SECOND ANNUAL CATALOGUE

—OF—

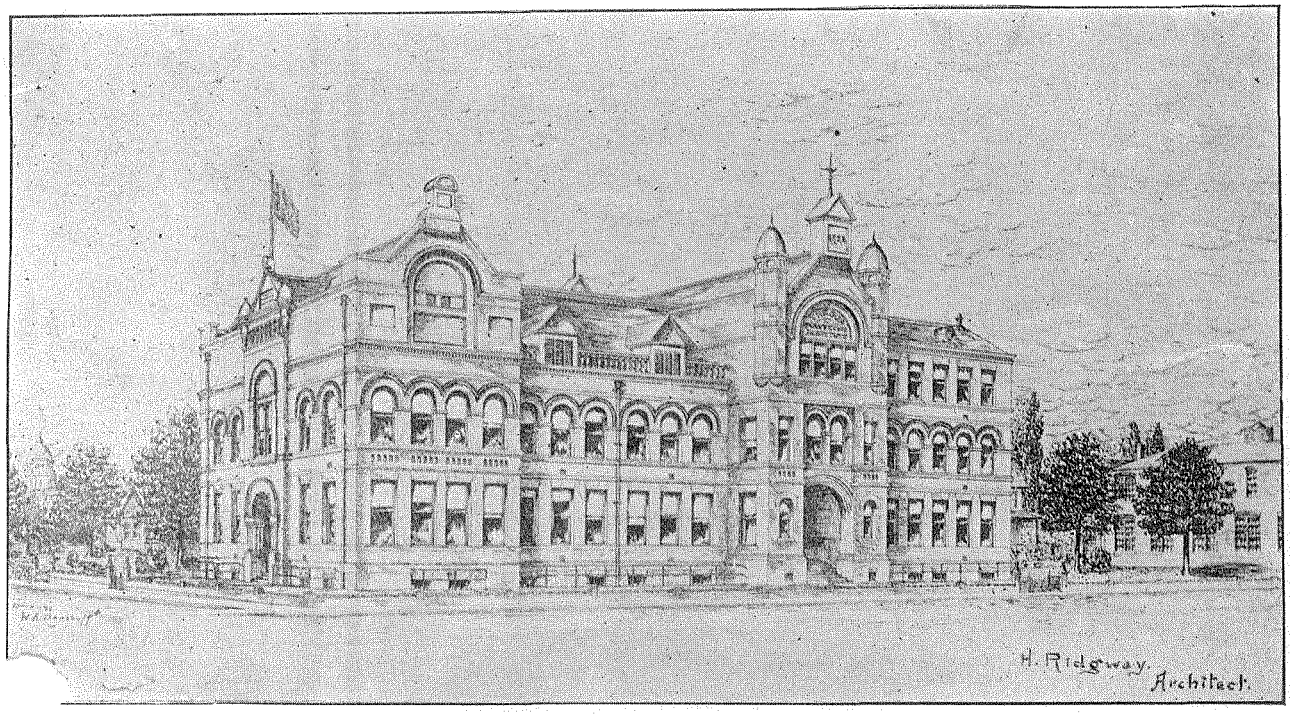
THROOP

POLYTECHNIC INSTITUTE

AND

MANUAL TRAINING SCHOOL.

PASADENA, CAL.
1893-1894.



EAST HALL—THROOP POLYTECHNIC INSTITUTE.

CALENDAR

1893-1894

Fall Term Begins..... Wednesday, September 20, 1893
Thanksgiving Vacation .....Thursday, Nov. 23 to Monday Nov. 27
Fall Term Ends..... .... Friday, December 22

HOLIDAY VACATION.

Winter Term begins .....Monday, January 8, 1894
Winter Term Ends .....Friday, March 30

SPRING VACATION.

Spring Term Begins .....Monday, April 4
Spring Term Ends .....Wednesday, June 20

SUMMER VACATION.

Board of Incorporators.

Hon. H. W. Magee
W. U. Masters
Maj. George H. Bonebrake
Hon. T. P. Lukens
Prof. T. S. C. Lowe
F. C. Howes
Hon. A. G. Throop
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Senator Delos Arnold
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Hon. P. M. Green
Milton D. Painter
Ex-Gov. Lionel A. Sheldon

Officers of Instruction and Government.

CHARLES H. KEYES, A. B., President
Civics and Education.

MILLARD M. PARKER, A. M.
Greek and Latin.

ALFRED J. MCCLATCHIE, A. B.
Biology.

HERBERT B. PERKINS, S. B.
Drawing and Chemistry.

CLARENCE E. ALDERMAN, B. S.
Physics and Electricity.

LOUISE MONTGOMERY, B. S.
English and History.

N. SAUNDERS, A. B.
French, German, and Spanish.

W. H. PARKER,
Wood Turning and Carving.

( )
Iron Work, Forging, Etc.

ALICE H. CAMPBELL,
Sewing and Cooking.

( )
Machines, Metal Work, Etc.

FRANK J. POLLEY, Secretary,
History and Accounts.

MRS. ELLEN J. Wilson,
Preparatory Department.

MILLIE A. MORSE,
Typewriting and Stenography.

O. STEWART TAYLOR,
Vocal Music.

MARIE A. NEY,
Drawing and Painting.

CARRIE B. CONGER,
Instrumental Music.

MRS. J. B. SUNDERLIN, Matron,
Wooster Hall.

The above is the list of officers and instructors at the close of the year 1892-3. Additions to the faculty for the year 1893 4 will be announced in the Special Circular of Information No. 2. to be issued in August.

Board of Trustees.

Hon. A. G. Throop,	Pasadena, Cal.,	1893
Hon. Enoch Knight	Los Angeles, Cal.,	1893
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Hon. H. M. Green,	Pasadena, Cal.,	1894
Mrs. Jeanne C. Carr,	Pasadena, Cal.,	1894
Norman S. Bridge, M. D.,	Sierra Madre, Cal.,	1894
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E. F. Spaulding, A. M.,	Pasadena, Cal.,	1895
W. E. Arthur, Esq.,	Pasadena, Cal.,	1895
Hon. W. L. Hardison,	Santa Paula, Cal.,	1896
George H. Deere, D. D.,	Riverside, Cal.,	1896
Prof. Charles F. Holder,	San Francisco, Cal.,	1896
E. L. Conger, D. D.,	Pasadena, Cal.,	1897
Mrs. Louise T. W. Conger,	Pasadena, Cal.,	1897
J. W. Scoville, Esq.,	Pasadena, Cal.,	1897

Officers of the Board.

Hon. A. G. Throop, *President.*

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L. W. Andrews, Esq., *Secretary.*

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Executive Committee.

Hon. A. G. Throop, Pres. C. H Keyes, W. E. Arthur, Esq., Rev. E. L. Conger, D.D., Mrs. Jeanne C. Carr.

WOOSTER HALL.

STUDENTS' DORMITORY AND DINING HALL.

HISTORICAL SKETCH.

FOUNDING.

The Throop Polytechnic Institute of Pasadena, California, was founded by Hon. Amos G. Throop, who endowed it with $200,000, and consecrated all his energy to its support, in 1891. Articles of incorporation were filed September 23d; the first Board of Trustees organized on October 2d. A five years' lease of the Wooster Block, a handsome and commodious four-story brick building, situated at the corner of Fair Oaks avenue and Kansas street, was at once secured and immediately fitted up with appropriate furnishings. The doors of the institution were opened to students on November 2d. It was established as an institution of learning, embracing the different departments of higher education, to furnish to students of both sexes and all religious opinions, a liberal and practical education, which, while thoroughly Christian, is to be absolutely non-sectarian in its character. It has since been determined to make the Manual Training and Polytechnic Departments the leading features of the institution.

LOCATION.

Pasadena is generally acknowledged to be the most beautiful residence city in California. It has a population of over seven thousand, and its suburbs are the homes of about five thousand more. 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 Mount Wilson, the most picturesque of the California Alps. In beauty and healthfulness, in the culture of its homes, and in its high social and moral tone, Pasadena is without a rival in the Golden State. It is reached by the Santa Fe and the Los Angeles Terminal Railways. An electric railway, whose lines pass just in front of each of the Halls, is now in process of construction. This road extends from Los Angeles through South Pasadena, Alhambra, Garvanza, on to Altadena, and connection with the great Mountain Railway now being completed up Echo Mountain, Mount Lowe and Wilson's Peak. Students living at any point along this line will be enabled to live at home and make the daily trips to and from the institution for little more than ordinary street car fare.

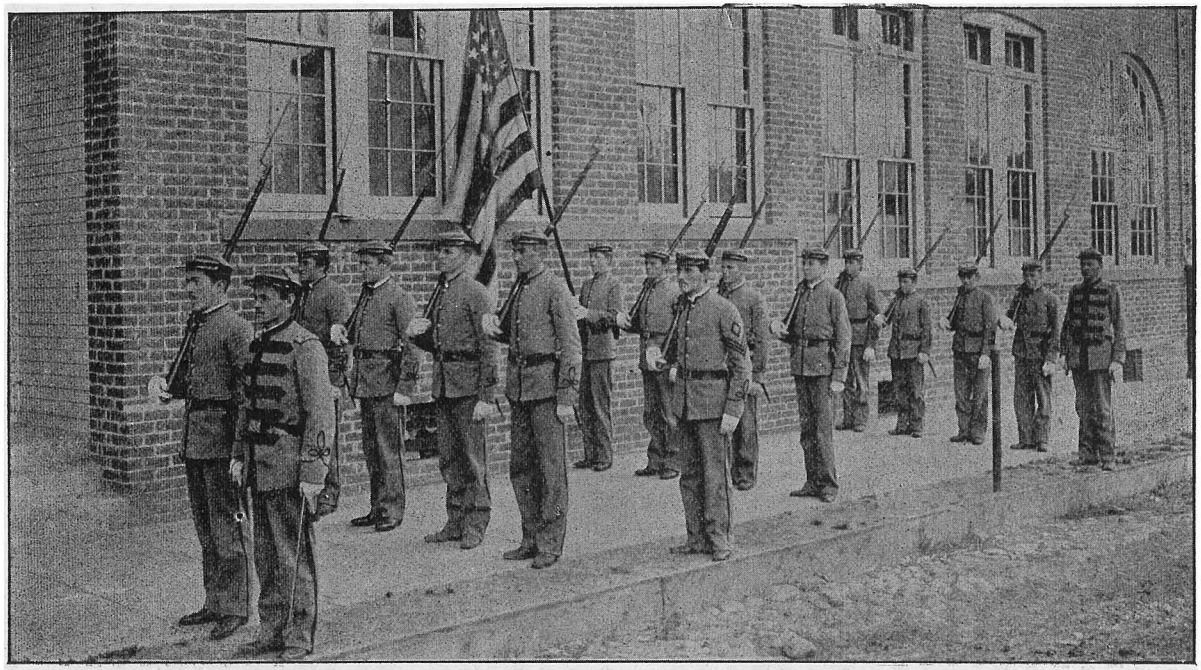
COURSES, DEPARTMENTS, ETC.,

In addition to the regular courses of the Manual Training School and Polytechnic Department, in which large opportunities for professional work will be offered, special provision has been made for the preparation of teachers for service in high schools as instructors in the Languages, Mathematics, Natural Sciences, &c. The training of teachers for Manual Training and other schools, in which education by doing has become a real thing, will receive practical attention. Special Laboratory opportunities will be offered mature students who have had experience in the school room.

The Preparatory Department for the Manual Training School will receive a limited number of boys and girls who need not only the preparation to qualify them to enter upon regular work in the school, but who demand more special and individual attention than can be given in other schools. To realize the purpose of this Department, however, will demand that only a small class be admitted. Applications for this department must accordingly be made early.

A Department of Accounts, Stenography and Typewriting will furnish first-class business training.

The Department of Art offers excellent facilities in both Painting and Drawing.



CO. A., THROOP POLYTECHNIC CADETS.

The Department of Music affords opportunity for a higher grade of musical culture than is ordinarily available.

SPECIAL LECTURES.

The management has the assurance of Norman Bridge, A. M., M. D., Professor of Clinical Medicine and Physical Diagnosis of Rush Medical College, Chicago that he will give a number of afternoon talks during the coming year on the hygiene of school life and intellectual growth, as well as of general living, to all the students. He will also give several personal and confidential talks to the young men alone.

Dr. Kate S. Black, of Pasadena, has signified her willingness to contribute to the general course as well as to give a series of talks to the young ladies alone.

D. W. Mott, A. M., M. D., of Santa Paula, will lecture upon hygienic themes, and give the young men a few lectures on subjects of special interest to them.

ATHLETICS, MILITARY COMPANY, ETC.,

Every encouragement will be given to the legitimate growth of athletics. Baseball, football and tennis associations have already been made. An excellent military company, "The Throop Polytechnic Cadets," was organized early in November. 1892. They were well uniformed and armed and have been drilled in a thorough manner by their Captain, George H. Miner.

HOMES FOR STUDENTS.

Upon the completion of the Polytechnic Hall, all class work was transferred from the Wooster Hall, which was at once fitted up as a students' home. It is in charge of Mrs. J. B. Sunderlin, and three members of the faculty. Its dining hall is operated by the students and faculty on the co-operative plan. which enables members of the school to make the total cost of living much lower than is usually possible in California. The average cost of board, room, etc., for the past year has not been over four dollars and seventy-five cents.

Parties desiring quarters in this building must apply early, as only forty young men and thirty young ladies will be received. Other students will find board in private families at from five to six dollars per week, and any desiring such accommodation should communicate with the Secretary, Frank J. Polley, who will engage quarters for all applicants who will indicate specifically the character of the accommodations required.

LIBRARY.

A Library has already been established and the collection of valuable works of reference begun; about one thousand volumes bearing chiefly on English Literature, History and Natural Science have been purchased. The works on Physics, Chemistry, Electricity, Botany, Zcology, etc., have been placed in the various laboratories. The remainder of the library was located in the general assembly and study room. Through the generosity of Mrs. Jeanne C. Carr, the school received three hundred volumes of historical and scientific books, which proved a very valuable aquisition to the working library.

DISCIPLINE.

The discipline of the institution will constantly keep in mind the development of self-governing citizens, self-respecting, law-abiding men and women. The helpfulness of the ever-watchful friend will take the place of the educational police officer. Student will be expected to attend whatever church their parents or guardians may elect. Sixteen societies have houses of worhip and pastors located in this city. Representatives of all the leading denominations are found

POLYTECHNIC HALL.

on the faculty, and a definite effort will be made to establish in the community such a relationship for the student as is desired by the home.

MANUAL TRAINING DEPARTMENT.

It has been determined to make this department one of the leading features of the institution. One of its chief purposes, in the the language of Prof. George S. Mills, is "to foster a higher appreciation of the value and dignity of intelligent manual labor. A boy who sees nothing in manual labor but dull brute force, despises both the labor and the laborer. With the aquisition of skill in himself comes the willingness to recognize skill in his fellows. When once he appreciates skill in handicraft, he honors the workman. The social influence must not be underrated. Many perplexing questions of the day arising from lack of sympathy between the classes, and the consequent lack of discrimination between skilled and unskilled labor, will grow clearer as the influence of such an education is felt."

As has been well said by Dr. Woodward, "A manual training school is not a school for the training of carpenters, blacksmiths, machinists and mechanical engineers. In a manual training school, properly so-called, no attempt is made to cultivate dexterity at the expense of thought. No mere slight-of-hand is aimed at, nor is muscular exercise of itself held to be of educational value. An exercise whether with tools or with books is valuable only in proportion to the demand it makes upon the mind for intelligent, thoughtful work. In the school-shop the stage of mechanical habit is never reached. The only habit actually acquired is that of thinking. No blow is struck, no line is drawn, no motion regulated from muscular habit. The quality of every act springs from the conscious will, accompanied by a definite act of judgment."

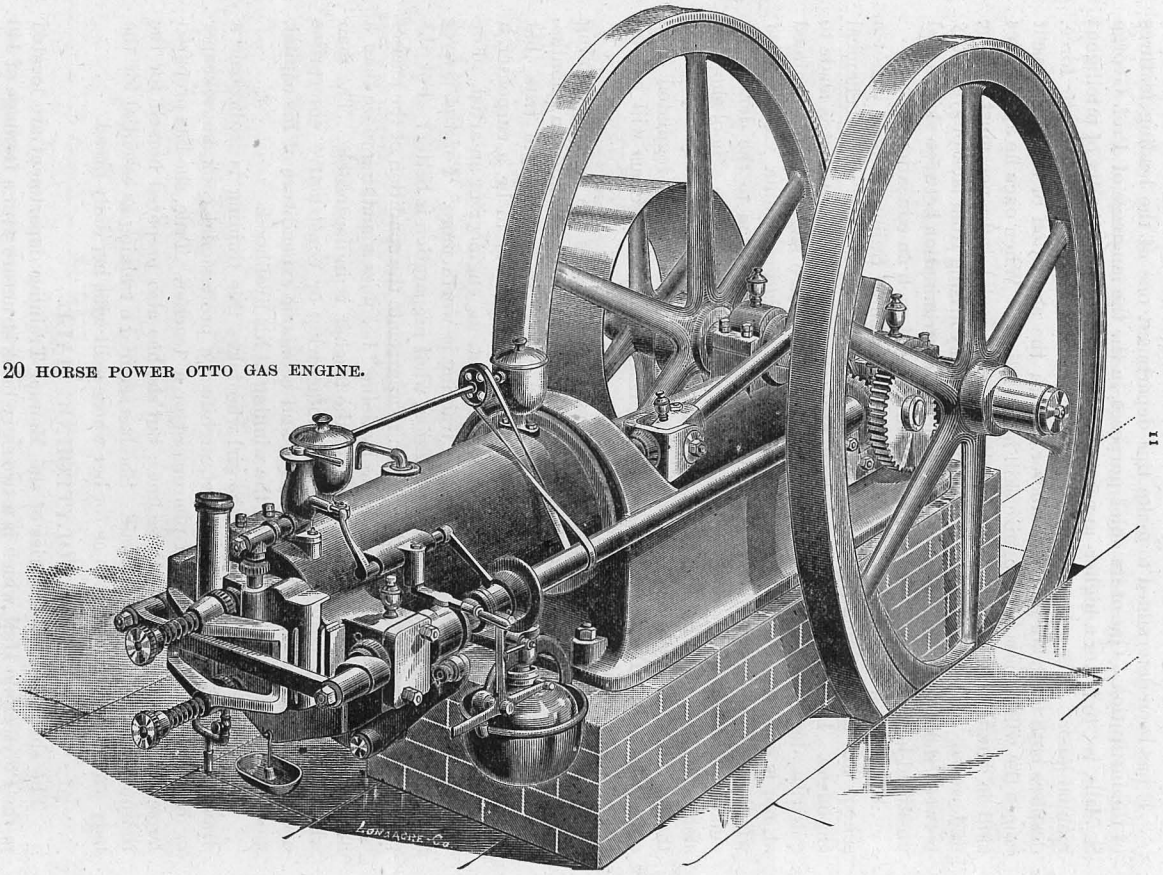
While 'tis true that the young man or women who takes the manual training course may master any one of a score of arts, trades or callings in months, where the average man or woman requires years, it is far from true that this training is only or chiefly valuable to the boy who is to be a carpenter, a blacksmith, a draughtsman, architect, a machinist, an engineer or an artist. For the physician or surgeon no preparatory training is worth more. For the lawyer in this day of endless commercial litigation, what preparation is better? For the preacher what training can better fit him to appreciate the condition of the masses of the people? And as "Learn to do by doing" becomes something more than a fine institute sentiment, such training for the teacher is indispensable. The man who has to manage large commercial, manufacturing or constructive enterprises needs such training for the protection and economic expenditure of his capital, more than the laborer needs it for the winning of his livelihood.

It must not be assumed that the girl who takes this training is to become a draughtswoman, a milliner, an artist, architect, a professional cook, housekeeper or dressmaker, a typewriter, a pharmacist or a teacher. True, she has prepared herself to rise to mastery in these lines; but she has also prepared herself for the thorough management of a home. She has secured a training as essential for the lady whom others must serve as for her whose skill wins her daily bread.

POLYTECHNIC HALL.

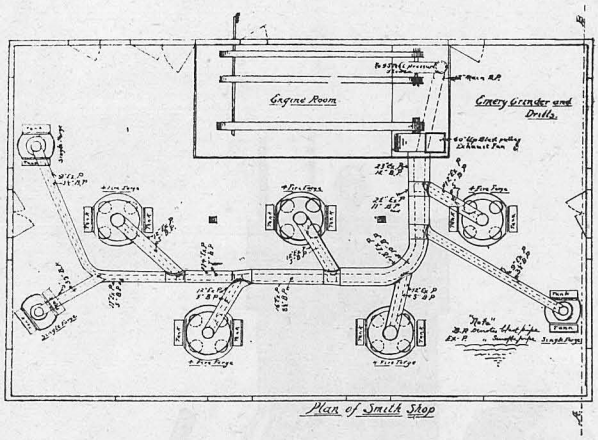
The shops and laboratories of the Manual Training department are located in the Polytechnic Hall, which is a two story brick structure with a frontage of 140 feet on Fair Oaks avenue and 80 feet on Chestnut street. It was designed by T. W. Parkes, A. R. I. B. A, and built by Matthew Slavin. It was finished and partly furnished for use on October 25, 1892.

20 HORSE POWER OTTO GAS ENGINE.

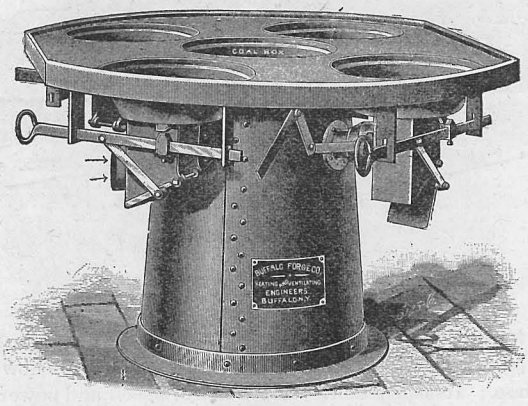


SHOPS.

The forging shop, which is situated on the first floor, was not equipped during the past year as there were no students in readiness to enter upon its work. The work of the first year having now been accomplished, three classes will occupy this shop during the coming year. The Buffalo Forging



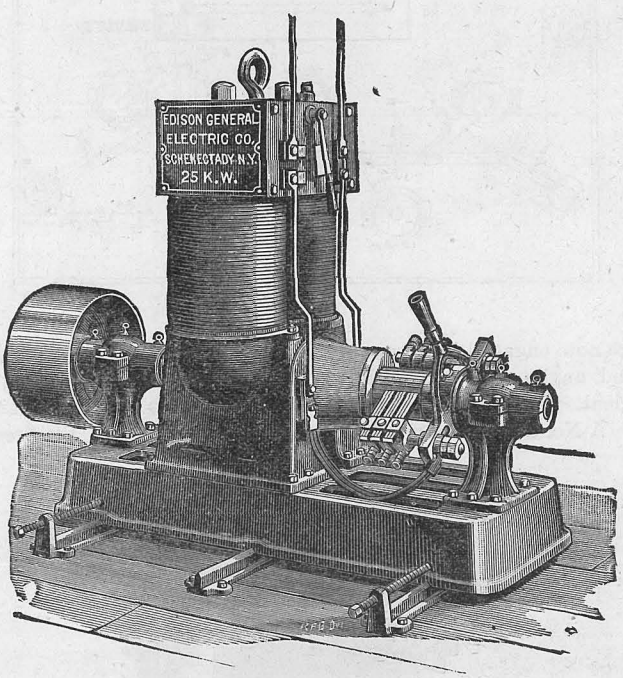
Co. are are now engaged in preparing its outfit, which consists of twenty-three forges and anvils, together with a full equipment of smithing tools for each student. Five sets of quadruple Buffalo forges and three single forges are used. A No. 9 steel pressure blower supplies blast for all the fires, while the



BUFFALO QUADRUPLE FORGE.

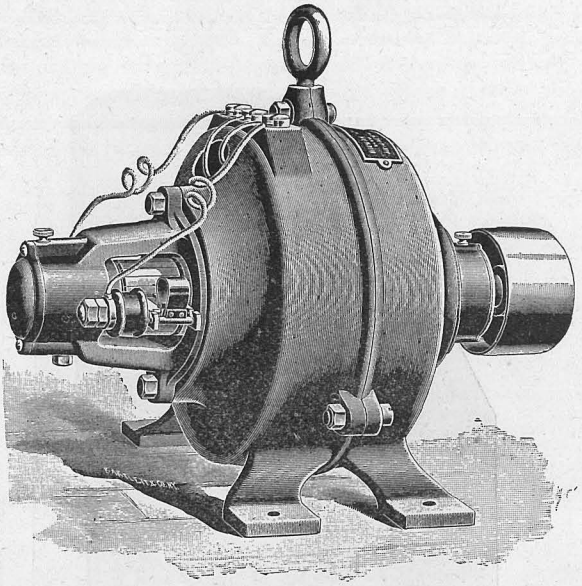
atmosphere of the shop is left pure and free from smoke by the use of a sixty-inch up-blast steel-plate Exhaust Fan. All the furnaces are supplied with telescopic hoods. An emery grinder and a combined hand and power drill, together with four blacksmith vises, complete the equipment of the forging shop which will be in many particulars superior to any shop in the country

The power for the operation of the fan and blower, together with lathes in the wood-working shop, is obtained from a twenty horse power Otto Gas Engine. This engine is located in a small room adjoining the smithing shop. Its advantage for work of this character consists in the fact that no expert engineer or other attendant is required after the engine has been started. It is left practically without any attendance until it becomes necessary to shut down.



DYNAMO.

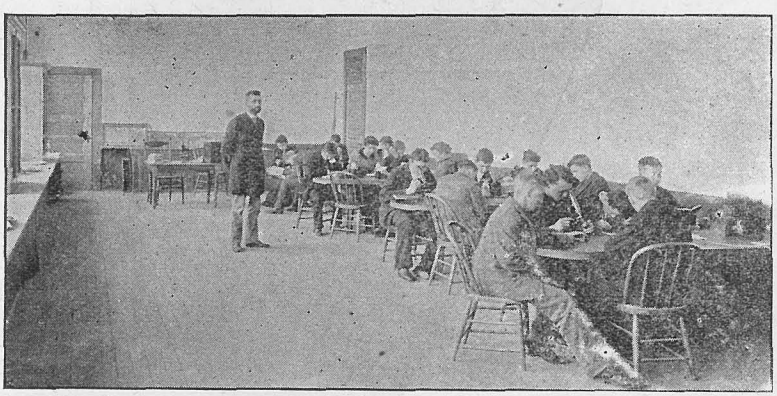
Next to the forging shop is a large room, finished in Oregon pine, which has been used during the past year for a study hall, but which is now being fitted up as a machine shop. Its equipment will consist of speed and power lathes, planers, shapers, drills, a universal milling machine and an outfit of general metal workers tools. The dynamo and motor used by the classes in electricity will also be placed in this room. South of the machine shop are three rooms, designed respectively for work shop, lecture room, and laboratory for the classes in Physics and Electricity, to be used for this purpose at the commencement of the Fall term. The equipment for these classes will be transferred to the lower floor during the long summer vacation.



MOTOR.

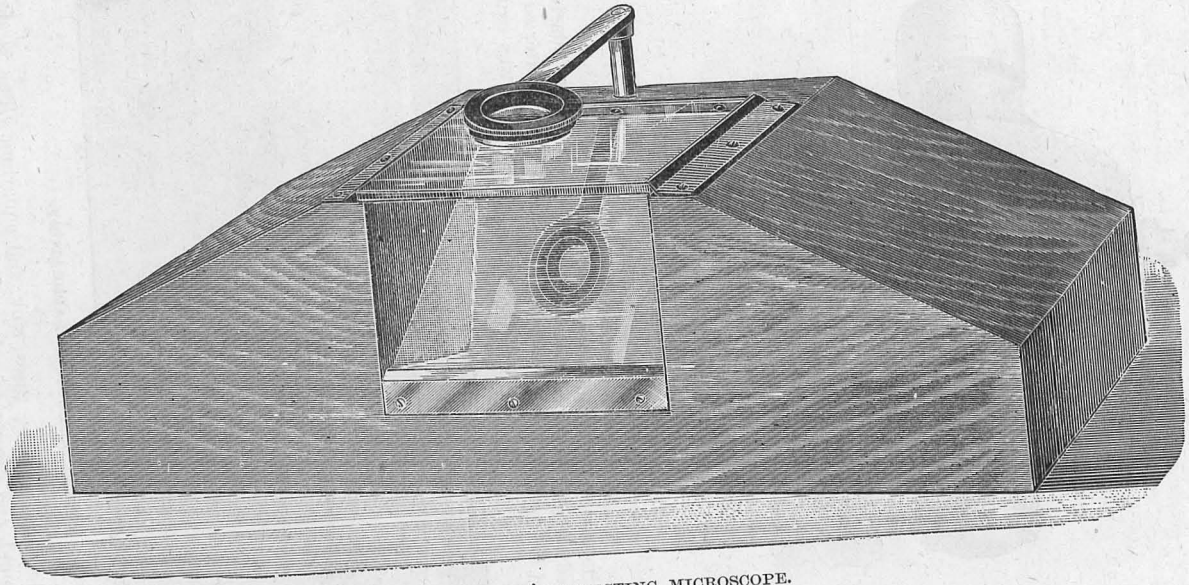
BIOLOGICAL EQUIPMENT.

During the past year the Biological department has been quartered in the rooms intended originally for the Physics (the work in the latter subject being done in the Chemical laboratory). The 19x48 Laboratory was equipped with



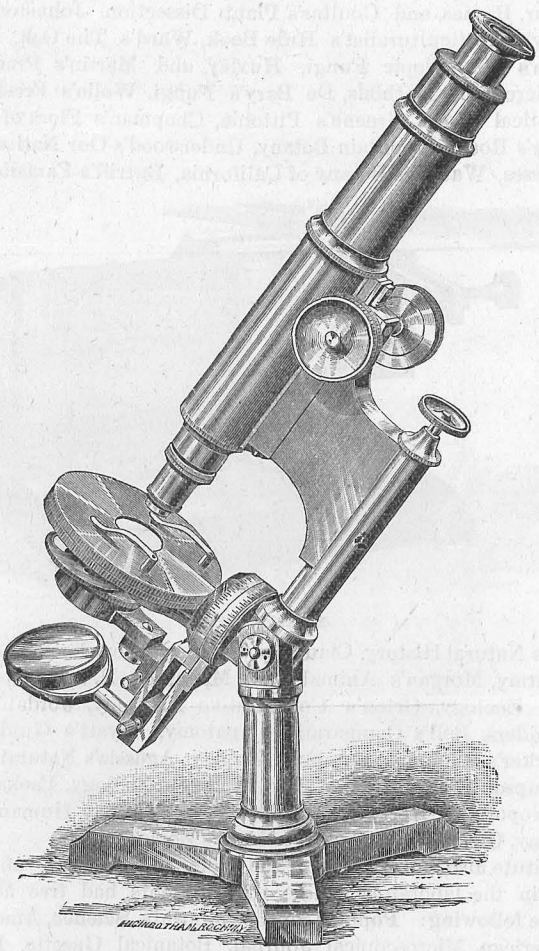
BIOLOGICAL LABORATORY.

microscopic tables, with closets, cases, sink and aquarium. The students were furnished compound and dissecting microscopes, a complete set of dissecting and microscopic tools, and the chemicals and reagents necessary for successful microscopic work



STUDENTS' DISSECTING MICROSCOPE.

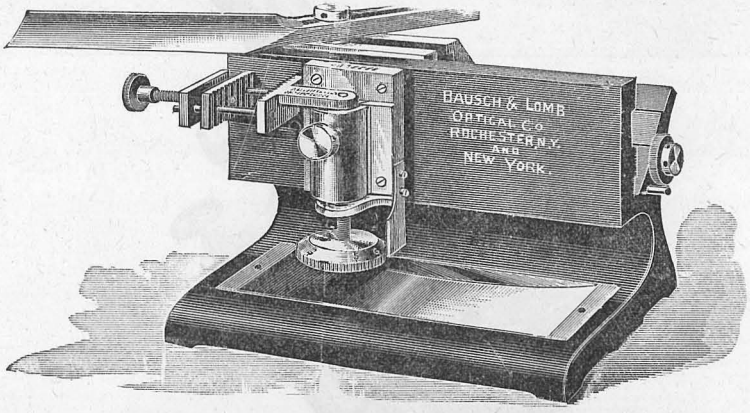
The laboratory was also furnished with culture dishes, microtomes, and solar microscope. The windows were curtained with black enamel shades running in grooved frames and permitting the laboratory to be transformed into a dark room for the use of the solar microscope by simply placing the porte lumiere in in one of the windows and drawing down all the curtains. A case was provided



DEMONSTRATING MICROSCOPE, USED BY STUDENTS

for an herbarium that before the end of the year, by donation and collection, came to number over 4000 specimens. Over two thousand specimens were included in a collection carefully made and selected by Dr and Mrs Carr. Many of these plants obtained by exchange were identified by the most eminent botanists of the country. In another case were placed reference books in Botany, Zoology, Physiology, Entomology, and allied subjects, additions being made to the original number as they were needed.

As indicative of the character of the working reference library for this department, we submit the following list which comprises the books most frequently used by the classes of the past year: Goebel's Outlines of Classification; Strasburger's Botanishe Practicum, Fraenkel's Bacteriology, Bessey's Botanies, Gray's Botanies, Youman's Botanies, Campbell's Botany, Goodale's Physiological Botany, Darwin's Cross and Self Fertilization, De Candolle's Origin of Cultivated Plants, Arthur, Barnes, and Coulter's Plant Dissection, Johnstone's Mannal of Botany, Bailey's Horticulturalist's Rule Book, Ward's The Oak, Massee's Plant World, Cooke's Microscopic Fungi, Huxley and Martin's Practical Biology, Whitman's Microscopic Methods, De Bary's Fungi, Wolle's Fresh Water Algæ, Gray's Synoptical Flora, Greene's Pittonia, Chapman's Flora of the Southern States, Coulter's Rocky Mountain Botany, Underwood's Our Native Ferns, Hackel's True Grasses, Watson's Botany of California, Burrill's Parasite Fungi.

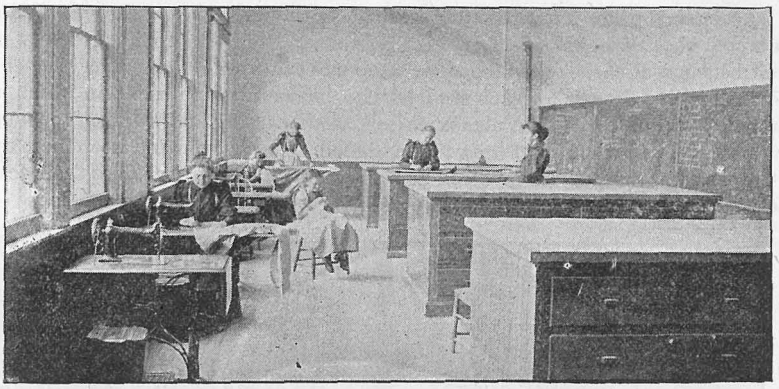


MICROTOME.

Kingsley's Natural History, Claus and Sedwick's Text-book of Zoology, Hornaday's Taxidermy, Morgan's Animal Life, Maynards N. A. Butterflies, Brook's Handbook of Zoology, Orton's Comparative Anatomy, Jordan's Vertebrates, Emerton's Spiders, Bell's Comparative Anatomy, Hyatt's Guides in Science Teaching, Parker's Zootomy, Bumpus' Zoology, Agassiz's Natural History, Geddes and Thompson's Evolution of Sex, Holder's Zoology, Packard's Zoologies Tyler's Anthropology, Hertwig's Embryology, Minot's Human Embryology, Gray's Anatomy, Cleland's Physiology, Morse's Zoology.

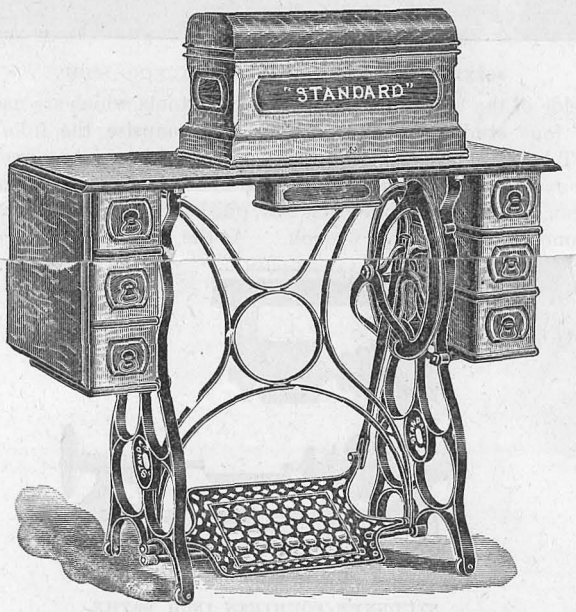
The Institute also subscribed for the biological Journals and placed them upon a rack in the laboratory where the students had free access to them, comprising the following: Popular Science Monthly, Science, American Naturalist, Zoe, American Microscopical Journal, Botanical Gazette, Bulletin of the Torry Botanical Club, Erythea, Meehan's Monthly, Botanisches Centralblatt, and Insect Life.

During the summer this equipment will be transferred to rooms in the new East Hall now in process of construction. In the northwest corner of the second floor of this building is the 19x50 laboratory, in which will be placed seven microscopic tables, closets, cases, sinks and two aquaria. In the southwest corner will be fitted up a room for recitation and for work in physiological-botany, and, between the west ends of the two, the instructor's private workroom.



SEWING AND DRESSMAKING ROOM.

East of the Physical laboratory is a large room devoted to sewing and garment making. It has been equipped with four large tables furnished with sufficient number of drawers to accommodate three classes of sixteen members each in garment making. An outfit of Standard Sewing Machines has also been placed in

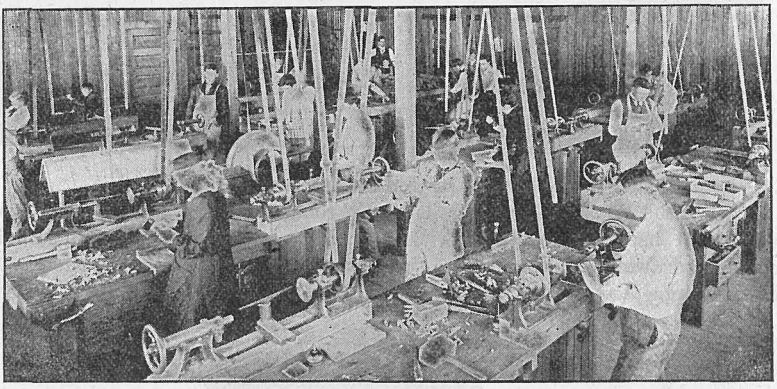


MACHINES USED IN SEWING DEPARTMENT.

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

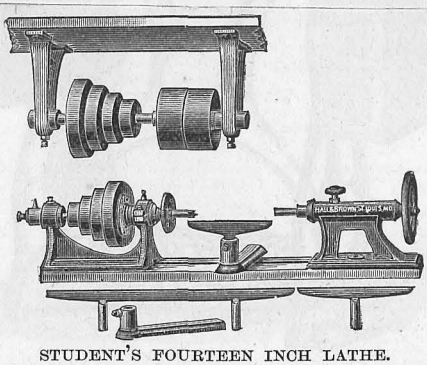
WOOD SHOP.

Accommodations for six distinct lines of work are found on the second floor; the wood shop, situated in the northwest corner, has been provided with twenty work benches, at each of which four students can work daily. Every bench is provided with a drawer for each student who has occasion to use it, in which, under Yale lock, are placed the planes, chisels, wood-carving and turning tools used by the student to whom that drawer is assigned. To sharpen and keep these tools in proper condition for use involves, probably, as much skill as does their actual use. Accordingly no two students are permitted to handle the same tools.



JOINING, TURNING AND WOOD CARVING SHOP.

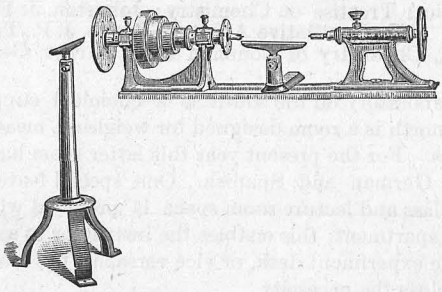
At the side of the bench is found an outfit of tools, which are used in common by three or four students during the day, and comprise the following: one tri-square, one T bevel square, one foot-square, one marking guage, one pair of inside calipers, one pair of outside calipers, one pair of compasses, one hammer, one mallet, one oil can, one oil stone, one back saw, one hand saw, one rip saw, one screw driver, and one six-inch monkey wrench. At the student's right on the bench



STUDENT'S FOURTEEN INCH LATHE.

is found a fourteen-inch lathe, while at the opposite end of the bench is placed his bench stop and Lightning-grip woodworker's vise. He is thus equipped with all the appliances and tools necessary to do most thorough work in joinery, turning, inlaying and carving. A continuous table on the

south and west sides of this shop furnish a special place for the woodcarving done by the young ladies after they have taken the first thirty lessons in carpentering and light joinery with the boys. A special pattern-maker's lathe and well

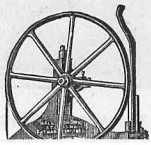


INSTRUCTOR'S LATHE.

equipped bench is provided for the use of the instructor, while a large band-saw serves to cut up the lumber for the needed exercises. The tools in the department were furnished by the Simmons Hardware Co., while the lathes and band-saw were made to order by Hall & Brown, of St. Louis. The modeling shop and pattern shop occupy the whole of the east wing of the second floor.

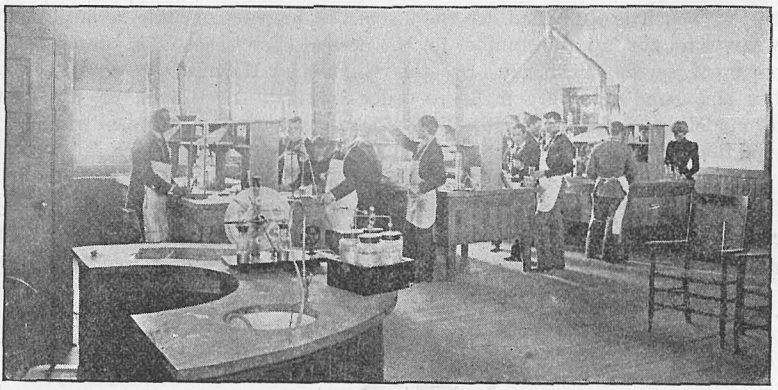
LABORATORIES.

South of the wood shop is the Chemical Laboratory, which for the present year has been used by the classes in both Chemistry and Physics. This laboratory is provided with experiment tables for three classes of twenty-four stu-



pulation; Bloxam, C. L., Handbook of Chemistry; Hare, Robert, Chemistry; Daniell, J. Frederic, Introduction to Chemical Philosophy; Hunt, T. Sterry, A New Basis for Chemistry; Meyer, Lothar, Theoretical Chemistry; Muir and Wilson, Elements of Thermal Chemistry; Remsen, Ira, Inorganic Chemistry; Fownes, George, Manual of Chemistry; Roscoe H. E., Elementary Chemistry; Mott, H. A., Practical Treatise on Chemistry; Johnston, J. F. W., Agricultural Chemistry; Thorpe, T. E., Qualitative Analysis; Cooke, J. P., The New Chemistry; Johnston, J. F. W., Chemistry of Common Life; Barker, Geo. F., Elementary Chemistry.

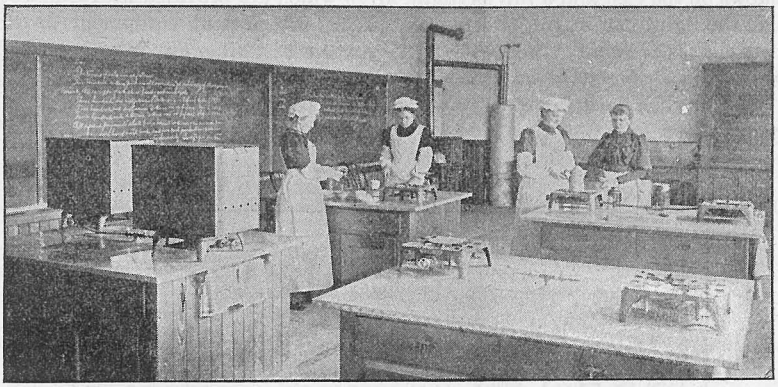
Adjoining the laboratory on the south is a chemical supply and apparatus room, while on the north is a room designed for weighing, measuring and work in quantitative analysis. For the present year this latter room has been used for the classes in French, German and Spanish. One special feature of the chemical laboratory is that, class and lecture room space is provided without the necessity of going to another apartment; this enables the instructor to send pupils from the recitation seat to the experiment desk, or vice versa, as the conditions developed in the exercises disclose the necessity.



CHEMICAL LABORATORY.

COOKING ROOM.

Next south of the chemical laboratory, the cooking room is located. This is supplied with four tables, upon each of which is located two gas stoves. Along either side of the tables are the drawers containing the caps, aprons, sleeve protectors, note books, etc., of the two young ladies assigned to work at that side of the table. The right-hand drawer contains cooking utensils, mixing, measuring dishes, stirring-spoons, kitchen knives and forks, etc., while in the closets beneath are found a full assortment of stove and kitchen furnishings. At either end of the table, towels, lid-lifters, etc., are hung. Two girls work at each stove, so that, at

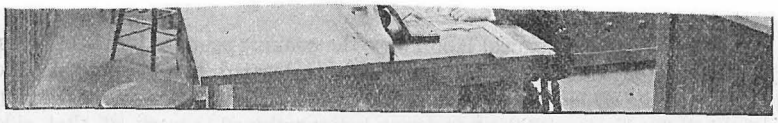


COOKING DEPARTMENT.

present, classes of sixteen can be accommodated, each student participating in every process called for in the instruction. The floor is so piped that an additional table can be put in, thus providing for classes of twenty at a time. A large dust-proof cupboard, containing meal and flour bins, dish closets, etc., occupies the southwest corner of the room, while in the southeast corner stands a large water heater and Lowe patent gas range. A large refrigerator and closet for furnishings complete the equipment of this room.

DRAUGHTING ROOM.

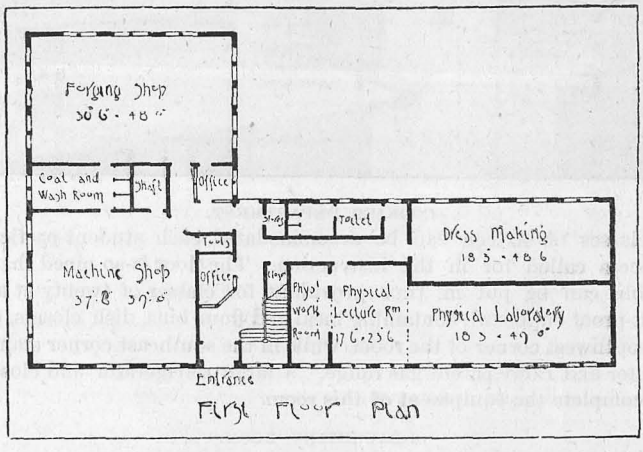
The remainder of the south wing is occupied by the draughting room, which is furnished with twenty desks, each containing six drawers and six slides for drawing boards. In the drawers, provided with Yale locks, as is the case in all other laboratories and work rooms, are found the rulers, triangles, curves, draught-



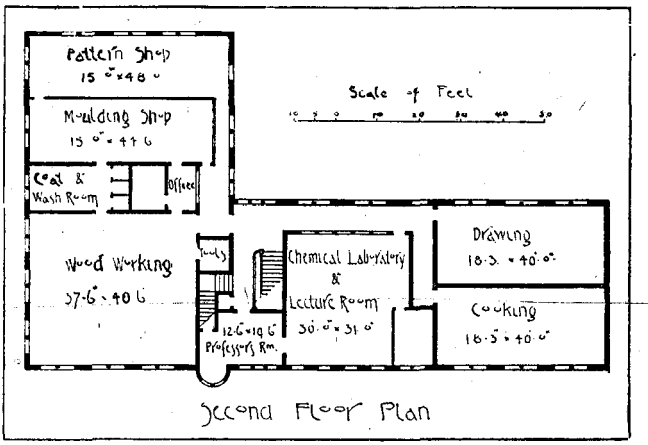
DRAUGHTING DEPARTMENT.

ing instruments, etc., of the individual students. Stools are supplied for each place so that a student may work standing or sitting. The T squares used by the students are hung along the walls about the room. The room is lighted by large windows on the east and a full skylight, all of which are provided with shades by which the lights can be fully controlled. Thus the present equipment provides for six classes of twenty students each without necessitating any interference with the special instruments of any student.

The English department is found for the present year in the large room on the third floor.

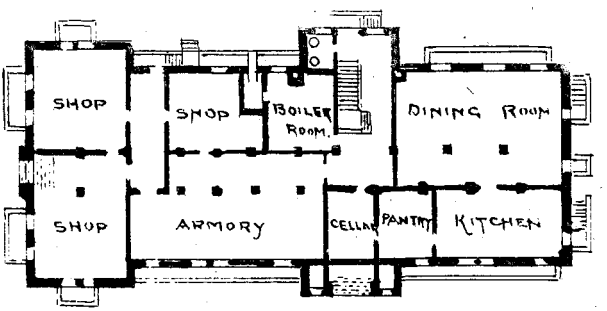


The arrangement of the rooms is further shown by the floor plans herewith presented. The cuts of the different shops and laboratories are made from photographs of classes actually at work in the first weeks of the fall term.



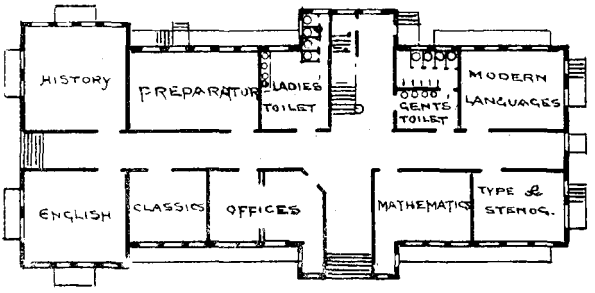
NEW EAST HALL.

To relieve the crowded condition of the past year and provide for the increased attendance already promised for the coming season, a new building, 150 feet long by 68 feet in width, three stories in height, with a full basement, is now being erected directly east of Polytechnic Hall. The building stands back 30 feet from Chestnut street and 20 feet from Raymond avenue. It will cost when finished and



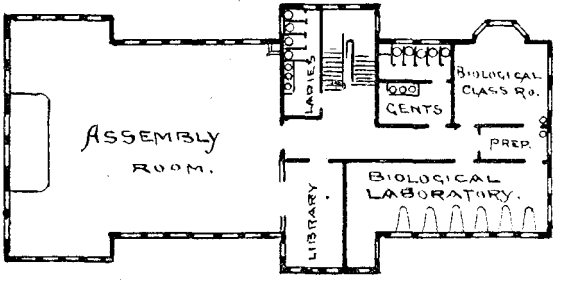
furnished nearly Thirty Thousand dollars. It was designed by H. Ridgway of Pasadena, and is being built by M. Slavin, Esq.

On the first floor are class rooms for Latin and Greek, French, German and Spanish, English Language and Literature, Mathematics, History, Stenography, Typewriting and Book-keeping, and the Preparatory department. A double office is found to the left of the main entrance, while at the rear are cloak and toilet rooms for both ladies and gentlemen.

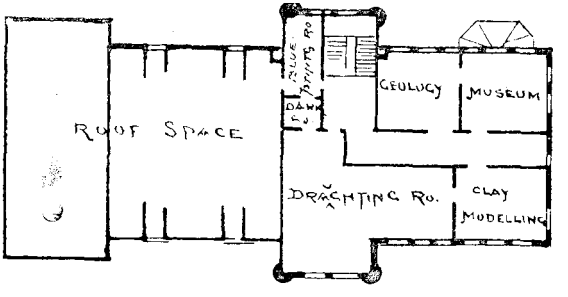


FIRST FLOOR PLAN.

The second floor is given up to a large assembly room, which will accommodate 400 students; a library for the accommodation of 8000 volumes; a Bilogical laboratory, lecture room, and preparation room, the arrangement and equipment of which is referred to elsewhere; a cloak and toilet room for ladies and gentlemen are also found on this floor.



SECOND FLOOR PLAN.



THIRD FLOOR PLAN.

The assembly room, with its high arched ceiling extending into the third story, leaves but half of that floor to be utilized for working purposes. A draughting room, 45 by 36 feet, lighted by north windows and a large skylight with an adjoining dark room and blue printing room occupies the west end of this floor. The museum and class rooms for Physicial Geography, Geology and Astronomy also find places here. The basement will provide additional shop and laboratory room, place for heating apparatus, recreation rooms, armory, etc.

MANUAL TRAINING SCHOOL COURSES.

Five parallel lines of work constitute the course of study for the Manual Training Department, which extends over four years, in which the school time of the student is about evenly divided between mental and manual exercises. Forty-five minutes of each day are given to freehand, architectural and mechanical drawing, while one and one-half hours daily are devoted to shop work. The five lines of work above referred to are as follows :

First. A course in English Language and Literature, History, Civics, and Economics. Especial attention will be paid to the study of the English Language. No other proficiency will be accepted as excuse for lack of ability in the art of writing or speaking English.

Second. A course in Mathematics, including Book-keeping, Algebra Geometry, and Trigonometry.

Third. A course in Science, including Biology, Physics, Chemistry and Electricity.

Fourth. A course in Freehand, Architectural and Mechanical Drawing.

Fifth. (a). A course of tool instruction involving carpentry, wood-turning, molding, brazing, forging, soldering, bench and machine work in metals, special work in electrical appliances. (b). Instruction in Domestic Economy, including clay-modelling, light wood-work and carving, sewing, cutting and fitting of garments, home decoration, etc.

The order of study and work is substantially as follows :

COURSE OF STUDY AND TRAINING FOR YOUNG MEN.

FIRST YEAR
1. Mathematics—Elementary Algebra, Course I.
2. Science—Biology, Course I.
3. Language—English, Composition and Literature, Course I.
4. Drawing, Course I.
5. Shop-work, Course I.

SECOND YEAR
1. Mathematics—Plane Geometry, Course II.
2. Science—Zoology, Course III; Botany, Course II; or Physics, Course I.
3. Language—English Rhetoric and Literature, Course II.
4. Drawing, Course II.
5. Shop-work, Course II.

THIRD YEAR
1. Mathematics—Higher Algebra, Course III; Solid Geometry Course IV.
2. Science—Physics, Course I or II; or Chemistry, Course I.
3. History, Course I; or English, Course III.
4. Drawing, Course III.
5. Shop-work, Course III.

FOURTH YEAR
1. Science.—Chemistry, Course I or II; or English, Course IV.
2. History, Course II; or English, Course IV; or Civics, Courses (*a*) and (*b*).
3. Mathematics, Courses V and VI; or History, Course III.
4. Drawing, Course IV.
5. Shop-work, Course IV.

Latin, Greek, French, German, Spanish, English and History electives are offered in the third and fourth years instead of some of the above work in Mathematics, History and Science. For full statement of courses in all subjects mentioned, see Synopsis of Courses.

COURSE OF STUDY AND TRAINING FOR YOUNG WOMEN.

FIRST YEAR
1. Mathematics—Elementary Algebra, Course I.
2. Science—Biology, Course I.
3. Language—English Composition and Literature, Course I.
4. Drawing, Course I.
5. Shop work—Clay Modeling and Joinery; (Courses to be outlined anew during the Summer of 1893).

SECOND YEAR
1. Mathematics—Plane Geometry, Course II.
2. Science—Zoology, Course III, Botany, Course II; or Physics, Course I.
3. Language—English Rhetoric and Literature, Course II.
4. Drawing, Course II.
5. Shop work—Plain sewing and harmony of color, Courses (a), (b) (c), (d).

THIRD YEAR
1. Mathemathics—Higher Algebra, Course III, Solid Geometry, Course IV.
2. Science—Physics, Courses I or II; or Chemistry, Course I.
3. Language—History, Course I; or English, Course III.
4. Drawing, Course III.
5. Shop work—Cookery and Domestic Economy, Courses (a), (b), (c), (d).

FOURTH YEAR
1. Science—Chemistry, Courses I or II; or English, CourseIV.
2. History, Course II; or English, Course IV; or Civics. Courses (a) and (b).
3. Mathematics, Courses V and VI; or History; Course III.
4. Drawing, Course IV.
5. Shop work—Dress and garment making, Courses (a), (b), (c), (d).

The same electives are offered as for young gentlemen.

For full statement of courses in above and all elective subjects see synopsis of courses.

SYNOPSIS OF COURSES.

COURSES IN MATHEMATICS.

I. Algebra fundamental operations; special attention to the mastery of factoring equations of the first degree with one and two unknown quantities.

This work is covered by Wentworth's School Algebra to Quadratics.

II. Plane Geometry. The regular work contained in Wentworth's New Plane Geometry. This is supplemented by original problems such as found in Wentworth and Hill's Exercise Manual.

III. Higher Algebra, beginning with Quadratics, paying special attention to the binomial theorem, conditional equations, the theory of elements and the so-called indeterminate forms.

IV. Solid and Spherical Geometry, with applications to original problems A half year will be given to each subject.

V. Plane and Spherical Trignometry and Surveying. This work is practically covered in Wentworth's Plane and Spherical Trignometry, and Surveying with Tables.

VI. Analytic Geometry. The regular course in Wentworth's Analytic Geometry, supplemented by a large number of practical problems.

VII. Calculus—Integral and Differential.

VIII. Analytic and Applied Mechanics.

COURSES IN BIOLOGY.

I. (*a*) General structure, physiology and classification of plants; dissecting, drawing and describing individual plants, as types of groups; the first half of the year spent upon the groups from the Protophytes to the Pteridophytes inclusive, and the remainder upon the Spermaphytes; collection, classification and preservation of one hundred plants, representing as nearly as possible all the plant groups; McClatchie's Guide in the Study of Plants as a laboratory guide, with readings from Campbell's, Bessey's, Youman's and Gray's botanies, the current journals, and other works; two recitations per week the first half year, three recitations per week the second half year.

(*b*) General structure, physiology and classification of animals; dissecting, drawing and describing typical forms; the first two-thirds of the year spent upon Invertebrates, and the last third upon Vertebrates; Colton's Practical Zoology as a laboratory guide, with readings from Kingsley's Natural History, Claus' and Sedgwick's Text-book of Zoology, Hyatt's Guides in Science Teaching, Morse's Zoology, the current journals, and other works; three recitations per week the first half year, two recitations per week the second half year.

II. Vegetable anatomy, histology and physiology, with the structure, life histories, and classification of mildews, smuts, rusts and other parasitic fungi; microscopic methods, use of microtome, etc.; Bessey's and Campbell's botanies as text-books, with Arthur, Barnes and Coulter's Plant Dissection, Sach's and Goodale's Physiological Botanies, Goebel's Outlines of Classification and Special Morphology, De Bary's Fungi, Whitman's Methods in Microscopy, the current journals and other works as reference books; daily throughout the year.

III. Comparative anatomy, histology and physiology of Vertebrates, with special reference to man; microscopic methods, use of microtome, etc.; Martin's Human Body as a text-book; Bell's Comparative Anatomy and Physiology, Foster and Langley's Practical Physiology, Parker's Zootomy, Huxley's Anatomy of the Vertebrates, current journals, and other works as reference books; daily during the year. Courses II and III are open to those that have taken Course I. Double the amount of the recitation period required to be spent at laboratory and field work, as preparation of all lessons in this department.

PHYSICS.

I. This course in Physics will be specially designed to show how those phenomena of nature which can be explained by mechanical principles can be studied in accordance with the principles of the Science of Energy. The work will consist mainly in actual laboratory work in Physics for an hour and a half daily supplemented by recitations, text-book work and lectures. The first years work will be a general course embracing the study of mechanics heat, sound, and light.

II. The study of electricity will be taken up in the second year in connection with, or separate from, a course in Electrical Engineering, according to the needs of the student. The microscope and its use will be studied in the physical laboratory and special opportunity will be given for the advanced work in microscopy in the biological laboratory.

CHEMISTRY.

I. Chemistry will be studied mainly in the laboratory and will involve a thorough study of the laws of chemical combination, experiments being performed chiefly by the students themselves. There will also be class work and the study of text-books in connection with the laboratory practice. The first year will be devoted to the study of Organic Chemistry with the elements of Qualitative Analysis.

II. For those who wish to pursue the study farther, opportunity will be given for more advanced work in Organic Chemistry and Quantitative Analysis. It is possible that some lectures will be given on the Chemistry of Photography in case there is a demand. A few lectures will be given on the Chemistry of Food.

COURSES IN ELECTRICITY.

I. A laboratory course in electrostatics, magnetism and voltaic electricity. This includes both primary and secondary batteries with the construction and care of the same. Much of the work will be in exact laboratory meausurements and the plan followed much like that suggested in Stewart and Gee's Practical Physics Vol. 2. Laboratory work will be supplemented by lectures and recitations.

II. Theory and methods of construction of the alternate dynamo, the transformer and incandescent lamp. The study of direct current machinery including motors and their applications together with central station wiring. The application of electricity to the telegraph, telephone, electric lighting and the transmission of power. Laboratory work includes the running and care of machines with various tests of the same.

COURSES IN HISTORY.

I. Greek and Roman History. Careful study of the chief epochs of Greek and Roman History with especial reference to the development of institutions.

II Mediæval and Modern History. This course is designed as a continuation of Course I. Particular attention will be paid to the growth of institutions.

III. A French History. A careful study of the main events in the History of France in their bearings upon the development of government. Special attention given to the French Revolution. Two days per week first half year, three days in each week during second half year.

(b) English History. Thorough study of social, political and constitutional development in England. Constant comparisons with the work in French History. This subject will be taken three times per week during the first half year and twice each week during the second half.

COURSES IN ENGLISH.

I. Kellogg's Rhetoric will form the basis of the technical instruction given in sentence structure, paragraphing, and qualities of style. A knowledge of the elements of English Grammar is a necessary prerequisite to this course.

During the year the following works will be read:—Evangeline, Snow Bound, The Vision of Sir Launfal, The Lady of the Lake. These works are offered not only to give a training in thoughtful reading but to aid in forming a taste for good literature. For this reason, the first reading of each poem will aim to secure familiarity with the story and an interest and enjoyment in the poem itself unhampered by analysis or criticism. The second reading will be accompanied by paraphrasing, by memorizing of select passages, by a study of metre and some attempts at critical comparison. Weekly compositions on some topic connected with the reading will be required.

II. Kellogg's Rhetoric will be completed, but the greater part of the year will be devoted to the study of Shakspere's Merchant of Venice, and Julius Cæsar. The first reading will be accompanied by a discussion of the story and the characters, and some exercises in independent criticism. The second reading will involve paraphrasing, a written outline of the several acts and finally of the whole play, and a study of syntax. The reading of the best criticism will follow the completion of each play, and a study of the English drama and of the life and times of Shakspere will complete the work.

III. Hale's Longer English Poems and Milton's Comus will be read and studied during the first half of the year. These poems will be treated as each one demands, and will require a study of biography and historical sequence of authors, exercises in critical comparison with studies in qualities of style, and written work on the topics suggested by the reading. Burke's American Speeches and Thackeray's novel, The Newcomes, will occupy the second half of the year. The American speeches will give an opportunity for the study of argument, for analysis of modes of reasoning, and for some discussion of the principles of general politics. The novel will be read in class and treated with the ordinary mechanism of instruction, namely; recitation, reproduction of scenes, character sketches, and comparison of characters among themselves and with others. In addition, it is designed to train the pupil in careful reading; to enlarge his ideas by an acquaintance with a world of thought and action outside of his own circle; to develop his ethical sense, and to guide him in looking for something more than the mere story.

IV. This course will be offered as an elective to pupils who have completed in a satisfactory manner the work of the preceding courses or their equivalent, It is designed to offer a year of work to students who have finished the necessary courses in technical grammar and rhetoric, and who are ready to give time voluntarily to the study of three important types of literary expression, the essay, the epic poem and the philosophic novel. These types will be represented respectively by Emerson, Milton and George Eliot, and their works will be used as a basis for comparison with other authors.

A part of one day in each month will be given to public rhetoricals. The exercises will include music, recitations, readings, compositions, and talks illustrated by charts or experiments. All pupils will be required to take part in these public exercises at least once during the year.

COURSES IN LATIN.

I. Collar and Daniell's Beginners' Book, through first and second terms.

Special attention given to vocabularies; translation of the exercises from Latin into English and from English into Latin; conversations based upon the sentences and exercises translated will be held occasionally, for memory-training.

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

II. Cæsar's Commentaries. Critical study of text with translations into idiomatic English.

The laws governing indirect discourse and the Subjunctive Mood are studied. Incidental study of the Gallic State, of the Gallic Province, of Germany, and of the constitution of Cæsar's army; sight-reading and composition. The theory of word-formation will be briefly examined.

III. Cicero's Orations. Textual study as in Cæsar, sight reading and composition; historical allusious 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 for study.

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

V. Horace. Satires, Epistles and Odes. The work will be similar to that done in the study of the Aeneid, except that more extended investigation will be made of Latin verse.

COURSES IN GREEK.

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

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

COURSES IN SPANISH.

I. (a) Worman's First Spanish Book and Conversational Exercises. (b) Monsanto's Practical Course with the Spanish. (d) Modern Spanish Readings, by Prof. Knapp of Yale College. (e) Drill in Correspondence and also in Ceremonial Formulas in Spanish.

II. (a) Modern Spanish Reading (Prof. Knapp); Conversational Exercises. (b) Monsanto's Practical Course with the Spanish. (c) Written Exercises from English to Spanish. (d) Don Quixote de la Mancha. Cervantes. (e) Spanish Idioms. (Becker & Mora.)

COURSES IN FRENCH.

I. (a) Otto's French Grammar (Bocher). (b) Causeries avec mes Eleves—L. Sauveur; and Conversational Exercises. (c) Worman's First French Book. (d) Written Exercises from English into French. (e) Worman's Second French Book. (f) Andromaque. Racine. (g) Drill in French Correspondence.

II. (a) Otto's French Grammar (Bocher). (b) Le Misanthrope, Moliere. (c) Conversational Exercises. (d) Written Exercises from English into French. (e) Lectures on the History and Peculiarities of the French Drama. (f) Exercises

in Idioms and Idiomatic Verbs (Chardenal). (g) Picciola—Un Roman par M. H. B. Saintaine. (h). Les Trois Mousquetaires (Alexandre Dumas). (i) Lectures on French Rhetoric.

COURSES IN GERMAN.

I. (a). Studien und Plaudereien. (b) Conversational Exercises from English into German. (c) Der Onkel als Neffe (Schiller.) (f) Drill in German Correspondence. (g) Lectures on the History of the German Language and Literature.

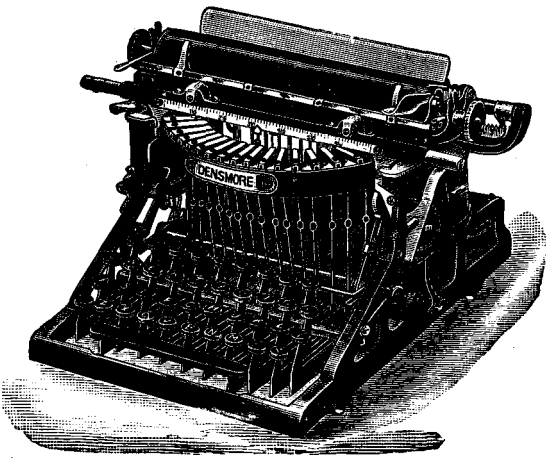
II. (a) Deutsche Grammatik für Amerikaner (Von Wenckebach und Schrakamp). (b) William Tell (Schiller). (c) Conversational Exercises. (d) Written Exercises from English into German. (e) Lectures on History of the German Literature and Language. (f) Drill in German Idioms and Conversation. (g) Faust, Goethe; or, Iphigenie aus Tauris, von Goethe.

COURSE IN CIVICS.

1. The study of this subject will cover one year and will devote itself during the first half to the development of governments. The second half year will be given to a comparative study of our Federal government. Three days in each week will be allotted to this work. The remaining two days of each week throughout the year will be devoted to a careful study of the Constitution of California, paying special attention to franchise provisions and the development of our election systems. Students will be required to pursue some original line of investigation throughout the last six months of the year and present results in the form of a written thesis.

COURSE IN THE PRINCIPLES AND PRACTICE OF TEACHING.

The aim of the study in this department will be to train teachers for special lines of instruction in high schools, manual training, etc. It will be shaped to meet the actual wants of the class of students presenting themselves, and will therefore not be outlined until September of 1893.



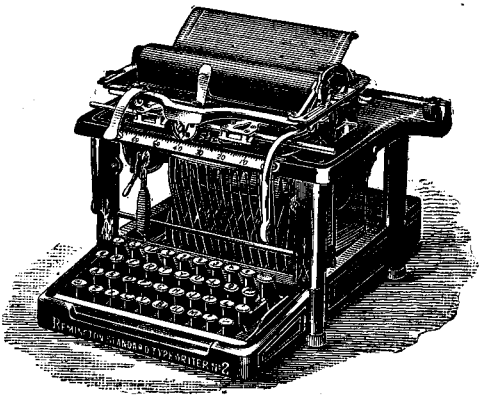
COURSE IN STENOGRAPHY.

The purpose of the course in this subject is the equipment of young men and women for practical service as stenographers and amanuenses. The time allotted to the work is six months, in which every student is expected to devote not less than one-third of each day to this particular department. Certificates will be

granted to all students who acquire the ability to write at the rate of one hundred words per minute for ten consecutive minutes, matter not previously seen by them, and who then are able to transcribe the same immediately. Pupils who have attained this degree of efficiency have mastered the principles of shorthand, so that the highest skill and accuracy is to be reached thereafter simply by practice.

COURSE IN TYPEWRITING.

The students are given thorough training in the use and care of the Densmore, Remington and Caligraph machines. No student will be permitted to take up this course who cannot devote to it at least one-third of his time. To obtain the certificate of the school, pupils must demonstrate their ability to carefully copy new matter at the rate of forty words a minute for ten consecutive minutes. The instruction in this work aims to reach the individuals so that the student may be permitted to advance as rapidly as his ability warrants. The following outline will indicate the chief features to which special attention is paid: [1]. The mastery of the key-board including accurate fingering and eveness of touch. [2]. Graded word exercises. [3]. Mastery of commercial, legal and legislative phrases. [4]. Special drill in spelling, punctuation, capitalization, business correspondence, etc. [5]. Work on architectural specifications, legal testimony and statutory forms. [6]. Speed exercises, including tests of speed in writing upon the machine from dictation. [8]. Letter press copying and manifolding. [9]. Special training in the mechanism, adjustment, repair and care of the machine.



COURSE IN BOOK-KEEPING.

The purpose of this work will he: [1]. The mastery by the general student of the elements of accounts. [2]. The special training of young men and young women for positions as book-keepers and accountants.

The study then, in this work will include not only mastery of the elementary principles, thorough drill in journalizing and posting, the making of the trial balance and balance sheet, but will familiarize the student with the various auxiliary books. Thorough drill will be given in rapid calculation, the computation of interest, the writing of notes, checks, receipts, etc. The time allotted to this subject will be one-half year. Students desiring to continue the work through the year will have special opportunity to do so.

COURSES IN DRAWING.

I. Free hand pencil work. drawing from objects, parts of machines, etc., in

orthographic projection. Working drawings in pencil for shop use. Pen lining and simple geometrical constructions with their applications. Lettering and tinting. Isometric and Cavalier projection, with simple constructions of shades and shadows. Simple constructions in carpentry and architectural plans. Free hand drawings from objects and casts.

II. Shop drawings for wood and iron work. Drawings for carvings. Shades and shadows. Perspective. Orthographic projection with development of surfaces. Architectural drawings. Tracing and blue printing.

III. Sketches from models, and designs for construction in clay, wood, iron, etc., and for wood carvings. Problems in stone-cutting and sheet metal working. Coloring and conventional methods used in topography. Problems in descriptive geometry with applications. Drawing of plans, elevations and sections of machines. Free hand sketches.

IV. Architectural orders, drawings of selected architectural studies. Graphical statics, composition and resolution of forces studied graphically. Stress diagrams for roof trusses and for the action of stationary and travelling loads upon beams. Drawing and designing machines. Problems in construction of gearing

COURSES IN SHOP WORK.

I. Carpentery and Joinery—Special instruction in the use and care of tools; inlaying; wood turning; straight shoulder and molded; center turning; chucking; inside turning; turning simple bowls and cups.

Wood Carving—Preliminary exercises in the care and use of tools; carving the plain and curved surfaces; horizontal and vertical lines; letters and inscriptions; low relief, half relief, high relief, filled and curved surfaces with both conventional and naturalistic treatment; the use of oils; stains and varnish in finishing woods.

The student will be required at the end of the year to design and make some one piece involving the elements of carpentering, turning and carving mastered during the year.

II. Iron-work, including forging, bending and up-setting; welding tool making ornamental iron work; making steel tools, brazing, etc.

As in the wood shop each student will be required to design some special piece at the close of the year, involving the various elements of forging mastered.

III. Pattern-making; molding; turning; carpenter work; metal spinning; chipping and filing; fitting; the use of taps and dies, machine work; the theory of cutting tools, turning, boring and screw cutting.

IV. Machines and Electricity—The special study of machinery and care of the same. The study of construction, testing of electrical machinery, wiring, lighting, etc.

COURSE IN PLAIN SEWING.

[*a*] Three days a week, one and one-half hours per day. The fundamental inciples of hand sewing, basting, running, hemming, hem-stitching, felling, patching, etc; drafting, and making of an undergarment by hand. Lessons on material used.

[*b*] Drafting of undergarments from actual measurements; machine sewing, plain stitching, hemming and tucking; making of garments by hand and machine.

[*c*] Continuation of white sewing. Practical experience in buying goods by each pupil. Neatness and accuracy required in each course. During the year a complete set of underwear must be made by each pupil.

[*d*] In connection with the plain sewing, two lessons a week of one and one-half hours, will be given on the cultivation of taste, including a condensed study of the history of Art. The ancient art of the east; Classic Art; Art of the 19th century; the modern artists and schools. With these talks will be given, practice in painting simple forms from nature in flat tones, using this for designing of dress fabrics; the subject of ornamentation and harmony of color in our dress and homes; special work in modelling and carving to assist in the study of form.

COURSE IN DRESSMAKING.

[*a*] This course is devoted to the first principles of dressmaking: Drafting a basque and sleeves from actual measurements; cutting, fitting and finishing of basque; cutting and making of skirt; choice of material, price, quantity and amount needed.

[*b*] Drafting continued. Cutting of fancy fronts to basque. Pupils are required to plan an entire dress, with written description of it before beginning, including the collar, trimming, sleeves, etc. Making of the dress; designing of dresses in paper.

[*c*] A waist is made of striped material to teach matching of goods; a dress of finer material than the first, and more elaborately made; with each, practical experience in shopping.

[*d*] With the foregoing, special attention to the bearings of dress on health; how to dress to preserve health and strength without sacrifice of health; rational dress reform studied. Presentation of the physiology of dress by special lectures.

COURSE IN COOKING.

[*a*] The fundamental principles of cookery and practice in the preparation of vegetables, soups, meats, cereals, biscuits, eggs etc. Cost of materials; chemistry of food; care of a kitchen; serving a simple dinner.

[*b*] Instruction in preparation of more complicated dishes; bread, fish, oysters, pastry croquettes, game etc. Care of silver and glass. Setting and serving a table; table etiquette; chemistry continued.

[*c*] Entrees, salads, deserts, cake, jellies and creams; giving of entire breakfasts, luncheons and dinners; ordering; proportions of food needed; garnishing; short course in invalid cookery; carving.

[*d*] Presentation of the physiology of nutrition by special lecturer.

SPECIAL COURSES IN DRAWING AND PAINTING.

Beginners in this department start with the representation of simple models which teach the principles of perspective. At this stage little is said of the theory of perspective, the object being to induce pupils to see perspective themselves without troubling themselves too much about the applied theory. Thus by degrees they assimilate, as it were, the substance of the science easily and unconsciously and can readily fit what is thus acquired to the completely formulated theory at the proper time.

The harmonious grouping of models and their relation to each other is studied, not only in outline, but in light and and shade and color, comparisons being made with objects of similar shape; and later those objects are drawn and shaded, at first being done in pencil, and later in pen and ink and charcoal.

This studio work in drawing from models and objects prepares students for out of door landscape sketching, either in pencil, sepia or color. From time to time the pupil will have the practice of out of door work.

Those who wish to give special attention to figure work will draw in charcoal from casts and as they advance, sh. de in broad washes in sepia, and so on, until they can work from life with color.

Advanced students will work in oil and water colors from life and still-life and be allowed considerable latitude as to subjects, etc.

Each pupil will be treated separately and given the practice he most needs, and may advance as fast as possible, regardless of others.

The following is the schedule of terms to students taking these courses.

DRAWING.

FOR TERM OF TWELVE WEEKS	One lesson per week.....$ 6	BY THE YEAR	$15
	Two lessons per week.....$10		$25
	Three lessons per week.....$15		$40

PAINTING.

FOR TERM OF TWELVE WEEKS	One lesson per week.....$12	BY THF YEAR	$30
	Two lessons per week.....$25		$50
	Three lessons per week.....$40		$70

Special rates will be made to students desiring both painting and drawing or desiring the use of the studio and the attention of the teacher every day in the week.

STUDENT LIST FOR 1892-3.

Allen Robert Stuart	Pasadena, Cal.
Anderson, Daniel	Los Angeles, Cal.
Adams, Elizabeth	Pasadena, Cal.
Allen, Elsie Pettijohn	"
Barnard, William Appleton	"
Britton, James Reynolds	"
Blanchard, Ada Frances	"
Barnhart, May	"
Brooks, Clinton Wm	"
Bonner, Ella Louise	"
Barker, Caroline Elvira	"
Bushnell, Bettie	"
Brush, Annie	Portland, Or.
Bergman, Mamie	Pacheco. Cal
Baker, Frank M	Pasadena, Cal.
*Burnham, Phrenia	"
*Brown, Lulu	"
*Bonine, A. E	"
*Buchanan, Romie	"
*Bushnell, Mary	"
Carleton, Don Woods	Los Angeles, Cal.
Conger, Lulu Nell	Pasadena, Cal.
Conklin, Clara Alice	Los Angeles, Cal.
Caldwell, James Harvie	Pasadena, Cal.
Corson, Flavilla Fitzgerald	"
Cockrell, Lucy Ellen	Los Angeles, Cal.
Corson, Ralph Joseph	Pasadena, Cal.
Cooley, May B.	"
*Conger, Lyda	"
*Crawford, Leah	"
Dunbar, James Elbert	"
Doty, George Francis	"
Dodworth, Arthur	"
Erskine, Ralph Child	Racine, Wis.
Erskine, Alfred Masena	"
Ellis, Myrtle Mae	Pasadena, Cal.
Erskine, Harold Perry	Racine, Wis.

Enderlein, William.....Los Angeles, Cal.
England, Homer Monte.....Pasadena, Cal.
Ellis, Bertha Alma..... "
Ferguson, Clarence.....Los Angeles, Cal.
Fuller, Lois Marguerite.....Pasadena, Cal.
Fish, Verna..... "
Frost, Lyda..... "
Fessenden, Alfred M.....Townsend, Mass.
*Forbes, Miss F.....Pasadena, Cal.
Green, William List..... "
Groenendyke, Edward Henry..... "
Groesbeck, James Rigdon..... "
Greenleaf, Charles Hunt..... "
Grinnell, Harold Duncan..... "
Gray, Athol.....Beaumont, Cal.
Graves, Nathan.....Minneapolis, Minn.
Haynes, Dian May.....Pasadena, Cal.
Hall, Fannie Aline.....Chicago, Ill.
Hickson, James Leroy.....Los Angeles, Cal.
Hardison, Ruth Mabel.....Santa Paula, Cal.
Hardison, Seth James..... "
Hiller, Willet Horace.....Los Angeles, Cal.
*Hansen, Lorena.....Chicago, Ill.
*Hansen, Walter..... "
*Haskell, Beulah.....Pasadena, Cal.
Hardison, Guy Lyman.....Santa Paula, Cal.
Howard, Eugene.....Pasadena, Cal.
Hull, Edward O.....Cleveland, Ohio.
Hall, Frank Worth.....Pasadena, Cal.
Hasse, Carl Edward.....Soldiers' Home, Cal.
Jensen, Jesper Anderson.....Cucamonga, Cal.
Johnson, Arthur.....Raymond, Cal.
Knight, Charles Cornell.....Pasadena, Cal.
Kenyon, Lewis Newlan.....Minneapolis, Minn.
Kimble, Robert.....Los Angeles, Cal.
Kenney, Oliver Greenfield.....Fillmore, Cal.
Kannon, James.....Beaumont, Cal.
Keyes, Mrs. C. H.....Pasadena, Cal.
Kellogg, Elmer Philander.....Santa Barbara, Cal.
Ketchum, Grace.....Pasadena, Cal.
Kerfoot, Mrs. J. B.....El Paso, Texas.
Keyes, Maud Vivien.....Pasadena, Cal.
Lowe, Sobieski..... "
Larkin, John Morton.....Chester, Penn.
Lyman, Mabel Ives.....Minneapolis, Minn.
Lyman, Florence Richards..... "
Lewis, Vernon Penfield.....Pasadena, Cal.
*Lisk, Tina..... "
*Lentz, Elsie..... "
Meloy, David Carson.....Santa Monica, Cal.

Macomber, Abraham Kingsley.....Pasadena, Cal.
Menner, Ivy..... "
M'Kie, Robert VanPelt.....Colton, Cal.
Muchmore, Frank Hadley.....Los Angeles, Cal.
Miller, George Edward.....Pasadena, Cal.
Morrison, Margaret Letitia.....Compton, Cal.
Miller, Chas Andrews.....Los Angeles, Cal.
Miller, George Winfred.....Pasadena, Cal.
M'Gilvray, Marian..... "
Markham, Alice..... "
Maguire, J. Harvey.....Stratford, Canada.
Mellish, Ida May.....Pasadena, Cal.
Mace, Lawrence Arnold.....South Pasadena, Cal.
Miner, Geo Harrison.....New York, N Y.
Michner, Harvey Deen.....Pasadena Cal.
Mallory, Conroy B.....South Pasadena, Cal.
Nelmes, Jeanie McAllister.....Pasadena, Cal.
Nash, Carl E..... "
Nelmes, Thomas..... "
Noyes, Ira S.....Boston, Mass
Pierce, Mary Louise.....Pasadena, Cal.
Parsons, Robert.....Los Angeles, Cal.
Parker, Henry.....Sharon, Mass.
Perrett, Bert.....Pasadena, Cal.
Pierce, Mamie..... "
*Pixley, Ethel..... "
Russell, Emma..... "
Rice, Theron Lyman..... "
Robinson, Edmund Clark.....Pomona, Cal.
Rice, Sue Isyphœna.....Pasadena, Cal.
Ross, Annie Scott..... "
*Robinson, Ida..... "
*Rameses, Clara..... "
Senter, Geo. Stanley..... "
Smith, Alfred Dore..... "
Snyder, Blanchard M.....Anaheim, Cal.
Stockton, Samuel Slade.....San Diego, Cal.
Scales, Carmon.....Los Angeles, Cal.
Smith, Louis.....Pasadena, Cal.
Smith, James Gordon.....Pasadena, Cal.
Stimson, Charles Willard.....Los Angeles, Cal.
Scudder, Katherine Hinde.....Pasadena, Cal.
Stevens, Claudine DeForest..... "
Scudder, Rhodin Cunningham..... "
Sprague, Miss..... "
*Schee, M..... "
Stokes, Guy Harold.....So. Pasadena, Cal.
Spear, William.....Ventura, Cal.
Simons, Walter.....Pasadena, Cal.
Throop, George Warren.....Los Angeles, Cal.
Throop, Frederick Oscar..... "

Thompson, Lewis George.....Pasadena, Cal.
Throop, Edwin Thompson.....Los Angeles, Cal.
Traphagen, Ethel.....Pasadena, Cal.
Traylor, Lucy L.....“
Torrance, Mrs. L. W.....“
Vose, Richard Alden.....Los Angeles, Cal.
Vallette, Alida Wallace Arlin.....Pasadena, Cal.
*Vierich, Jessie.....“
Witman, John Mark.....Hueneme, Cal.
Williams, Henry Lafayet.....Santa Barbara, Cal.
Whitmore, Ben Lunt.....Pasadena, Cal.
Wood, Emma M.....“
Wood, Corinne A.....“
Wickens, Ward Bussey.....Holly, Mich.
Williams, Gourtland Dion.....Brooklyn, N. Y.
Wagner, Pearl.....San Diego, Cal.
Wamsley, Tyrone Victor.....Glendora, Cal.
Walker, Gilbert Stoddard.....Los Angeles, Cal.
Young, Florence Elizabeth.....So. Pasadena, Cal.
Walker, William Freeman.....Pasadena, Cal.
Williams, Lily M.....Brooklyn, N. Y.

*Students whose names are marked with a star [*] have been enrolled in the Art Department only.

GENERAL INFORMATION.

Students of sufficient preparation, desiring to take special courses, will be admitted on application to the President. Applications should be filed with the Secretary as early as possible.

Students will be admitted to the Manual Training School on diplomas of graduation from California Grammar Schools or on the certificate of admission to any high school accredited to the Universities at Berkeley or Palo Alto. The faculty reserves the right to examine for classification all students who present themselves. Graduates of accredited high schools will be received in any departments of the Institute for the work of which they are prepared. Others must pass the entrance examinations. All students must present satisfactory evidence of good character and of honorable demit from the school with which they were last connected.

Classification examinations will commence on September 18, and departments will organize on September 20.

Term bills will be payable strictly in advance, and students should present the Secretary's receipt for the same on making application for admission to classes.

No allowance will be made for absence, unless occasioned by protracted illness. All requests for rebates must be addressed to the Executive Committee.

TUITION AND EXPENSES.

Tuition per half year	$40.00
Tuition per year, if paid in advance	75.00
Vocal Music, per lesson	2.00
Instrumental Music, per lesson	1.25

Art, per lesson	1.00
Stenography and Typewriting, per month	10.00
Stenography and Typewriting, per six months	50.00
Room Rent, per week	1.00 to 1.25
Board, per week	3.50 to 3.75
Incidentals, per term	2.00

Students will make a deposit of five dollars to cover loss, breakage, etc. in Laboratory and Workshops. Any unearned balance of this sum will be returned to students at the end of the year. This deposit must be kept good.

For further information address

PRES. CHARLES H. KEYES,

THROOP POLYTECHNIC INSTITUTE,

PASADENA, CALIFORNIA.

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