

Annual Report - California State Polytechnic College  
San Luis Obispo

ANNUAL REPORT TO THE  
STATE BOARD OF EDUCATION  
—ON THE—  
California State Polytechnic College  
FOR THE PERIOD  
January 1, 1947 to December 31, 1947

### FOR E W O R D

This progress report of the California State Polytechnic College for the period January 1, 1947 to December 31, 1947, is submitted to the State Board of Education and the State Department of Education for the purpose of acquainting these two groups with the calendar year activities of this college over which they have administrative control.

These annual reports have been for the past several years rather extensive because of the necessity of explaining the operation of various war-time special programs operated by the college in addition to its regular instructional program. In the past these reports also have contained considerable explanation of the organization, administration, financial support and educational philosophy of this college because it was felt that those not entirely familiar with the college should be informed regarding those areas in which the California State Polytechnic College differs from the other State Colleges. Now that these differences are generally accepted, and because the full explanation of these points are available in previous annual reports, this report will confine itself to actual progress accomplished in the 1947 calendar year.

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ENROLLMENT

Because of lack of facilities, it was necessary to limit the Fall quarter enrollment in 1947 to 2609 students. This was an increase of 800 students over the total of 1809 enrolled in the Fall quarter of 1946. Of this figure of 2609 students, 2229 were enrolled at the home campus in San Luis Obispo and 380 were enrolled at the branch in San Dimas. Approximately 300 applicants for admission to the San Luis Obispo campus were turned down because of lack of facilities and nearly 100 applicants were rejected at San Dimas for the same reason.

The number of regularly enrolled students at San Luis Obispo were divided fairly evenly between the agricultural division, with 1064 and the engineering division, with 1096. Following are summaries of the San Luis Obispo enrollment:

<u>By Division</u>	<u>By Years</u>
Agricultural Division . . . 1064	First year , . . . . 1093
Engineering Division . . . 1096	Second year. . . . . 731
Science and Humanities. . . . 69	Third year . . . . . 262
2229	Fourth year. . . . . 145
	Fifth year . . . . . 7
	2229

ENROLLMENT BY DEPARTMENTS

<u>Agricultural Division</u>	<u>Industrial Division</u>
General Agriculture** . . . . . 7	General Engineering** . . . . . 16
Agricultural Engineering . . . . . 40	Architecture. . . . . . . . . 91
Animal Husbandry . . . . . 360	Aeronautics . . . . . . . . . 187
Agricultural Inspection . . . . . 28	Air Conditioning. . . . . . . . . 281
General Crops . . . . . . 144	Electrical Engineering. . . . . 174
Truck Crops . . . . . . . . . 26	Electronics . . . . . . . . . 160
Dairy Production . . . . . . 115	Mechanical Engineering. . . . . 175
Dairy Manufacturing . . . . . . 61	Printing. . . . . . . . . . . 12
Fruit Production . . . . . . . . . 40	
Ornamental Horticulture. . . . . 74	
Poultry. . . . . . . . . . . 119	
	<u>1064</u>
<u>Science &amp; Humanities Division*</u>	
	Physical Education. . . . . 38
	Mathematics . . . . . . . . . 1
	Social Science. . . . . . . . . 6
	Physical Science. . . . . . . . . 3
	Life Science . . . . . . . . . . . 6
	<u>69</u>

\* This is the first year that the departments listed under this heading were organized into a Science and Humanities Division. In previous years these courses were referred to as "related subjects." The primary function of these departments is to provide related courses and general education courses to majors in the other two divisions. With the addition of very little in the way of facilities or additional courses, it was possible to give major work leading to the Bachelor of Science degree in these five departments.

\*\* The majors of General Agriculture and General Engineering were added last year to take care of the overflow from specific departments where lack of facilities limited enrollment. At the end of each year, these students will be given a priority over new students in changing over to the major of their preference. During 1947 the college was compelled to limit or turn away enrollment in Animal Husbandry, Air Conditioning and Refrigeration, Mechanical Engineering, Dairy Husbandry, Crops Production, and Poultry.

SAN LUIS OBISPO  
ENROLLMENT BY CLASSES AND CURRICULUM LEVEL (NOVEMBER, 1947)

<u>Agricultural</u>	<u>Vocational</u>	<u>Technical</u>	<u>Degree</u>	<u>Special</u>
Freshmen	70	59	325	39
Sophomores	24	41	225	33
Juniors	0	20	103	2
Seniors	0	2	106	9
Fifth year	0	0	6	0
	<u>94</u>	<u>122</u>	<u>765</u>	<u>83</u>

Total Agriculture 1064

<u>Industrial</u>	<u>Vocational</u>	<u>Technical</u>	<u>Degree</u>	<u>Special</u>
Freshmen	20	118	406	9
Sophomores	6	62	309	4
Juniors	0	9	122	2
Seniors	0	1	28	0
	<u>26</u>	<u>190</u>	<u>865</u>	<u>15</u>

Total Industries 1096

<u>Science and Humanities</u>	<u>Vocational</u>	<u>Technical</u>	<u>Degree</u>	<u>Special</u>
Freshmen	0	0	37	0
Sophomores	0	0	25	0
Juniors	0	0	7	0
Seniors	0	0	0	0
	<u>0</u>	<u>0</u>	<u>69</u>	<u>0</u>

Total Science & Humanities 69

Total All Divisions 2229

SAN DIMAS BRANCH  
ENROLLMENT BY CLASSES AND CURRICULUM LEVEL (NOVEMBER, 1947)

	<u>Vocational</u>	<u>Technical</u>	<u>Degree</u>	<u>Special</u>
Freshmen	12	18	169	5
Sophomores	5	16	147	8
Juniors	0	0	0	0
Seniors	0	0	0	0
	<u>17</u>	<u>34</u>	<u>316</u>	<u>13</u>

Total 380

COMPARATIVE SUMMARY OF REGISTRATION

SAN LUIS OBISPO CAMPUS

<u>County</u>	<u>Jan. 4, 1940</u>	<u>Jan. 1, 1941</u>	<u>Mar. 21, 1946</u>	<u>Nov. 1, 1946</u>	<u>Nov. 1, 1947</u>
Alameda	23	25	19	35	63
Alpine	0	0	0	0	0
Amador	2	1	0	0	0
Butte	6	9	1	1	4
Calaveras	0	1	0	0	0
Colusa	3	5	2	2	1
Contra Costa	15	17	7	13	12
Del Norte	0	0	0	0	0
Eldorado	0	0	0	0	7
Fresno	24	23	20	65	65
Glenn	6	7	1	3	5
Humboldt	7	13	6	12	13
Imperial	4	12	3	7	12
Inyo	2	2	0	2	3
Kern	17	18	8	29	27
Kings	6	13	6	18	17
Lake	3	0	0	1	1
Lassen	0	1	2	2	3
Los Angeles	185	197	163	397	439
Madera	6	5	1	3	11
Marin	3	1	2	3	10
Mariposa	0	1	0	0	2
Mendocino	5	8	1	9	13
Merced	15	16	2	13	27
Modoc	4	4	0	1	4
Mono	0	0	0	0	1
Monterey	6	8	8	19	41
Napa	0	1	7	4	4
Nevada	1	0	1	3	4
Orange	25	39	12	40	59
Placer	1	5	1	4	5
Plumas	0	0	0	0	0
Riverside	24	24	11	32	35
Sacramento	9	7	5	13	27
San Benito	0	3	1	5	9
San Bernardino	34	34	13	28	44
San Diego	24	20	15	69	78
San Francisco	14	17	19	34	61
San Joaquin	19	16	14	19	28
San Luis Obispo	84	81	134	175	427
San Mateo	2	7	6	22	28
Santa Barbara	25	37	19	32	64
Santa Clara	15	18	15	43	53
Santa Cruz	9	9	10	28	33
Shasta	0	1	3	1	5

<u>County</u>	<u>Jan. 4, 1940</u>	<u>Jan. 1, 1941</u>	<u>Mar. 21, 1946</u>	<u>Nov. 1, 1946</u>	<u>Nov. 1, 1947</u>
Sierra	0	0	1	2	2
Siskiyou	4	7	0	4	4
Solano	2	5	0	1	5
Sonoma	10	9	8	19	21
Stanislaus	24	19	7	15	38
Sutter	1	4	0	2	9
Tehama	2	7	2	3	5
Trinity	1	1	0	0	1
Tuolumne	0	3	2	6	3
Tulare	15	21	18	43	56
Ventura	11	9	8	34	33
Yolo	4	3	3	2	4
Yuba	6	5	1	1	7
Other States & Foreign Countries	29	67	67	179	231
Other States Foreign Countries				20	21
	<u>737</u>	<u>866</u>	<u>655</u>	<u>1518*</u>	<u>2185*</u>

\* Not all students registered at the San Luis Obispo campus were included in this survey as some cards were not available at the time the study was made. In 1946 actual enrollment was 1571 and 1947 it was 2229. Had the balance been included in this study, some additional counties would be represented.

**VOORHIS UNIT ENROLLMENT  
BY DEPARTMENTS AND COUNTIES**

November 1, 1947

Counties	Ornam. Hort.	Agricu. Inspec.	Citrus	Deciduous	Crops	Total
			Fruit Prod.	Fruit Prod.		
Los Angeles	51	78	43	1	8	181
San Diego	5	2	5	1	1	14
Orange	5	15	19	0	0	41
Riverside	1	11	9	0	0	21
San Bernardino	4	7	10	0	1	22
Santa Barbara	0	2	7	0	1	10
Fresno	0	3	0	0	0	3
Sacramento	0	1	0	0	0	1
Ventura	0	7	15	0	1	23
Kings	0	1	0	0	0	1
Kern	0	4	0	1	0	5
Sonoma	0	1	0	0	0	1
Napa	0	3	0	1	0	4
Santa Cruz	2	0	0	0	0	2
San Luis Obispo	0	3	0	0	0	3
Alameda	0	4	0	0	0	4
San Francisco	0	1	0	0	0	1
Imperial	0	1	0	0	1	3
Tehama	0	0	1	0	0	1
Tulare	1	5	8	0	0	14
Mendocino	1	0	0	0	0	1
Butte	0	1	0	0	0	1
Sutter	0	1	0	0	0	1
Stanislaus	0	1	0	0	0	1
San Mateo	0	2	0	0	0	2
Santa Clara	0	0	0	1	0	1
Marin	1	0	0	0	0	1
Placer	2	0	0	0	0	2
Merced	1	1	0	1	0	3
Yuba	0	2	0	1	0	3
San Joaquin	0	1	0	0	0	1
Out of State	4	2	3	0	1	10
Out of Country	0	0	1	0	0	2
	78	160	121	7	14	380

### SUMMARY OF ENROLLMENT DISTRIBUTION

California State Polytechnic College stands out in contrast to the other State Colleges in that its enrollment is wide-spread throughout the State, with 53 of the 58 counties represented. The five counties not represented are Alpine, Amador, Calaveras, Del Norte and Plumas, all small, sparsley populated, extreme northern counties of the State.

The enrollment survey at the San Luis Obispo campus alone shows 221 students are registered from 39 of the 48 states, New York has the most out-of-state students with 21 while Nevada has 17, Illinois, 15; Pennsylvania, 15; Washington, 12; Oregon, 11; Texas, Massachusetts and Ohio, each 10; Arizona 9, and Michigan, 8.

Twelve students indicate Hawaii as their legal residence, while 21 students are registered from 10 foreign countries.

A study of the foregoing study of registration by counties at San Luis Obispo and San Dimas shows a percentage distribution of the counties having the largest representations as follows:

<u>County.</u>	<u>Percentage At San Luis Obispo</u>	<u>Percentage At San Dimas</u>
Alameda	2.88	1.05
Fresno	2.98	0.79
Kern	1.24	1.32
Los Angeles	20.1	47.6
Merced	1.24	0.79
Monterey	1.88	---
Orange	2.70	10.80
Riverside	1.60	5.53
Sacramento	1.24	0.26
San Bernardino	2.01	5.79
San Diego	3.57	3.69
San Francisco	2.79	0.26
San Joaquin	1.28	0.26
San Luis Obispo	19.6	1.05
San Mateo	1.28	0.53

<u>County</u>	<u>Percentage At San Luis Obispo</u>	<u>Percentage At San Dimas</u>
Santa Barbara	2.93	2.63
Santa Clara	2.43	0.26
Santa Cruz	1.51	--
Stanislaus	1.74	0.26
Tulare	2.56	3.69
Ventura	1.51	6.05
Out of State	10.57	2.63
Foreign	0.96	0.53

#### TRANSFERS FROM OTHER COLLEGES

Although California State Polytechnic College has been a four-year degree granting college only since 1942, when the State Board of Education authorized the raising of the curriculum level from that of a three-year technical college, it is interesting to note the number of students who in 1947 transferred from other colleges to complete their degree work here. Following is the list of colleges and the number of students who transferred:

University of California. . . . .	75	Other California Universities and Colleges. . . . .	32
U. of Calif. at Los Angeles . . . .	20	California Junior Colleges. . . .	47
State Colleges		Other State Colleges and Universities. . . . .	115
Chico. . . . .	1	U.S. Territories Colleges . . .	7
Fresno . . . . .	10	Foreign Countries Colleges. . .	7
Humboldt . . . . .	2		
San Diego . . . . .	10		
San Francisco. . . . .	2		
San Jose . . . . .	8		
Santa Barbara College. . . . .	1		
			337

#### ENROLLMENT OF VETERAN AND NON-VETERAN STUDENTS

San Luis Obispo, November 1, 1947

	<u>Veterans</u>	<u>Non-Veterans</u>	<u>Total</u>
Freshmen	682	402	1084
Sophomores	560	171	731
Juniors	225	37	262
Seniors	110	31	141
Fifth Year	11	0	11
	1588	641	2229

### ENROLLMENT OF MARRIED STUDENTS

San Luis Obispo

Public Law 346	536	
Public Law 16	97	
State Veterans	<u>4</u>	
Married Veterans	637*	*Approximately 40% of veteran enrollment
Married Non-Veterans	<u>21</u>	
Total Married Students	658**	**Approximately 30% of total enrollment

### NUMBER OF DEGREES AND CERTIFICATES GRANTED

San Luis Obispo, 1947

<u>Bachelor of Science Degrees</u>	<u>Certificates of Completion</u>
Agricultural Inspection . . . . .	Vocational & Technical . . . 8
Animal Husbandry. . . . .	15
Crops Production. . . . .	5
Dairy Husbandry . . . . .	3
Dairy Manufacturing . . . . .	2
Fruit Production. . . . .	1
Poultry Husbandry . . . . .	2
Aeronautical Engineering. . . . .	7
Air Conditioning & Refrigeration.	2
Electrical Engineering. . . . .	2
Mechanical Engineering. . . . .	1
Total Degrees . . . . .	48

### FACULTY

For the school year beginning in September 1947, 34 new instructors were added to the faculty, bringing the total to 141 persons on the teaching staff at the San Luis Obispo and San Dimas campuses. The following charts indicate the distribution of the teaching staff according to degrees:

#### SAN LUIS OBISPO FACULTY

<u>Degrees</u>	
Ph.D. or Ed.D . . . . .	12
M.A. or M.S. . . . .	46
A.B. or B.S. . . . .	51
No degree. . . . .	14
	123

#### SAN DIMAS FACULTY

<u>Degrees</u>	
Ph.D. or Ed.D. . . . .	2
M.A. or M.S. . . . .	5
A.B. or B.S. . . . .	11
No degree. . . . .	0
	18

DIVISIONS OF THE COLLEGE

AGRICULTURAL DIVISION

During the calendar year, 1947, this division of the college offered instruction in eleven major curricula. These departments are: Agricultural Engineering, Agricultural Inspection, Animal Husbandry, Citrus Fruit Production, Dairy Husbandry, Dairy Manufacturing, Deciduous Fruit Production, Field Crop Production, Ornamental Horticulture, Poultry Husbandry, and Truck Crop Production. The first two years in the majors of Agricultural Inspection and Citrus Fruit Production must be completed at the San Dimas branch. In addition to those two majors, the San Dimas branch also provides instruction in Ornamental Horticulture and Deciduous Fruit Production to those students who elect to take the first two years of their work in those majors at the southern branch.

The college prepares men in the field of agriculture with the principal objective being to provide graduates of this division with a full and broad understanding of basic factors involved in production, management and marketing, together with the necessary skills, experience, and related subjects to make such a graduate an efficient agricultural producer.

The educational approach used at California State Polytechnic College not only prepares men to hold positions lying at the top rung of the ladder of agricultural success, but it gives them a thorough understanding of the various processes represented by the lower rungs in the ladder. This knowledge of all steps in the agricultural industry not only enables the student to climb to the top, but it also gives him a grasp of the significance of all

agricultural processes and a consequent tolerant attitude toward every problem faced by the industry.

The college herds, flocks, orchards, range and crops land are used by students to develop practical application and technique. An unique phase of the California State Polytechnic College educational philosophy is the use of the student owned and managed project as an integral part of the instruction system. Each student in the college has the opportunity to select a productive project in the particular field in which he is interested. He has managerial and financial responsibility over the project and must submit a complete record upon its completion.

Student projects are financed through a project foundation fund from which students may borrow at six percent interest, and each project returns a percentage of the net profit to this fund as a guarantee against any possible individual student financial loss. This practical system not only enables the student to earn money while doing work directly related to his major occupation and academic interest, but also gives him the "feel" of ownership and management, a proven incentive for learning. Observing the young man as a producer under commercial conditions furnishes an excellent indicator of his probable future success on the job.

#### ENGINEERING AND INDUSTRIAL DIVISION

Instruction in seven major departments was offered during the year in this division. These departments are: Aeronautical Engineering, Air Conditioning and Refrigeration Engineering, Architectural Engineering, Electrical Engineering, Electronic

and Radio Engineering, Mechanical Engineering and Printing. Printing was the only one of these departments which accepted enrollment for the first time in 1947.

Primary objective of all instruction in this division is to provide training that will lead to employment in maintenance, operation, production, application and sales phases of specific engineering fields. It is not the purpose of the Engineering Division of this college to train engineers interested primarily in research or design.

One objective of this division is to provide each student with necessary skills in his specific field so that he not only will be immediately employable but will be valuable to his employer from the first day he enters such employment.

However, every student in this division also receives a thorough foundation in general engineering theory as well as practices so that he may advance rapidly in his field. Engineering students receive instruction in basic science and mathematics which enables them to study and understand new developments and techniques and thereby keep astride of changing conditions in any industrial field.

In the process of achieving these objectives, the Engineering Division also attempts to inculcate in every student proper work habits and attitudes which will lead to successful employment. Such students have the proper attitude to start at the bottom in their specific field, and the proper background to advance to higher positions.

In order to provide practical experiences similar to those which will confront an engineering student at the time of employment, every engineering department has its own well-equipped laboratory in which a student is given an opportunity to work with the same type of machinery, tools, equipment, etc. that is used in the specific engineering field for which he is training. Laboratory instruction in every engineering department is based on the objective of providing group or individual projects similar to those which will be encountered by the students on the job. Such projects are not routine laboratory exercises, but are practical projects conducted along commercial lines. For example, aeronautical engineering students operate group projects in the repair and overhaul of aircraft or aircraft engines in the department's shop, which was the 84th government approved repair station to be established in the United States. All such work by students must pass rigid CAA examinations prior to the time that it is returned to service as "airworthy". All student labor during instructional shop hours is done without pay, but students assigned to work on a project outside of instructional shop hours receive hourly pay from the foundation fund, which is reimbursed at the time the aircraft or engine is sold or at the time the owner pays for the repair work.

In the Electrical Department a job such as the installation of a motor or the re-wiring of a shop or room is assigned to a group of students. They plan the job, make an estimate of the cost for labor and material, and prepare a bill of materials. When these estimates come in the job is assigned to one student who acts as foreman and

carries the work through to completion. He is assigned student help from the laboratory classes, keeps all records of material and labor used, and upon completion makes the final report. Similar projects of various kinds are carried on by all departments in the Division throughout the campus.

#### SCIENCE & HUMANITIES DIVISION

The calendar year 1947 was the first in which courses previously referred to as "related subjects" were grouped together for administrative purposes under the newly organized Science & Humanities Division. The departments included in this division are: Education, English, Health and Physical Education, Life Science, Mathematics, Music, Physical Science, and Social Science. Work leading to the Bachelor of Science degree was offered for the first time in 1947 in five of these departments: Life Science, Physical Science, Mathematics, Physical Education, and Social Science. In Education, English and Music no departmental majors for meeting graduation requirements have been established.

In 1947 the State Board of Education approved the college to provide instruction leading to the Special Secondary Teaching Credential in Physical Education.

This division has three principal functions. First it is a service division providing for students in agriculture and engineering those courses very closely related to and directly supporting the area of the major. Second it provides those courses not so closely related, but required as general education. The third function is to prepare teachers who are seeking teacher credentials in Vocational

Agriculture and Physical Education. An application has been made for permission to prepare teachers for the general secondary credential with teaching majors in life sciences, physical sciences, mathematics, social science and physical education.

As a service division it provides instruction which is essentially vocational, since the aim of such instruction is to aid the students to make a better living. For example, scientific agricultural production must depend heavily on the biological sciences. Agricultural marketing is a specialized branch of economics as is accounting. Agriculturalists must be familiar with governmental services and policies. In engineering examples of related work include the use of therodynamics in physics and air-conditioning courses, and the mathematics and physics of stress and strain in mechanical engineering courses such as Strength of Materials. Familiarity with subjects such as labor relations, industrial economics, and governmental policies are needed increasingly by engineers. A typical example of this service function of departments in this division is that of the Physical Science department. Although there was only a small number of students majoring in this department during its first quarter as a graduation major, the department provided instruction in that quarter to 1017 students who were majoring in other departments.

Ability in communication, both oral and written, as well as intelligent and critical reading are tools which all vocations demand in varying degrees.

Students must attain a sufficient mastery of such related courses to be able to apply the theoretical knowledge to production problems

encountered in their major work. For students taking vocational and technical level curricula, such related courses differ from those required of degree students. These non-degree related courses are not simplified degree courses, but are especially designed to correlate more closely with production in the vocational and technical areas.

As the division providing general education it places emphasis on those aspects of living which are common to all persons. For example, such questions as how to make a home, how to rear children, how to define group policies and enforce codes of conduct, how to protect oneself against various types of enemies (disease and war), how to care for unable persons, how to acquaint oneself with the mysteries of the universe, are covered.

This aim is being attained by such methods as the inclusion of certain units in the English courses, the pointing up of the social implications of developments in science in the science courses, and by requiring some courses which are primarily concerned with attaining the aims of general education. That is, such courses as "The Background of Modern Affairs", "Family Psychology", "A Survey of United States History", "General Biology", and "Literature", etc.

Because the college had developed over a period of years the various courses necessary to provide general education and also courses related to various majors in agriculture and industry, the addition of very little in offerings was necessary to provide majors in the five departments of this division.

This division cooperates with the Agricultural Division in providing teacher training courses for those seeking the Special Secondary Credential in Vocational Agriculture and the Special Secondary Limited Credential in Agriculture. The division not only administers the teacher training courses for students seeking the Special Secondary in Physical Education, but also administers the curriculum content of the Physical Education department.

One of the strengths of the teacher training program at California State Polytechnic College is that it provides actual experience in mastering the skills which the teacher in these fields is called upon to teach.

#### FACILITIES

Construction on the most important addition to the college's physical facilities in recent years began in December when ground was broken for the new \$530,000 Walter F. Dexter Memorial Library building.

Only construction projects completed during 1947 were:

1. Athletic field house: 20' x 160', two sets showers, offices for staff, drying rooms for athletic equipment; serves new athletic field.
2. Office building: accomodations for 28 instructors, temporary FWA construction.
3. Four classroom buildings: each 40' x 48', seats 125 each, pre-fabricated FWA surplus units.
4. Fruit shed, deciduous orchard: 20' x 48', pre-fabricated FWA, used as fruit packing shed, storage for orchard equipment.
5. Storage unit: 20' x 48' foot, pre-fabricated FWA, used for storage of dormitory equipment.
6. Installation dairy manufacturing unit in former NYA resident center kitchen and cold storage area.

The number of students now in attendance at the San Luis Obispo campus is about three times the 1940-41 average attendance. The only facilities added since 1940-41 are four steel buildings (dairy feed barn and laboratory, agricultural engineering and shop building, hangar and airplane construction shop, and the central feed processing and storage plant); the 40 temporary 20' x 40' steel classroom and laboratory buildings; and the six units listed above. Tripled enrollment and progressively expanding curricula have necessitated more classrooms and increased laboratory facilities which the college was only able to provide through the erection of very temporary war surplus facilities.

A survey conducted in October, 1947, relative to utilization of facilities at San Luis Obispo indicates that in addition to eventual replacement of many temporary structures, many other permanent building improvements are needed to take care of present and anticipated enrollment.

The report indicated that additional science laboratory facilities particularly are needed to bring current instruction up to standard. Limited laboratory facilities have made it necessary to reduce laboratory instruction time by from one-third to one-half of what is considered optimum. All of the science laboratories except two are located in the group of temporary buildings. The other two are in the Agricultural Education building which was built in 1906, and which also needs to be replaced because of age. A Science and Classroom Building including a minimum of eighteen laboratories and appropriate demonstration and classrooms is necessary for the present student body.

When the new library and classroom building is complete, it will provide some additional classroom space, but there still will be need for 26 classrooms to substitute for those now located in temporary facilities or in the old Agricultural Education building.

The most serious limiting factor in the development of the San Luis Obispo campus is the antiquated central heating and electrical distribution center. This plant was constructed in 1908 for a campus designed to meet the needs of 400 students. The steam supply is insufficient to provide for present buildings not to mention any new ones. In addition to a heating plant and utility distribution center large enough to supply present buildings and any new ones that might be planned, it is necessary to replace much of the underground water and gas system. Electricity in some sections of the campus is carried on poles that were installed more than 30 years ago. Wire sizes are inadequate to serve permanent as well as temporary buildings that have been constructed in the last few years. Before permanent buildings are completed the entire electrical, water and gas distribution system will have to be re-engineered and the electrical supply lines placed underground. The sewer system is in better condition because considerable work was done on it about ten years ago, but many of the lines are too small.

In accordance with the college's overall established instruction policy, the central heating plant and electrical distribution center have been used for many years as an electrical and mechanical engineering laboratory, and the new plant will continue to be used.

Agricultural production facilities for student owned-projects are insufficient to meet the needs of current enrollment. With the

exception of the sheep unit and the Thoroughbred horse stable built in 1940, no additions to project facilities have been made in more than ten years. Facilities required to provide for present project needs include a cattle feeding shed, slaughter house and meats laboratory; swine feed lots; project dairy unit for student-owned animals; small demonstration creamery and products laboratory; field house and laboratory for truck crops, additional land for field and truck crops projects; student poultry project houses; green house and propagation laboratory; and additional agricultural engineering and farm shop facilities.

No additional lands were acquired by the college during the calendar year 1947. Lands now total about 2,233 acres, of which 2,083 acres are used for the campus and farm at San Luis Obispo and 157 acres are included in the San Dimas campus. At San Luis Obispo about 100 acres are used for the campus proper, several hundred acres are suitable for range, and the remainder is used for field crops, orchard, truck crops, etc. At San Dimas, about 30 acres are utilized for citrus, avocados, deciduous fruit, truck crops, etc.

The valuation on buildings and property at San Luis Obispo is about \$4,000,000 and the San Dimas campus property and buildings are valued at about \$1,500,000.

## HOUSING

Housing of students was still a major problem in 1947. To realize the real significance of this problem to California State Polytechnic College one must take note of the fact that this college is the only one of the State Colleges which is considered as an exception to the rule that the State Colleges are regional institutions. California State Polytechnic College is a state-wide institution. On the San Luis Obispo campus only 427 of the 2229 students enrolled in the Fall quarter, 1947, were residents of San Luis Obispo county. Even the figure of 427 is very misleading because so large a percentage of the students are married (33%) and give San Luis Obispo as their home address. With this size of enrollment it was necessary that more than 1800 students find housing either through the college or privately in the city of San Luis Obispo. Since the city of San Luis Obispo can accommodate a relatively small percentage of the total enrollment, the college must provide housing for almost all out-of-town students.

Present facilities on the campus will, with normal occupancy, provide for only 742 men. Approximately 600 students are currently housed at Camp San Luis Obispo and 90 more reside at the Las Higueras (Public Housing Administration) Housing Project, making a total of 1432 accommodations for single students. In addition there are 75 houses and 235 trailers on the campus for married veterans and their families. All are in use and a waiting list exists.

Since neither the facilities provided at Camp San Luis Obispo nor those provided by the Federal Government can be considered more than temporary, provision must eventually be made to house an

additional 700 or more single men on the campus without consideration of a larger enrollment than now exists.

The college also provides housing for 20 faculty families, and five single faculty members.

#### INSTRUCTIONAL METHODS

##### PROJECT SYSTEM

So that there will be a better understanding of statements made about project operation under Departmental Activities later in this report, the following information on the project system is included:

The function of training students for maximum employability and earning power is carried out by a thorough integration of the "doing" practices with the underlying theory. The classroom instruction, the formal laboratory experiences, and the actual project operations on a commercial scale are each used in their proper proportion. The project system consists of self-owned or managerial projects operated by students in such a way as to give knowledge in the commercial production and marketing of agricultural products or in the construction, rebuilding, repair or maintenance of industrial machinery or equipment. This combination of the very practical "learn by doing" and "earn while you learn" philosophies not only enables a student to earn money while doing work directly related to his major academic interest, but also creates an added incentive for the more rapid acquisition of further skills and knowledge. Many students after graduation have established fine foundation herds on their home farms from livestock

raised as projects at the college. A \$90,000 revolving fund from which students may borrow at the current rate of interest without co-signers makes it possible to finance the many projects. One-third of the net profit of a project is returned to the Project fund to guarantee against individual student financial loss.

#### UPSIDE DOWN EDUCATIONAL SYSTEM

California Polytechnic College has established an unique educational plan sometimes described as the "upside down educational plan." This plan is characterized by the grouping of as many technical and job-getting courses in the first two years as possible. In the third and fourth year the student takes, in addition to courses in his major, those subjects considered as general education. The net result is that a student who completes the four-year course leading to a degree will have covered substantially the same material covered in a similar major in a typical agricultural mechanics type college--but in a somewhat inverted order. This way the student comes immediately into contact with the field of his major interest and doesn't feel thwarted by numerous hurdles which seem to him unrelated to his interest. He also acquires a realization of need for some "theory" courses. This system enables a student to earn a living, using the skills he has learned, at whatever point he may complete his formal education.

#### INSTRUCTION LENGTHS

A student enrolling at California State Polytechnic College may elect to take a four-year degree curriculum leading to a Bachelor of Science in his major field; or a three-year technical curriculum, or a two-year vocational curriculum for which there

are appropriate certificates. The two and three-year curricula are offered in the Agricultural, Engineering and Industrial divisions.

STUDENT LABOR

In addition to the opportunities for students to earn money through managerial and self-owned projects, California Polytechnic uses a maximum number of students to operate the college farm and handle grounds and campus maintenance on the 2083 acres at San Luis Obispo and 150 acres at the Voorhis unit.

In addition to absorbing a great amount of on-campus student labor, the college has an employment office where off-campus job opportunities are handled under direction of an instructor assigned part-time to that duty.

Following is a recapitulation of a typical month of on-campus student work as shown in the Foundation and State payroll reports for October, 1947:

STUDENT LABOR - STATE PAYROLL

FOR MONTH OF OCTOBER 1947

<u>Function</u>	<u>San Luis Obispo</u>			<u>Voorhis</u>		
	<u>Number</u> <u>Employees*</u>	<u>Payroll</u>	<u>Total</u>	<u>No. Em-</u> <u>ployees</u>	<u>Voorhis</u> <u>Payroll</u>	<u>Total</u>
Adm.	20	579.02				
	20		579.02			
Inst.						
Ag.	41	522.39		7	77.60	
Ind.	49	830.82				
R. S.	49	864.58		1	18.75	
Lab	21	652.61		2	102.60	
P M	1	40.13				
	161		2910.53	10		198.95
M & O						
Bldg.	33	878.52		6	155.40	
Grounds	23	305.10		13	169.20	
Repairs	5	67.13		1	33.00	
Autos	8	285.38		1	73.69	
Security	14	323.25				
	83		1859.38	21		431.29
Farm						
General	18	343.90		1	27.90	
MA	3	207.25				
Dairy	1	7.50				
Poultry	1	183.60				
Orchards	27	389.07		2	69.00	
	50		1131.32	3		96.90
Totals	314	\$6471.25		34		\$727.14

\* As the number of different employees suggests, every effort is made to employ many different students in order to provide experience to as large a percentage of the total enrollment as practicable.

STUDENT LABOR - FOUNDATION PAYROLL

FOR MONTH OF OCTOBER, 1947

	No. of Employees	Student Payroll	<u>Total</u>
<b>Project Fund</b>			
Dairy	2317.17	34	1891.21
Beef	292.60	10	272.60
Hogs	58.30	2	40.30
Sheep	56.30	2	40.30
Horses	36.15	1	20.15
Poultry	838.57	25	387.85
Crops	164.67	15	164.67
Feed		7	202.25
	<b>Total</b>	<b>96</b>	<b>\$3019.33</b>
<b>Cafe-Dorm-SLO</b>			
Cafe	154	4602.70	
Dorm-Campus	90	1334.44	
Dorm-Camp	30	606.57	
Dorm-Los Higueras	5	100.00	
Health Center	5	131.53	
Bus	2	46.50	
	<b>Total</b>	<b>284</b>	<b>\$6821.74</b>
<b>Cafe-Dorm-SD</b>			
Cafe	17	406.40	
Dorm	20	621.16	
	<b>Total</b>		<b>\$1027.56</b>
<b>Admin. Office-SLO</b>	3	114.35	
Repairs & Renewals	2	156.00	
Spec. Projects - Football Field	4	106.50	
Veterans Housing	3	91.00	
	<b>Total</b>	<b>49</b>	<b>\$ 467.85</b>
<b>Grand Total</b>	<b>429</b>		<b>\$11336.48</b>

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\* As the number of different employees suggests, every effort is made to employ many different students in order to provide experience to as large a percentage of the total enrollment as practicable.

### GENERAL FARM OPERATION

During 1947 about 420 acres of state land and 100 acres of project-leased land was farmed and produced a good harvest of oats and vetch, small grains, and corn for ensilage. Due to the drouth this year the alfalfa was used chiefly for pasture.

### SUMMARY CROPS PRODUCTION-1947

<u>Acres</u>	<u>Land</u>	<u>Crops</u>	<u>Amount</u>	<u>Value</u>
223	State	Oats & Vetch (hay)	462.5 Tons	\$ 8356.70
27	Project-leased	Oats & Vetch (hay)	38.5 Tons	750.00
<u>250</u>			<u>501.0 Tons</u>	<u>\$ 9106.70</u>
8	State	Alfalfa (hay)	7 Tons	84.00
109.5	State	Irrigated Pasture	109.5 Acres	894.00
45.5	State	Green Feed	116.5 Tons	582.50
25.5	State	Corn (ensilage)	195.5 Tons	977.50
8	State	O. & V. (ensilage)	30 Tons	150.00
14	Project-leased	Honey Sorgm (ensilage)	15 Tons	75.00
60	Project-leased	Small Grains	13 Tons	1031.60
<u>521.5</u>				<u>\$12,901.30</u>

## SCHOLARSHIPS

During 1947 two additions were made to the number of scholarships offered to students at California State Polytechnic College.

Mrs. Norman Geis, Connecticut, read about the college in the Reader's Digest and was sufficiently impressed to establish two \$100 scholarships to be awarded to needy students.

The San Luis Obispo Rotary club established two \$150 scholarships to be awarded annually to students outstanding in extra-curricular activities.

## STUDENT PERSONNEL SERVICES

### ADMISSIONS, GUIDANCE & PLACEMENT

During 1947 the various activities relative to admissions, guidance and placement, including operation of the offices of the registrar and recorder, were placed under the authority of an assistant dean in charge of admissions, guidance and placement. This organization deals primarily with the problems involved in assisting students and faculty with enrollment of students, student academic progress, and ultimate placement of individuals. The offices mentioned are not separate functions; they carry out their activities on a cooperative basis that makes available information useable to each office as well as to faculty members and students.

### GUIDANCE CENTER

During the calendar year 1947 a trained psychologist was placed in charge of this activity as Director of Guidance. The guidance center has three main functions which are coordinated so as to aid the student in understanding himself and to give the faculty information so that they can more intelligently counsel the student. All new students are given placement tests, the results of which are used to place students in sections in which they will have the best chance for success. Counseling service consists of vocational, educational and personal counseling provided to all students (veteran and non-veteran) who request the service and also to those referred there by faculty members. This consists of interviewing, testing, and providing occupational

information. The guidance center provides available information about each student to the deans of divisions and instructors of departments. In the past year the guidance center has handled the following number of cases:

249 veterans who have completed advisement  
75 non-veterans who have completed advisement  
450 informal interviews

#### PLACEMENT

A placement secretary was added to the staff during 1947 and immediately began organizing that office to act as a central agency for all information relative to job opportunities, and student qualifications. This office works directly with the department heads and instructors. It uses the records and personal data compiled by the Admissions, Guidance, and Records offices to help in the preparation of a placement folder and of letters of recommendation. Inquiries from prospective employers are sent to department heads and instructors. Students are informed of job openings and of the trend of employment. Necessary arrangements for interviews are made to meet the needs of students and the employers. Students seeking employment are interviewed and advised as to placement opportunities. After the student or graduate has been placed, an up-to-date record and mailing list is maintained. Employers are contacted to keep case records up-to-date. Placement for summer employment as well as post-graduation employment is handled by this office.

### TEACHER TRAINING

During the period January 1, 1947 to December 1, 1947, the California State Polytechnic College offered not only the skills and method courses for Agriculture Teacher candidates, but also the recommended work in general and professional education leading to the Special Secondary Credential in Vocational Agriculture or the Special Secondary Limited Credential in Agriculture. This work is carried on in cooperation with the Bureau of Agricultural Education.

The College has established a Committee on Teacher Training which includes representatives from all departments of the college, who are interested in the education of teachers. This committee receives and approves applications from teacher candidates. Five candidates secured Special Secondary Credentials in Vocational Agriculture, while three candidates secured the Special Secondary Limited Credential in Agriculture.

Critic Centers have been opened in nearby high schools in order to provide Directed Teaching Facilities in the Agriculture Departments of the high schools.

The college was approved in 1947 to give instruction leading to the Special Secondary Credential in Physical Education. Thirty-eight students enrolled in this major during the Fall quarter.

## LIBRARY

One of the most important steps in the progress of the college was made possible with the beginning of construction of the Walter F. Dexter Memorial library late in 1947. This new library, being erected at a cost of \$530,000, will relieve the over-crowded condition of the present library quarters and will make possible an expansion of the services of the library to the institution. The building will provide adequate housing for 120,000 volumes and will have a seating capacity of 528 persons. In addition, there will be work rooms, receiving rooms and staff offices that will provide excellent quarters in which the staff may process the books and reference materials. The visual education program will be aided by the provision in the building for additional rooms for the projection of audio-visual materials.

There will also be included two listening rooms where the students and faculty may listen to recordings. This new service will be of material assistance to the music department in their music appreciation course. An attractive exhibition room is planned where appropriate exhibits may be placed on display. This room will be especially useful in connection with the course in "Art in Everyday Living." One of the features of the new building will be the "Browsing Room" where outstanding books will be displayed and where students will be encouraged to read during their leisure moments.

The book budget for the library was increased to \$10,000 for the fiscal year 1947-48. During the calendar year 1947, 3,149 books were added to the library collection. The use of the library

by both the students and the faculty increased considerably over the previous year. In the year 1947, the library circulated a total of 22,364 books. Over three thousand reference questions were answered by the reference department. In order to supplement the college collection, this library borrowed reference works from the State Library and other California libraries.

Two trained librarians and one clerical assistant were added to the staff during the year. One of the librarians was assigned to the cataloging department while the other librarian assisted at the reference desk. The clerical assistant assumed the responsibility of preparing book orders and receiving new books. Considerable progress was made during this year in re-cataloging the library. This project is attempting to re-classify the library collection in accordance with the highest library standards.

The Faculty Library committee gave valuable assistance to the librarian in completing plans relative to the construction of the new building. The library staff made every effort to meet the increased demands for its services during the year. Evidence of library progress is reflected in the increase in the use of the library, the large number of new books added to the collection, a larger staff, and above all, the construction of a modern and adequate library building.

## DEPARTMENT FUNCTIONS AND FACILITIES

### AGRICULTURE

Agricultural Engineering and Mechanics: In addition to providing instruction to 90 majors who intend to enter the agricultural engineering field as engineers or mechanics, the department also functions as a service department providing instruction in agricultural mechanics to some 740 students who are majoring in other agricultural departments. Principal facilities include a new building, 100 x 180 feet with a 60 x 60 foot wing, fully equipped to handle courses in farm machinery, tractor repair and operation. The department has two other buildings for laboratory and shop work, and in addition uses the entire college farm for construction, repair and operations laboratory.

Three new instructors were added in this department in 1947, bringing the total to six full time instructors and two part-time.

This department received from war surplus channels nine tractors and a number of engines and other pieces of equipment. Much of this equipment was in poor condition, but it has provided much valuable experience in repair and in re-conditioning during laboratory practice periods.

Several new pieces of modern farming equipment have been added to the department's inventory through regular purchase which provides the students a variety of farm machinery and equipment with which to work.

While work in this department does not lend itself particularly well to student owned projects, from 40 to 50 students earn a

considerable portion of their college expenses doing work related to their major outside of class and laboratory time. Advanced students do major overhaul jobs on tractors and various engines owned by the college and design and construct special machinery whenever needed. Other students work in the farm shop and auto shop where they service, repair, make adjustments and tune-up automobiles, trucks, tractors, gasoline and diesel engines and farm machinery of all kinds. They also build fences and gates, level land for irrigation, build and maintain soil conservation terraces, irrigation ditches and reservoirs, operate all kinds of tractors and farm machinery in the tilling, planting, harvesting and processing of the various crops raised on the college farm.

Laboratory classes in this department are equally as practical. While it would require several pages to enumerate all the contributions which the Agricultural Engineering lab classes have made in construction and repair of equipment for the college, the following are some examples:

In 1947 built four pedigree poultry houses and two large brooder houses, four sunshine brooders and numerous feeding and watering devices for the poultry department. Built and repaired much equipment for the Animal Husbandry and Dairy departments. Poured four concrete feeding floors. Built several walks and retaining walls. Cleaned out and enlarged the irrigation reservoir. Filled several large gullies restoring the fields to productive farming, etc.

With the full approval of all local farm machinery dealers and repairmen, this department in 1947 launched a project of great value to farmers of the area. Farmers were asked to bring in farm equipment and machinery to be repaired or re-built. The farmers furnished all parts and materials needed, and the students received a wide variety of experiences in working on the many types of equipment.

#### ANIMAL HUSBANDRY

This department provides instruction for students intending to enter the field of livestock production, agricultural education, and related fields. It was necessary to limit enrollment in this major to 360 in the Fall quarter, 1947.

Breeding herds maintained by the college include 100 registered beef cows, 150 registered ewes, and 75 brood sows; three breeds of beef, three breeds of sheep and three breeds of hogs are represented. Buildings include beef breeding barn and steer shed, plus feed lots to accommodate 250 head of steers throughout the year; central swine farrowing house, and individual feeding pens to accommodate 75 brood sows and approximately 800 fat hogs throughout the year; sheep barns and feeding shed to accommodate the sheep breeding flock and approximately 400 fat lambs per year. In addition to pasture and hay land available on the college farm, approximately 600 acres of additional land adjoining the college are leased for this department.

Students enrolled in this department carry supervised livestock programs to supplement their classroom and laboratory work.

These projects involve the feeding, care and marketing of either beef, sheep or swine. Each year these student projects include about 250 head of beef cattle, 600 head of sheep and 800 head of swine, marketed yearly by the students for about \$50,000, depending upon prices.

The department also has available for instructional purposes a Thoroughbred Breeding unit, operated cooperatively on the campus with the California Thoroughbred Breeders Association since 1941. Thoroughbred mares were given to the college by members of the association. Offspring from these mares are raised to yearlings and sold at the annual California Thoroughbred sales. Proceeds from the sale of these yearlings help to defray the cost of maintaining this instructional unit. Zuncho, a Thoroughbred sire imported from South America, was donated to the college by Walter T. Wells. The unit provides students with instruction in care, handling, and breeding of light horses. Five head of Thoroughbred yearlings were raised by students and sold by the college foundation. Four of them were sold at the annual California Thoroughbred Breeders Sale at Santa Anita in July for \$2600, \$1250, \$1050 and \$1000. Profits from these sales help maintain the cost of operating the breeding unit.

Four full-time and two half-time instructors were assigned to the department.

During the 1946-47 fiscal year animal husbandry students received \$13,668.66 as their share of the profits from student-owned and operated projects. The foundation received \$6,834.33 as its share of the profits from these projects. Approximately

\$6,800 was paid out to students for wages for operation of the beef, swine, sheep and horse breeding herds and foundation owned livestock and the feed room operations. An average of 12 students were employed part time during the year at approximately \$50 each per month.

Forty-five students fed out and marketed 137 head of beef cattle including: Grand Champion carload of steers at Great Western livestock show; Reserve Grand Champion steer of same show; also Champion Angus and Champion Shorthorn steers of the open division at the Great Western; Reserve Grand Champion carload of steers at the Grand National Livestock show, and the Champion Junior Calf, Reserve Champion Senior Calf, and Reserve Champion Summer yearling steer at the same show.

Sixty students fed out over 360 head of hogs as projects. Included were: Grand Champion barrow and Reserve Grand Champion pen of barrows at the California State Fair; and miscellaneous ribbon winners in hog classes at both the Grand National and Great Western Livestock shows.

Sixty students fed out project sheep in three classes: rams, show fat lambs and commercially fed lambs. Eight students were assigned the rams and sold them at the California State Ram Sale in May. Twenty-eight students fed fat lambs and exhibited them at the Great Western Livestock show and the Grand National Livestock show. At the Los Angeles show student owned lambs took the Open Division championship individual and Open Division champion pen of three. Twenty-four students fed out 300 head of feeder lambs purchased in Wyoming. The lambs were

sold in South San Francisco on the open market at \$25.75 per 100 weight, the highest price paid per pound on that market in years. In cooperation with the California Wool Growers Association the sheep department sponsored a sheep school at which over 50 students and sheepmen improved their sheering technique.

In addition to the gift of the Thoroughbred stallion, \*Zuncho, from Walter T. Wells, the department also received Minnesota No. 1 boar from Stewart Coffing, Sacramento.

Field, Fruit and Truck Crops: Function of this department, which includes three major areas with an enrollment of 210 students, is to prepare students in the field of crop and fruit growing both as a specialty and as a part of livestock and general farming. The department uses 400 acres of crop and orchard land and the extensive range and pastures of the college farm as a basis for much instruction. The orchards include more than 130 varieties of fruits and cover approximately 19 acres. Off-campus projects are conducted on rented land by students. Much of the truck crop land of the college is operated by truck crop students as projects.

More than 200 students have worked in the college orchards in the past year doing all orchard operations either as laboratory work or as project labor.

Two acres of new orchard was added to the 19 acres bringing the total to more than 140 varieties of fruit grown for instructional purposes.

The department received during the year many gifts, including new varieties of trees, spray materials, rootstock seedlings, hives of bees, packed fruit for class instruction, soil fumigation equipment and material, soil pulverizer and float, transplanting equipment, use of 30 foot land plane, wheels and frame for Farmall tractor, etc.

A new field house in the deciduous orchard was constructed during the year.

Dairy Husbandry and Dairy Manufacturing: The dairy unit maintains a purebred Guernsey, Holstein and Jersey herd of around 200 head. This includes approximately fifty animals that are owned by 20 students and operated as projects. This is one of the outstanding college herds in the United States as indicated by a herd average of around 500 pounds of butterfat and a high score on conformation. It includes several national champions in production. The herd produces around \$6,000 worth of dairy products and \$1,000 worth of surplus stock each month. The unit has a monthly student pay-roll of around \$1,600. The dairy projects and this large pay-roll help a considerable number of students in paying college expenses. The college offers majors in both the dairy production and manufacturing fields. Modern barns house the dairy herd, and at the present time additional new equipment is being added to the college creamery for use in teaching dairy manufacturing. There are now 176 students majoring in either the dairy production or manufacturing fields.

Four students now operate dairy manufacturing projects making and selling ice cream and cheese. It is planned to start other projects in this field as soon as the college creamery is more fully equipped. In addition to this project work, dairy manufacturing students do all the pasteurizing, bottling and distribution of milk on a student labor basis.

All work about the dairy is done by students with the exception of that done by a dairy herdsman and one full-time milker. Two students milk over 20 of the highest producers three times daily. There is considerable amount of other work in milking, feeding and caring for 100 milk cows and young stock. Last year the dairy department had a gross income of \$71,005 with a net income of \$6,801 after all operating expenses were paid, and, of course, in addition the entire dairy is used for instructional purposes.

One new instructor was added, bringing the total to three full-time instructors in this department.

During the past year, the dairy feed barn and laboratory which includes a judging pavilion was put into use. Seventy-five students can be seated and cattle can be brought into the classroom for such phases of instruction as judging. The kitchen of the former NYA unit was assigned to the department for a temporary creamery. With the addition of refrigeration equipment received from war surplus, the creamery unit is now in limited operation. A new milking machine also was purchased.

Last year the college dairy herd averaged 466 pounds of butterfat per cow compared with the state average of 262. The college Holstein herd made the outstanding average of 606 pounds

of butterfat per cow which record is second in the United States for their class. Several new national champions are included in the group.

Breeding stock was shipped throughout the West to improve the dairy industry and also semen for artificial insemination. The staff assisted with numerous dairy events throughout California.

Mr. Walter Wells of Los Angeles presented the college dairy with three valuable registered Guernsey cows and two heifers. Wells paid \$2500 for one and had been offered \$7500 for another. Mr. J. H. Sawyer of Galt donated a valuable purebred Jersey bull, for which he had paid \$600 when the bull was a calf. He also gave the department a fine Jersey heifer.

Ornamental Horticulture: In addition to instruction offered to more than 74 students majoring in the department, the landscape unit has a very practical function in that it keeps the grounds of Cal Poly beautiful. Students propagate and grow all the trees, shrubs and flowering plants used on the campus. The unit consists of 3400 square feet of glass house, 2400 square feet of lath house and 1800 feet of cloth house space. A propagation or head house of 1600 square feet is the main center of activity. Over 10,000 plants are now in the nursery, with another 10,000 in the cloth and lath houses. The glass houses are used for student training in pot plant raising and propagation of shrubbery plants.

Twenty-five student projects were operated during the year. Total gross sales amounted to \$1,197.13. Projects included cut flowers, pot plants, lining-out stock, bedding plants both

ornamental and vegetables and gallon-can plants. Project operation include growing of annuals, herbaceous perennials and woody perennials.

During the year 107 students were on student labor pay-rolls receiving a total of \$4,106.40 for operating the nursery and grounds maintenance. Under direction of the head campus gardener, students of this department did most of the shrubbery and tree spraying, shrubbery and tree pruning, and fertilizing, and irrigating both lawns and shrubbery. In the nursery students perform such operations as watering, pest control, propagation of plants, and general nursery practices.

A new 40 x 65 foot lath house was added during the year. The department also acquired electrically heated combination hot beds to which cold forms were added; an electric 50 cubic foot refrigerator for storing and holding bulbs, cuttings, scion wood, and deciduous plants; a new four cubic foot propagation oven; and a new soil mixer; as well as recording thermometers, hygrometers and numerous other small items through war surplus.

Gifts in the form of plant materials have been received by many donors.

During the year the department was host to the Tri-County chapter of the California Association of Nurserymen.

Poultry: Providing instruction to the 119 poultry majors is only part of the function of this department which also provides instruction in poultry husbandry to several hundred other agricultural majors who take such courses to round out a diversified experience in all farming operations. A flock of 4200 laying and breeding hens is maintained for student project work. During 1947, the plant did more than \$40,000 in business from sales of eggs, chicks, dressed poultry and other products. An intensive trap nesting and pedigree breeding program is carried on and each year approximately 120,000 hatching eggs and 40,000 baby chicks are sold, mostly to Future Farmers and former Cal Poly students. About 10,000 birds are raised and marketed locally each year by students as project activity.

In November of 1947 the new poultry dressing plant adjacent to the egg-handling building and salesroom was completed. This new building includes a wrapping room, killing room, dressing room, utility storeroom, walk-in refrigerator, men's shower and dressing room with lockers and ladies rest room. The killing room is equipped with an automatic scalding tank with overhead track. Other new equipment includes a new 1000-capacity battery brooder.

During the year the turkey program was expanded to include the following varieties: Narragansetts, Bourbon Reds, Beltsville White, Black, and Small Type Baby Beef Bronze.

The poultry flocks now include pedigreed White Leghorn flock, also New Hampshires, Barred Rocks, Dark Cornish as well as cross-breds raised for fryers.

Individual student projects were increased to 95 during the year, with each student project consisting of either 150 laying or breeding hens each or 250 or more chicks each. The student operator of the project shares the net profit on the project with the project fund, with the average student earning from \$10 to \$15 per month. About 30 students were paid by the hour for labor out of project funds for processing and selling products.

ENGINEERING AND INDUSTRIAL DIVISION

Aeronautical Engineering: Extensive shop, laboratory, hangar and flight strip facilities provide actual maintenance and operations experience for all students. The department operates a CAA approved repair station where aircraft and aircraft engines are overhauled and rebuilt by students under close supervision of licensed instructors. Recommended graduates must pass Federal license examinations given by the CAA. Enrollment in the fall quarter was 187.

A new 120 x 100 foot combination repair shop and hangar, constructed adjacent to the 3000 foot airstrip, became the headquarters of all construction activities, and the engines department took over all space in the building formerly occupied by both the engines and construction sections of this department.

A new road was built to the hangar during the year; a C46 Commando troop transport plane was flown in to the college air-strip where it is now used for engine run-up, hydraulic operation, and aircraft familiarization instruction. In addition, much other war surplus in the way of engines, accessories, etc. was received.

The department also began installing equipment in the new testing laboratory which will be used for testing hydraulic, electrical and aircraft instruments.

One new instructor was added to the staff during 1947, making a total of seven full-time instructors.

Air Conditioning and Refrigeration Engineering: This department with 281 students has the largest enrollment in the engineering division. One of the very few, if not the only college in the country giving a degree in air conditioning engineering, California Polytechnic is well-equipped with modern laboratories, having a total of more than 6,720 square feet of floor space, plus equipment valued at \$75,000. The laboratories include refrigeration, heating and ventilating, and sheet metal shops. Students repair and maintain all refrigerating, heating and ventilating equipment on the campus, and service and rebuild private units as individual projects. On-campus installations are designed, constructed and installed.

Four new instructors were added in this department, bringing the total to seven.

During the year project activities of students have included designing and installing refrigeration and exhaust equipment for the horseshoeing laboratory and chemistry laboratories. Installing exhaust equipment for the student store kitchen; installing refrigeration and ice cream making equipment in the dairy's creamery. In addition the students of this department maintain all of the campus' 50 or more refrigeration units, and maintain some of the campus heating and ventilating equipment. Students are paid for all labor on such projects which are done outside of laboratory periods.

In addition to the major students, this department offers instruction in refrigeration to all dairy manufacturing students, and heating and ventilating courses to mechanical engineering

and architectural engineering students.

Because of a shortage of text book material in this field, each instructor in the department must prepare teaching materials for every course.

Architectural Engineering: Students are given opportunity to design small buildings on the campus, write specifications to supplement the usual training in architecture, and follow through construction on these buildings. Students are trained as architectural and structural draftsmen for architectural firms, building trades or allied industries, and because of the practical experience provided in the course students are often qualified to enter the contracting business. Facilities include large, well-lighted drafting rooms, blueprint and reproduction facilities.

More than 90 students were enrolled in the fall quarter.

One new instructor, a graduate architectural engineer, was added to the staff, making a total of two-full time instructors in this department.

Electrical Engineering: This curriculum gives students practical knowledge of standard equipment and procedures used in the field as well as basic theories of electrical work. Facilities for practical experience include completely equipped laboratories, and the college power plant. The campus electrical system together with more than 300 campus and farm motors, provide an excellent laboratory for practical work. A total of 174 students were majoring in this department in the fall quarter.

Project activities in this department during the past year included much repair and extension of electrical work on the campus. When a request is received by the department for repair, alteration or installation of electrical equipment, a student is sent out to make a survey of the job, figuring cost of materials and labor. If the department head requesting the work agrees to the estimated cost of materials and labor, the job is assigned to one or more students. Student labor on such work is paid only if such labor is done outside regular laboratory periods, which is frequently the case when the job is an emergency that needs immediate attention.

Plans are being developed for rewiring and installing new lighting fixtures in one of the older dormitories to bring it up to standard. This will be a student project under the supervision of the department.

Electronic and Radio Engineering: By the fall quarter 160 students had enrolled in this comparatively new division of the electrical department, which trains students to fill positions, exclusive of planning and pure research, carried on by engineers in the fields of communications and electronics. Facilities include four laboratories, a shop, instrument stock room, small parts stockroom and department offices. In addition to a large amount of equipment used in commercial installations and testing equipment, the department has two radar units. As part of the project system, the students operate a small radio repair shop to service the radios of the campus community of more than 2000 persons.

One new instructor was added to the staff in 1947, bringing the total to four full-time instructors. Two students are employed on an hourly basis to build the much needed laboratory equipment.

A new laboratory for work in Industrial Electronics was started during the year. This laboratory will handle heavy equipment including a 37.5 KW Induction Heating unit and an Electronic Seam Welder.

During the year the department received its own FCC licensed experimental radio station (W6BHZ). A small room has been set aside to house the receivers and transmitters used on the amateur bands. A 20 x 33 foot rotating directional antenna as well as a 30 foot mast with rotating FM antennas have been mounted on the roof of the building. With the station in operation it is now possible to do laboratory work in radiation.

In recognition of the outstanding work and curriculum of this department, which completed its second year in 1947, the Institute of Radio Engineers invited the department to organize a Student Branch of this society which has been done. This recognition by the leading professional engineering society in the fields of radio and electronics places the department on an accepted list with some of the outstanding engineering schools in the country.

Much valuable equipment has been received through the State Surplus Property Agent, and the FWA. The acquisition of a Navy Mark XVI Radar set through FWA gives the department a complete operating station.

Mechanical Engineering: In the fall quarter 175 students had enrolled in this major for the purpose of preparing for either operation, maintenance, production or sales branches of mechanical engineering. Although the student is given background in design, it is not the purpose of this department to train design engineers. The main laboratory for the Mechanical Engineering department is located in the central heating and power plant for the campus. Diesel and steam engines connected to electric generators, which generate part of the power for the campus, and steam boilers which supply steam heat for the campus are operated, serviced and overhauled by students in this department.

During the year the power plant was put in operation for the production of power for use on the campus after an idle period of several years. Students of the department are used as

power plant operators under the supervision of the faculty.

Approximately 10 percent of the campus load is now being produced. The students operating the plant do so as a part of their laboratory work.

Completion of the installation of a new unit and repair of an existing one will make it possible to produce a substantial portion of the campus load with all units operating. It is not contemplated that the plant will produce all of the power required but instead only a large enough amount to provide ample operating experience for electrical students.

Construction was started during the year on a new Fluid Mechanics laboratory being built by two Mechanical Engineering students as an undergraduate project. Most of the equipment will be obtained from a recently acquired war surplus water purification unit. Cut-away and operating pumps for use in this laboratory have been obtained on a permanent loan basis from Jaccuzzi pump company.

Construction also began on a Strength of Materials laboratory to be used for a new course to be taken by all Mechanical, Aeronautical and Architectural students.

Both the Fluid Mechanics and Strength of Materials laboratories are being constructed so that they may be moved easily to the new Power Plant and Mechanical Engineering laboratory building when it is constructed.

Additional equipment received includes several small pieces of laboratory equipment for testing fuels and lubricants, a large

General Motors marine diesel engine, two large Superior diesels and an Atlas diesel. These and several smaller engines were obtained through the State Agency for Surplus Property.

Three new faculty members were added to this department during the year.

Printing: A completely equipped print shop is operated by students who produce a weekly newspaper, monthly Future Farmer magazine, and all other student body publications, including programs, letterheads, etc. Graduates will be qualified to operate their own print shops, newspaper publishing plants, or work in management or supervisory capacities in various fields of the allied printing industry. One of two degree courses of its kind in the country, this department is offering instruction endorsed by the California Newspaper Publishers association and by the International Typographical Union which permits the use of its apprentice training manuals as text books.

One new instructor was added to the department last year.

During 1947 considerable new equipment was added, including the following: one 17 x 22 Kelly high speed automatic press, power metal saw, type cases and composing stones, complete new series of Linotype matrix in various sizes, many new fonts of type faces, power stitcher, perforator, complete book binding equipment, power router and type-high unit, proof press and stand, stereotype caster with electric pot, school cabinets and pilot job presses, 34 inch electric power paper cutter, etc.

The overhauling and moving of all equipment from the old print shop to new and modern quarters was completed in the early part of 1947. Printing majors, under supervision of the instructors, overhauled and reconditioned such equipment as: job presses, cylinder press, three linotype machines, proof presses and many other pieces of print shop equipment. The overhauling of old equipment, moving, re-installation, and installation of new equipment was done entirely with student labor at a cost of \$1281.

Students in this department do all the mechanical work involved in the publication of the weekly college newspaper, monthly college magazine, athletic programs, a monthly magazine sent to 10,000 Future Farmer members, a pictorial brochure featuring the student Poly Royal show, and many smaller printing jobs for student organizations. Students doing work outside regular laboratory hours receive hourly pay which is included as part of the cost of every job and is charged to the student organization ordering the work. Students received about \$2000 in such project wages last year.

#### RELATED INDUSTRIAL DEPARTMENTS

Welding: This department gave instruction in both oxy-acetylene and arc welding to approximately 300 students each quarter. Two full-time and one student instructor carried on the program.

A drafting room and laboratory were completed and equipped with four drafting tables, six drafting machines; metallographic equipment, and a metallurgical microscope.

A complete ventilation and fume collector system for the entire arc welding area was designed, built, and installed by the welding classes.

Construction was started on a physical testing and special welding equipment section. New equipment on hand includes an inert gas shielded arc welder, an automatic submerged melt welding head, an atomic hydrogen arc welder, a 1200 pound capacity welding positioner, a 300,000 pound capacity hydraulic forcing press, built with student labor, and a resistance welder. The use of this equipment will give students training that is unavailable in other schools.

Machine Shop: During the year 73 machines were installed in the new machine shop using student labor for all work except electrical wiring. The 73 pieces of equipment, consisting of both new and old machines, were cleaned, repaired, anchored and leveled. Tools and accessories were sorted, cleaned and racked or put away. The equipment was obtained from the following sources: 13 from War Assets Administration through the State Department of Education; three from the discontinued Defense Training program; ten from the college's old machine shop, and 47 new pieces brought from original sources by the state purchasing agent.

The shop now has the following facilities: a bench shop for 20 students where hand operations can be taught; a machine shop where a beginning class of 20 and an advanced class of 12 can be handled at the same time; a lecture room for talks, tests and instructional films; and adequate storage facilities for tools and supplies. The shop, located in a building constructed originally for use by the NYA, is well-lighted, has ample room without crowding of equipment and has locker and washroom facilities.

Three full-time instructors are now employed in the department to handle a per quarter enrollment which averages more than 380 students.

VOORHIS UNIT, SAN DIMAS

Adequate classrooms, laboratories, shops, equipment, citrus groves, deciduous orchards, truck crop land, green houses, glass houses, are included at the southern branch of the college to provide the first two years of work in the degree curricula and all of the instruction in the two and three year program in Agricultural Inspection, Citrus Fruit Production, and Ornamental Horticulture. Dormitories, cafeteria, student store, swimming pool, athletic field, chapel, and other facilities makes the Voorhis campus a compact unit ideally situated for the type of instruction offered.

AGRICULTURAL INSPECTION DEPARTMENT

Adequate facilities are provided at the Voorhis Unit for teaching men in the common practices and skills and the essential techniques in agricultural inspection. The curricula were established after each course and combination had received the approval of the State Department of Agriculture for its effectiveness in training inspectors. Graduation requirements include actual work in commercial packing houses and at inspection points. Field trips are made to shipping points, picking, propagation districts, in addition to the campus area.

### CITRUS FRUIT PRODUCTION DEPARTMENT

The San Dimas campus has facilities for teaching fruit production on a practical basis. The college-owned groves and orchards are operated primarily by students as part of their instructional program. Various irrigation methods are employed on the campus in connection with fruit production. Farm equipment, including tractors, tillage implements, spray rigs, and fumigation equipment, is owned, maintained and operated on the campus farm. A small nursery of citrus, avocado, and deciduous plantings is operated to give instruction in the problems of propagation and raising of trees.

### ORNAMENTAL HORTICULTURE DEPARTMENT

The facilities on the Voorhis campus consist of a lath house, two glass houses, propagation frames, a subtropical canyon, a two-acre nursery, and one acre of cut flowers. Extensive landscaped portions of the campus include, in addition to the buildings, seven acres of lawn and three miles of roadway. Estates, parks, golf courses, nurseries, and flower plantings in the vicinity serve as a natural laboratory for field experience and practice.

### ADDITIONAL COURSES

Courses in deciduous fruits, vegetable crops, poultry, and the general required related courses also are being offered at the Voorhis Unit.

### SPECIAL PROGRAMS

Service and Extension: For many years the college has taken advantage of its unusual opportunity to assist in the development in California of a state-wide program for all vocational education. The president of the college is also Director of Vocational Education for the State and previously was Chief of the Bureau of Agricultural Education.

Bureau of Agricultural Education: The college serves as headquarters for the State Bureau of Agricultural Education and from here the bureau supervises vocational agriculture throughout the state. Through the college the bureau provides foundation stock for boys, teaching materials for 360 instructors in 196 high schools in California and technical assistance particularly with project problems in the high schools.

In addition the college provides an in-service summer session training program for agriculture teachers, and facilities for the annual state conventions of the California Agriculture Teachers Association, Future Farmers of America, and California Young Farmers.

Agricultural Teacher Training: All vocational agricultural teacher candidates for California are selected by the State Bureau of Agricultural Education. Following selection, teacher candidates are enrolled for one year of training on the graduate level with a portion of the time spent at California Polytechnic and the remainder at selected "critic centers" under careful supervision of vocational agricultural critic teacher and teacher trainer.