can take up some manual occupation he will return finally to his books, fresh and ready to again engage in the more purely mental processes.

"Seek in every subject of study, especially in the lower grades, to provide motor activity, at least as an accompaniment of study and recitation. If possible, however, invent means which shall use up the motor tendencies and at the same time make a contributing part of the more purely thought work required of the child. In short, let some doing accompany all the child's efforts to learn."

In schools where such forms of work are provided, that the pupil may readily change from the one to the other, much improvement has been found. The pupil looks forward to his manual work with pleasure, and attacks with vigor and energy the problems of his daily recitations.

PHYSICAL DEVELOPMENT

There can be no question of the desirability of the strong body. The time has passed when to be a student means to be an invalid and a weakling. The pale student of the monastery with his book for companion is no longer the symbol for education. It is, perhaps, the duty of the school to make for physical and bodily growth, fully as much as it is to minister to the mental side of the pupil's nature. Many school rooms are admirably suited to prevent physical growth.

In a close fitting seat, leaning over upon a desk several sizes too small, or reaching up to one as much too large, with shoulders stooped and chest compressed, the boys and girls are, through the long hours of the day, assuming harmful and dangerous bodily positions. Instead of being free and unhampered, they are many times, cramped and warped.

Muscular action and the exercise of the larger organs of movement are provided for in any rational form of the industrial arts. If the child sits, he may usually be in a healthful position. If he stands or walks about, his movements are free; he works with materials that offer resistence to his efforts and with tools that demand strength in their mastery. The effects of certain necessary harmful bodily attitudes are counteracted and undeveloped muscles are strengthened.

DECEPTION MADE DIFFICULT

The more concrete the work in hand, the less likely is doubt and uncertainty to play a part. In his grammar or history a mistake upon a pupil's part may easily pass unchallenged. The student glides over an error consciously or without intent; and even the teacher may not detect the fault. In a word, both teacher and pupil may be deceived. In the shop or in the cooking room it is quite different. Be the box too long or too short, the metal too thick or too thin, the joint too loose, the basket askew, or the ingredients improper in proportion, little doubt need enter the pupil's mind as to the rightness of his work. He can see and have pointed out to him the fault or defect, and can himself usually tell when the same is remedied.

How often do we find the pupil in his book lesson, believing thoroughly that he understands the subject, when later it becomes apparent that he does not! Simply repeating something, memorizing a statement, or working through an abstract problem, does not prove that there is an understanding of the same.

GENERAL DEXTERITY

There has been no lack of manual training advocates, especially among the parents themselves, to put forward the claims for a general dexterity of hand. Work of a constructive nature, when taken up by the boy in school, will, they affirm, render him **handy at making and repairing things,** and these people will tell you that this is the chief benefit to be derived from a study of the manual arts.

Certain it is that many friends of manual training consider the ability to use a knowledge gained, toward useful and purposeful ends a desideratum. As a rule, however, they do not think in terms of its industrial, or economic, or commercial value, but

rather in terms of its so-called, educational worth. In other words, while desiring that industrial work be directed in useful channels, they look upon it in the light of an added tool, that will assist in further development, rather than as a factor bringing immediate results.

THE TRADE IDEA

A sharp line is drawn by most advocates between the teaching of the industrial arts for the purposes of learning a trade upon the one hand and what is spoken of as the purely formative side, upon the other. There have all along been those who have ably put forward the idea that handwork in schools should not only aim at but should prepare directly for some one of the many trades in which the pupil might engage. Many persons, a majority no doubt, do not discriminate between manual training for general purposes and the work carried on in the regular trade school; and since the elements of so many trades are of necessity found to exist in the work done in the various school shops, the chief value attaching to handwork is conceived to be in furnishing the foundations for some one or more of these several trades.

That the province of the real trade school is somewhat distinct from the field of the manual arts in the regular school, and that the two must not be confused, need not be considered at length here. Since, however, to earn one's livelihood is quite legitimate, rather than degrading, and since the making of things without the application of knowledge gained is no longer thought of as being educational, the trade and educational phases are, in the last analysis, not in conflict. Certain is it that the boy or the girl, having intelligently pursued work in manual training is enabled to take up and carry forward not only the plans worked out by others, but is capable of originating problems. His ability in self expression and his power of individual initiative is quickened.

The writer was recently told by the manager of a large furniture factory, that the most difficult undertaking connected with his business was the securing of efficient men to plan and direct new enterprises; that more than elsewhere, in the graduates of the manual training high school, were they finding the men they desired. I could give so many instances in line with the above that individual cases would lose their value.

OBJECTIVE TEACHING CLARIFIES MENTAL CONCEPTS

Objective teaching has long been looked upon as being of extreme value in the school. In the manual training the pupil approaches more nearly the tangible product than elsewhere in school work. When the industrial processes are used, not so much as an end in themselves, nor merely from the standpoint of

a school subject, but as a medium of expression, the other subjects are illuminated. The shadows are thrown into relief, so to speak. It is claimed that the problem in mathematics or the experiment in science, that may prove only so many words to the pupil, is readily understood when the model or bit of apparatus made by the student, is used for illustration.

When carried to its final analysis this point brings one to the idea of the correlation of manual processes with other school work. Some declare that when thus considered manual training will be the "handmaid" of the other subjects and will thus become degraded. Those who hold this view are, of course, making the subject, rather than the child, the object of chief concern. Any rational unifying of subjects can only result in benefit to all.

With this brief consideration of the more important claims made for the introduction of handwork into the school, we may now turn to a somewhat general discussion of the field of the industrial arts.

THE EXERCISE SYSTEM

The so-called exercise system of manual training is that first put into actual practice in Russia and is usually spoken of as the Russian System. It is very probably true that work of the nature indicated was actually begun in France. The exercise system, worked out largely in the secondary and technical schools, and at a date earlier than the introduction of handwork into the grades, comprised, as the term implies, a series of abstract exercises. Using wood as the material to illustrate the thought, certain typical tool processes would be considered, such as cross or rip sawing, chiseling, the construction of various joints, and so on. In sewing, to illustrate further, various common stitches were practiced upon a bit of fabric prepared for such work; button holes were made and buttons fastened, sample pieces of cloth being used. Later on in the course, indeed, these abstract exercises frequently found expression in a completed article.

These exercises, whether in wood, iron, cloth, or other material, were based upon supposed difficulty in tool manipulation, the simple movements being followed in regular order by the more difficult. Under this system, as a general rule, and in most places, the exercises or articles made become the property of the school, to be disposed of as desired.

Teaching was carried on in the mass, the individual form of instruction being seldom resorted to. The exercises, too, were given in direct order and in some instances, as pertains in certain Danish schools to-day, the class worked as a unit, until some one dropped behind or forged ahead of his fellows, when the class

would pause that all might again start at a given signal and proceed in **harmony** as before.

THE MODEL SYSTEM

The exercise system, under which the abstract task was performed, was the forerunner of the model system, which comprehended the making of complete objects. This in itself was a long step forward, the models being thought of as articles of use. What is known as the Swedish **Sloyd** or **Slojd** emphasizes more clearly that anything else this model scheme of handwork. Again taking wood as the illustrative material, although at first paper, rushes, iron and other materials were used, a number of objects were presented, carefully arranged and graded as to difficulty of construction, considered chiefly with reference to tool manipulation. It was therefore necessary to determine what tool, or what particular exercise with a given tool, presented the least difficulty. As before stated, this same principle was applied to other forms of handwork, sewing, for example, to use the illustration before given. In this manner the pupil was carried along by regular steps, from the simple to the complex, from the known to the unknown, from the concrete to the abstract.

Here, as under the exercise system, the sequence was arranged mainly on the basis of difficulty in tool manipulation, without consideration of necessity or choice, or varying ability in the pupils. The models were made in both rectilinear and curvilinear form to be tested not only with measuring tools, but also with the eye and sense of touch. They became the property of the student by whom they were produced.

WHAT IS DEMANDED

While those advocating such a scheme, as is here mentioned, realized that the abstract would not satisfy, they failed many times to understand that the model could be nearly or quite as far removed from the concrete as the exercise itself. Here, as under the exercise system, the thing is made because it is the next object in the series or course, and not necessarily because any particular need or desire on the part of the child calls for the making of such an object. No demand may arise from the pupil himself for a flower stick or a keyboard, a hammock or an apron. He makes the one or the other, in some instances putting it to use or, perhaps, giving it away; frequently it is left at school, or if carried home, it is stored in the attic or laid aside in the bureau drawer to be exhibited to visitors.

Technique, too, has been emphasized to the exclusion of thought values. A technical ability is to be desired but it is possible to attain such ability without regard to the thought behind the process. The purpose of the work should be to

generate power, and dexterity of hand should not and need not be had at the expense of other training.

Let us have a real, live, industrial form of work in this day when the topic which overshadows in public interest is "the industrial and commercial development of this country, and the training which should be given our youth in the public schools, colleges, universities, and special school to best fit them for the changing conditions which the twentieth century is bringing to them."

WORK SUITABLE FOR GIRLS

This is a wholesome sentiment and is in accord with what has already been said. There is, however, one side of the question of industrial education yet to be emphasized: that of handwork for girls. More and more, attention is being given such work in the schools, but too frequently it is from the sentimental standpoint. The boys have manual training, consequently we *must* provide some work whereby the girls may occupy their time during such periods. Such an argument is no argument at all.

The time has passed when any thinking man or woman will advocate the same kind or type of work for girls and boys alike. In the early grades all may engage in similar occupations, but differentiation should not be long delayed, and processes suitable to the aptitudes, desires and actual needs of girls should be offered and required. At present, aside from art training and physical culture, no industrial work is given the older girls save sewing and cooking, and these in the upper grammar grades and a few special high schools.

It is unnecessary to begin here a discussion as to why these arts cannot or are not taught at home. Such economic and sociological questions are involved as seem to be a barrier to home teaching, although the value of home instruction is unquestioned. Continuous courses throughout the grades, high school and college should be offered. Not only sewing and cooking in their narrow aspects, but a study of the chemistry of foods, simple analyses, marketing in its economic aspects, heat, light, ventilation, house sanitation, plumbing and disinfectants; proper methods of sweeping, dusting, laundry and care of the home; hygiene, nursing, and emergency aid; a knowledge of accounts and business forms, domestic architecture and planning of the house and grounds; gardening and tree and floral culture, and much more that in the Swiss schools is included under the term "female handwork," and which is both practical and cultural.

LIST OF GRADUATES WITH DATE OF GRADUATION

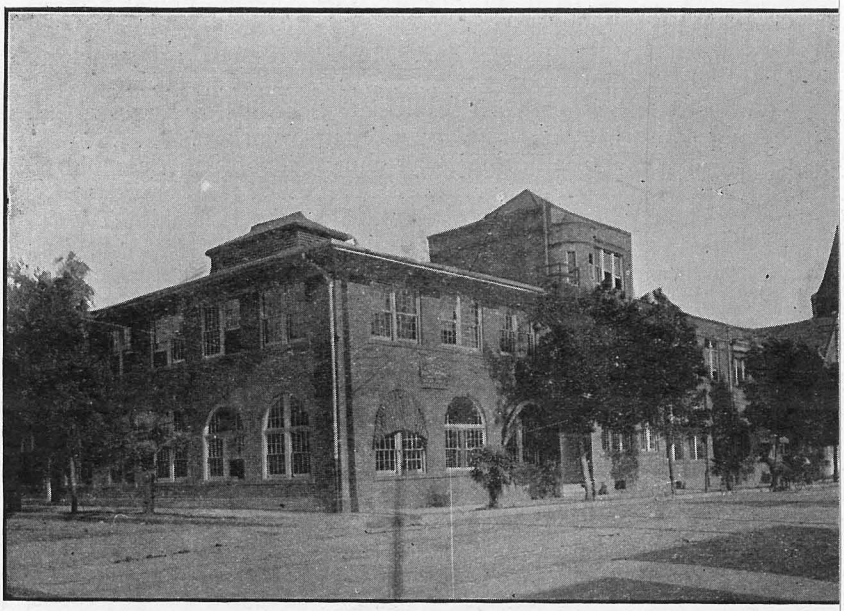
Adams, Gertrude, 1904.....Los Angeles, Cal.
Anderson, Lucy J., 1900.....Los Angeles, Cal.
Babcock, Martha Maud, 1904.....
Asst. in Art and Manual Training, Pasadena, Cal., Public Schools
Barker, Katherine K., 1899.....
.....Domestic Science, Los Angeles Public Schools
Batchelder, Lizzie E., 1897.....
.....Manual Training, Los Angeles Public Schools
Beckett, Alice M., 1901.....Anaheim, Cal.
Beckwith, Kate B., 1896 (Mrs. Thos. E. Everett).....Tulare, Cal.
Blanchard, Ada F., 1897.....
.....Manual Training, Los Angeles Public Schools
Blanchard, Estelle, 1903.....
.....Domestic Science, Los Angeles Public Schools
Blanford, Mary E., 1899.....
.....Domestic Science, Los Angeles Public Schools
Brooks, Ada M., 1900..Kindergarten, Public Schools, Pasadena, Cal.
Brownson, Gladys, 1906.....Public Library, Pasadena, Cal.
Burkhead, Ada H., 1896 (Mrs. Hale Weaver)....Los Angeles, Cal.
Burnett, Grace, 1899 (Mrs. Carl Raleigh).....Los Angeles, Cal.
Chamberlain, Arthur Henry, 1896.....
....Dean and Professor of Education, Throop Polytechnic Inst.
Cleveland, Ada C., 1897.....Teacher, Pasadena, Cal.
Colyer, Gertrude, 1903 (Mrs. L. O. Atwood).Middleborough, Mass.
Combs, Sara C., 1897.....Manual Training, Visalia, Cal.
Cook, Mary A., 1897.....Ednia, Mo.
Daniels, Esther C., 1895 (Mrs. Turner).....
.....Manual Training, Los Angeles Public Schools
Davidson, Leonard E., 1900.....
.....Manual Training, San Francisco Public Schools
De Yoe, Mrs. Rose, 1899.....
.....Domestic Science, San Francisco Public Schools
Dickey, Florence Ivah, 1906.....
.....Manual Training, Los Angeles Public Schools
Diffenbacher, Lulu A., 1905.....Los Angeles, Cal.
Dobbs, Ella V., 1900.....
.....Elementary Manual Arts, Throop Polytechnic Inst.
Elleau, Jeannete M., 1898 (Mrs. Harold A. Simpson), Pasadena, Cal.
Elleau, Pauline M., 1898 (Mrs. Frederick Rhoades)..Seattle, Wash.
Ellis, Bertha Alma, 1906.....
.....Domestic Economy, Long Beach, Cal., High School
Faithfull, Claude A., 1898.....
....Mechanical Drawing, Poly. High School, Los Angeles, Cal.

Fish, Carrie May, 1903.....Pasadena, Cal.
Fisher, Pearl B., 1897.....
Asst. in Drawing, and Instructor in French, Throop Poly. Inst.
Fordyce, Mabel, 1899.....Pasadena, Cal.
Frost, Lillian, 1905.....
.....Sewing, Girls' Collegiate School, Los Angeles, Cal.
Getchell, Mary E., 1901.....Tropico, Cal.
Gibson, Annette, 1901, Manual Training, Los Angeles Public Schools
Glick, Naomi, 1901.....Terre Haute, Ind.
Gooch, Mrs. Emma A., 1902.....
.....Manual Training, Los Angeles Public Schools
Gould, Marie Augusta, 1902.....Pasadena, Cal.
Gower, Hattie F., 1895.....
.....Manual Training, Los Angeles Public Schools
Gower, Mary L., 1900.....Los Angeles
Greening, Susie A., 1903.....
.....Domestic Science, Los Angeles Public Schools
Guillou, Alfred, 1904.....Pasadena, Cal.
Hahn, Ida, 1903.....Domestic Science, Los Angeles Public Schools
Haller, Dora, 1899.....Kindergarten, Los Angeles Public Schools
Hannah, Lillian, 1898.....Ontario, Cal.
Harris, Caroline, 1895, Manual Training, Los Angeles Public Schools
Haskell, Beulah, 1904.....Pasadena, Cal.
Hawley, Josephine, 1906.....Pasadena, Cal.
Hazzard, Mrs. Jessica C., 1901.....
....Domestic Science, State Normal School, Los Angeles, Cal.
Heald, Oscar Leslie, 1903.....Student, Stanford University
Holbrook, Lucy M., 1897.....Teacher, Worcester, Mass.
Holton, Lola N., 1902.....Drawing, Long Beach, Cal.
Howard, Celia Eleanora, 1903.....Teacher, Long Beach, Cal.
Howard, Grace Irene, 1906.....Pasadena, Cal.
Hunt, Genia A., 1898.....
Manual Training, Harvard Military Academy, Los Angeles, Cal.
Johnson, Annette, 1896, Manual Training, Los Angeles Public Schools
Johnson, Mrs. Carrie, 1901.....
.....Manual Training, Los Angeles Public Schools
Jordan, Mabel, 1899 (Mrs. Chas. F. Dennison).....Pasadena, Cal.
Junkin Anna M., 1906, Domestic Science, Los Angeles Public Schools
Junkin, Mary, 1902, Manual Training, Los Angeles Public Schools
Keyes, Mrs. Helen B., 1896.....Hartford, Conn.
Lamb, Jennie M., 1906.....
.....Asst. in Domestic Art, Pasadena Public Schools
Little, Mrs. Lulu P., 1901.....Los Angeles, Cal.
Lyde, Louise, 1900, Domestic Science.....Oakland, Cal.
Marsh, Mable, 1905.....Los Angeles, Cal.
Martin, Walter W., 1900.....
.....Instructor in Wood Working, Throop Polytechnic Inst.

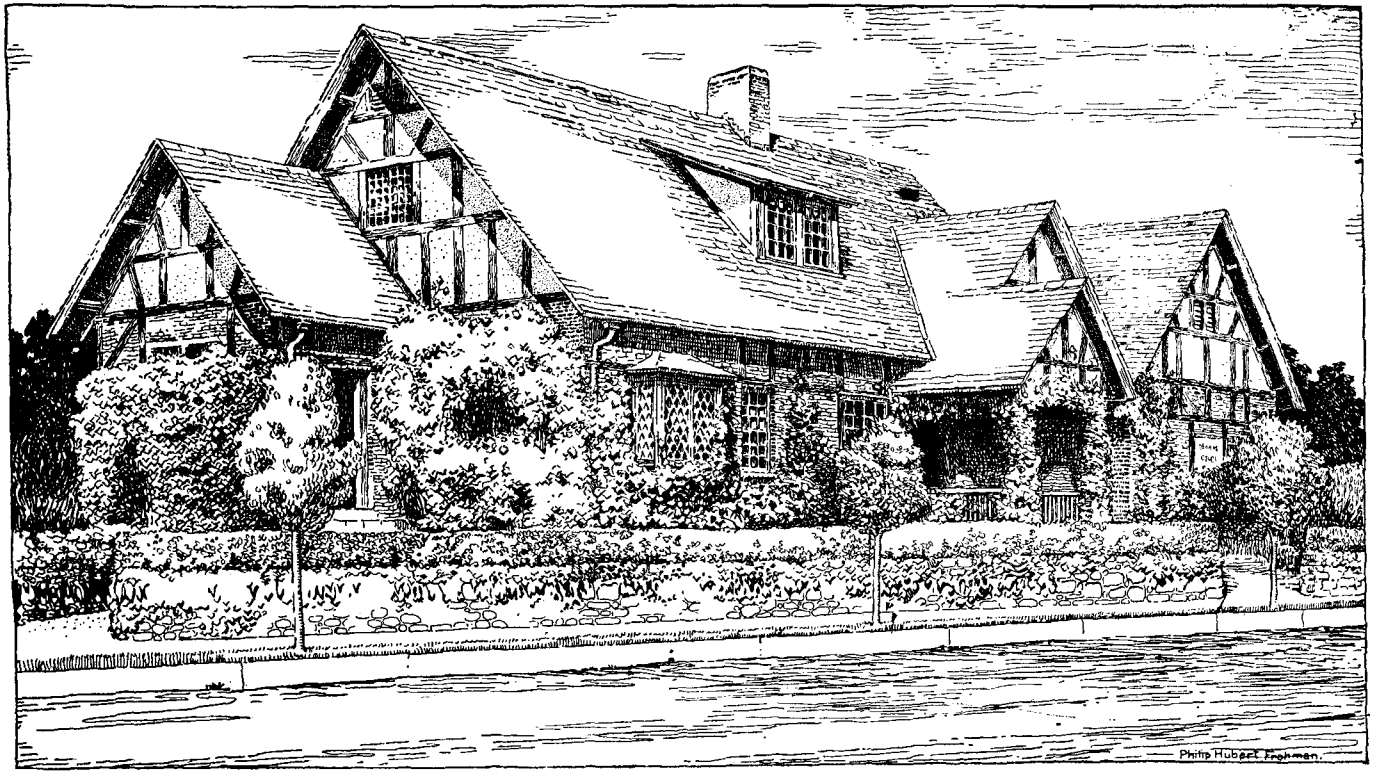
Mathews, Amanda, 1896.....Los Angeles, Cal.
McLaren, Jennie, 1896.....Architecture, Alameda, Cal.
Mellish, Ida, 1897.....Art Student, Rome, Italy
Metcalf, Stella, 1900 (Mrs. H. S. Knapp).....Bertrand, Neb.
Miller, Ada J., 1901, Manual Training, Los Angeles Public Schools
Miller, Charles M., 1895.....
Asst. Supervisor of Manual Training Los Angeles Public Schools
Miller, James C., 1905.....
.....Instructor in Manual Arts, Throop Polytechnic Inst.
Moore, Laura P., 1905....Sewing, Y. W. C. A., Los Angeles, Cal.
Moore, Nellie, 1901.....Teacher, Long Beach, Cal.
Moore, Nevada, 1906..Manual Arts, Public Schools, Flagstaff, Ariz.
Morgan, Mabel V., 1900.....
.....Domestic Science, Public Schools, Los Angeles, Cal.
Mosher, Mary Stratton, 1905.....Berkeley, Cal.
Nicholson, Maude L., 1901..Doctor of Osteopathy, Pasadena, Cal.
Nyce, Ida May, 1904.....Pasadena, Cal.
*Olson, Albert L., 1898.....
Parry, Geraldine, 1904.....
.....Domestic Science, Los Angeles Public Schools
Parsons, Ellen N., 1901.....Teacher, Bonsall, Cal.
Peabody, Sallie, 1900.....Newport Beach, Cal.
Pearce, Mrs. Susan, 1900.....
..Domestic Science, Girls' Collegiate School, Los Angeles, Cal.
Pearson, Leo Earl, 1906, Drawing and Metal Work.....
.....California Polytechnic School, San Luis Obispo
Read, Archie L., 1899.....San Francisco
Reed, D. C., 1904.....Supt. City Schools, Yakima, Wash.
Rice, Meta Cleora, 1906.....Pasadena, Cal.
Richards, Bessie Everett (Mrs. V. Whitehead) Artist.....
Riggins, Ara, 1896...Teacher and Missionary in.....
.....Caligio Palmore, Chihuahua, Mexico
Ross, Donald A., 1902, Supervisor Manual Training, Pasadena, Cal.
Ross, Minnie E., 1902.....
.....Manual Training, Los Angeles Public Schools
Russell, Emma, 1898 (Mrs. Frank C. Heath).....Berkeley, Cal.
Sabin, Jessie MacFarland, 1899.....Pasadena, Cal.
Sanders, M. Frances, 1898.....
.....Manual Training, Los Angeles Public Schools
Seegmiiler, Frances Caroline, 1902.....Teacher, Whittier, Cal.
Shields, Mrs. Alice B., 1898.....
.....Manual Training, Los Angeles Public Schools
Simcoe, Benjamin F., 1895.....
.....Manual Training, San Francisco Public Schools
Simpkins, Mary E., 1904.....
.....Manual Training, Los Angeles Public Schools

*Deceased.

Smith, Mary M., 1897 (Mrs. Wald).....Riverside, Cal.
Snell, Harry M., 1905.....Manual Training, Winnipeg, Canada
Southwick, Clara, 1899.....
.....Instructor Elementary School, Throop Polytechnic Inst.
Stevenens, Elizabeth, 1901.....Lincoln Park, Cal.
Story, Estelle Cornelia, 1905.....
.....Domestic Science, Union High School, Whittier, Cal.
Toll, Mabel E., 1900.....Baldwinsville, N. Y.
Van Hook, Kate, 1900.....Manual Training, Hiawatha, Kansas
Wakeham, Blanche, 1903.....
.....Asst. Domestic Economy, Throop Polytechnic Inst.
Webber, Marie Bambrick, 1898.....Highgrove, Cal.
Woodbury, Fred Ralls, 1906.....
.....Manual Training, Horton School, Oakland, Cal.
Wright, Charles H., 1897.....Architect, Boulder, Colorado

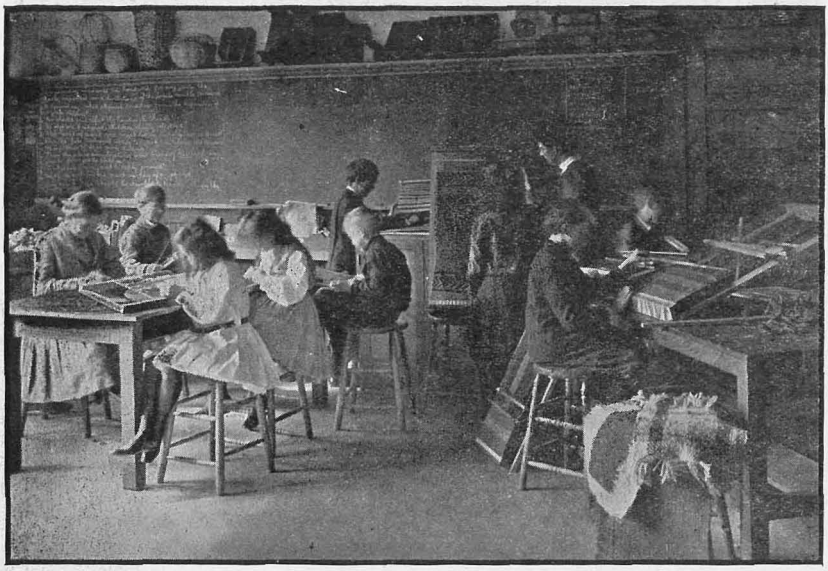


POLYTECHNIC HALL

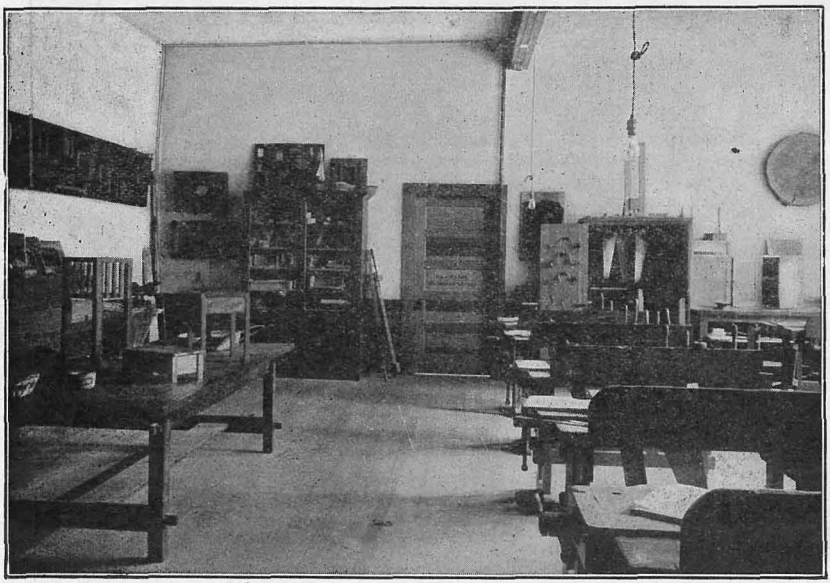


STICKNEY MEMORIAL ART BUILDING

PEN AND INK SKETCH BY STUDENT



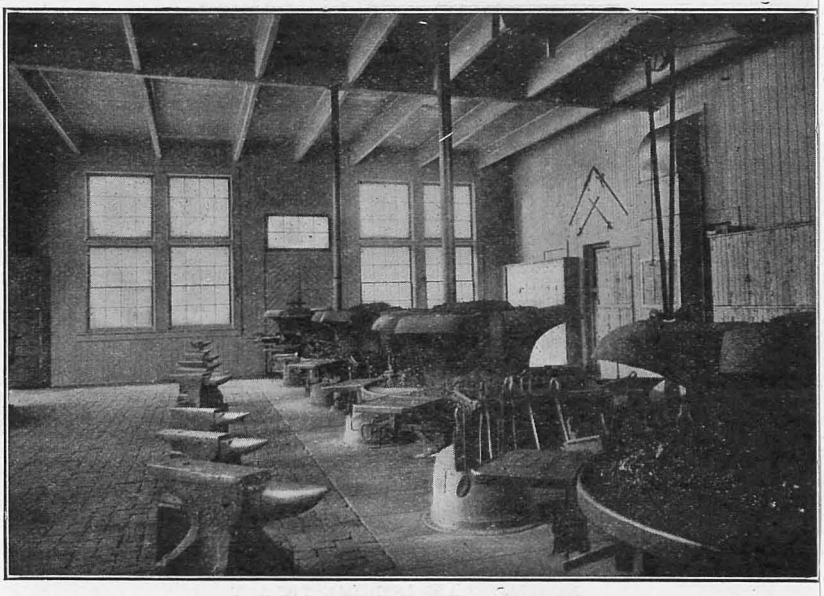
ELEMENTARY MANUAL ARTS—PRACTICE CLASS



MANUAL ARTS—WOOD WORKING ROOM

NORMAL CLASS IN DOMESTIC ART

NORMAL CLASS IN DOMESTIC SCIENCE



FORGING SHOP

DESIGNED AND MADE BY STUDENT
IN WOOD SHOP

PORTRAIT BUST, MODELED FROM L