No. 297 Issued Semi-Monthly January 1, 1919

Oregon Agricultural College Bulletin

Biennial Report of the Board of Regents 1916-1918

CORVALLIS, OREGON

Entered as second class matter May 9, 1916, at the postoffice at Corvallis, Oregon, under the Act of August 24, 1912.

Oregon Agricultural College Bulletin

Biennial Report of the Board of Regents 1916-1918

The O. A. C. Press
1919

CONTENTS

Honorable James Withycombe,

Governor of the State of Oregon.

Sir:

In accordance with the law, I herewith submit the report of the Board of Regents of the Oregon State Agricultural College for the biennial period ending December 31, 1918, including the report of the President of the College and the appended reports of the Treasurer and of the Director of the Experiment Station and other officers.

Respectfully submitted,

J. K. WEATHERFORD,

President of the Board of Regents.

January, 1919.

OREGON AGRICULTURAL COLLEGE

PRESIDENT'S BIENNIAL REPORT

1916-1918

To the Board of Regents:

The President of the College has the honor to submit to the Board of Regents his report for the years 1916-17 and 1917-18. In previous biennial reports, particularly the reports for 1906-08, 1910-12, 1912-14, and 1914-16, there were presented at considerable length various questions relating to the purpose and scope of the College, its place in the educational system of the State, its policy, organization, and courses of study; the sources of income, and the relation of the College to the Federal Government and the State. For information upon any phase of these questions reference may be made to the different reports. Detailed information regarding student enrollment, College finances, and the work and needs of the Agricultural Experiment Station, the Extension Service, and the various schools and departments throughout the institution, may be found in the appended reports and in official College publications which are submitted as a part of this report.

STUDENTS

The distribution of enrollment among the different courses is indicated in the following table, which, for purposes of comparison, covers the four years, 1914 to 1918, inclusive.

Notwithstanding the fact that a large number of regular students were engaged in war service, it is to be noted that there was a decrease in 1917-18 as compared with 1916-17 of

only 47 regular degree-course students; also that there were actually registered more freshmen and sophomores in 1917-18 than in the preceding year, and only 16 fewer juniors and 31 fewer seniors. The falling off was largely in the vocational and special courses, though there were 36 fewer graduate students.

	1914-15			1915-16		
	Men	Women	Total	Men	Women	Total
Agriculture	540	7	547	550	6	556
Engineering	297	.....	297	312	.....	312
Forestry	83	.....	83	76	.....	76
Commerce	116	54	170	131	46	177
Home Economics	.....	371	371	.....	354	354
Pharmacy	54	7	61	60	9	69
Optional	6	21	27	3	50	53
Music	16	57	73	12	54	66
	1112	517	1629	1144	519	1663
Summer School	75	133	208	95	142	237
Short Courses	1405	934	2339	793	572	1365
	2592	1584	4176	2032	1233	3265

	1916-17			1917-18		
	Men	Women	Total	Men	Women	Total
Agriculture	569	7	576	419	6	425
Engineering	364	1	365	318	1	319
Forestry	85	.....	85	59	1	60
Commerce	149	63	212	112	186	298
Home Economics	.....	412	412	.....	413	413
Pharmacy	57	6	63	44	24	68
Optional	8	53	61	3	24	27
Music	16	31	47	16	42	58
	1248	573	1821	971	697	1668
Summer School	144	223	367	96	268	364
Short Courses	1002	608	1610	967	452	1421
	2394	1404	3798	2034	1417	3453

As shown in the report of the Registrar, the student enrollment during each year of the biennium covered by this report represents every county in Oregon; in the year 1916-17, 35 other states and 15 foreign countries; in 1917-18, 32 other states and 8 foreign countries. During the first year of this period the number enrolled from Oregon was 1,271; from other states, 512; from foreign countries, 38. During the second year of this period the number enrolled from Oregon was 1237; from other states, 405; from foreign countries, 26.

Geographical Distribution

During the year 1916-17, eighty-one percent of the entire student body were partly or wholly self-supporting; and in 1917-18, seventy-seven percent. Of these, in 1916-17, forty-two percent were entirely self-supporting, twenty-seven percent half self-supporting, and twelve percent less than half self-supporting. Only nineteen percent of the entire student body were in no degree dependent upon their own efforts for support. In 1917-18, thirty-nine percent were entirely self-supporting, twenty-seven percent half self-supporting, and eleven percent less than half self-supporting. In that year twenty-three percent were not self-supporting in any degree.

Students Self-supporting

The occupational representation of parents or guardians runs practically the same for the two years, the proportion being in the order named: agriculture, miscellaneous business, skilled labor, unskilled labor, retired, mercantile, professions, financial and semi-legal, government service, railroading, business management, manufacturing, artistic professions, scientific.

Occupations of Parents

For the year 1916-17 **the average age for men students** was 19; **for women students,** 20. For the year 1917-18 the average age for men students was 20; for women students, 19.

High Schools, Colleges, and Universities Represented

For the two-year period, 1916-17 and 1917-18, 157 high schools and 26 colleges and universities of Oregon were represented among the student body. From the Oregon high schools came 508 and 515 students, respectively; and from the Oregon colleges and universities, 33 and 39 students, respectively. Twenty-nine high schools and 27 colleges and universities of other states were represented, with 227 and 185 students respectively from the high schools. and 85 and 71 students respectively from the colleges and universities. Seven high schools and two colleges and universities of foreign countries were represented, with 9 students each year from the high schools and 3 and 1 respectively from the colleges and universities. The total number of high schools represented was 193; the total number of colleges and universities was 55. The total number of students from high schools for the two years was 744 and 709 respectively, and the total number from colleges and universities was 121 and 111 respectively.

Graduates

Complete lists of the graduating classes are given in full in the Registrar's report. The number in the graduating class of 1917 was 281. Of these, 9 received the Master of Science degree, 245 the Bachelor of Science degree, 2 the Music Diploma, and 25 the Vocational Certificate. The number in the graduating class of 1918 was 216. Of these, 5 received the Master of Science degree, 187 the Bachelor of Science degree, 1 the Music Diploma, and 23 the Vocational Certificate. During the two years, of the number receiving degrees, 78 had transferred from other colleges and universities; in 1917, 37, representing 13 percent of the number in the graduating class; in 1918, 41, representing 19 percent of the graduating class. In the graduating class of 1917 there were 204 representatives from Oregon, 71 from other states, 6 from foreign countries. In the graduating class of 1918 there were 155 from Oregon, 55 from other states, 6 from foreign countries.

FACULTY

The College staff is classified into the three groups required for the work of Resident Instruction, the Agricultural Experiment Station, and the Extension Service. Exclusive of the President, the general administrative officers, and general and miscellaneous appointees, there were for the year 1916-17 in the resident instructional force, 6 deans, 39 professors, 8 associate professors, 26 assistant professors, 63 instructors, and 11 fellows and assistants, representing the full-time equivalent of 137. The Experiment Station staff, including the superintendents of branch stations, aggregated 44, representing the full-time equivalent of 23.23 persons. The number of persons giving part or full time to the Extension Service was 64, representing the full-time equivalent of 44.875 persons. For the year 1917-18, on the same basis, the resident instructional force comprised 9 deans, 39 professors, 13 associate professors, 25 assistant professors, 60 instructors, 10 fellows and assistants, and 3 research assistants, representing the full-time equivalent of 131.27 persons. The Experiment Station staff, including the superintendents of branch stations, aggregated 56, representing the full-time equivalent of 28.57 persons. The number of employees giving whole or part time to the Extension Service was 75, representing the full-time equivalent of 48.83.

Withdrawals from the staff have been particularly heavy during the biennial period covered in this report. A considerable number of men of military age withdrew to enter the military service. The following summary gives by rank the resignations for the years 1916-17 and 1917-18.

Resignations	1916-17	1917-18
Directors or deans	1	1
Professors	1	4
Associate professors	1	1
Assistant professors	6	7
Instructors	11	21
Assistants	2	5
Fellows	7	5
Extension workers	5	2
County agriculturists	3	10
Branch experiment station employees	....	3
Office employees	23	30
Miscellaneous	6	16
Total	66	105
		171

STUDENT LOAN AND SCHOLARSHIP FUNDS

The Student Loan Fund, established in 1911, has been of great assistance in helping worthy students, many of whom without such aid would not be able to continue their courses.

The Student Loan Fund

In the Treasurer's report appended hereto is a detailed statement of the loan fund for the past biennial period. The fund has grown from year to year until on December 1, 1918, it aggregated $7,844.81, representing contributions made from year to year by friends of the College in the aggregate of $6,698.79, and accumulated interest since the establishment of the fund totalling $1,146.02. Up to December 1, 1918, 568 different loans have been made, totalling in the aggregate $20,939.55, or an average per loan of $36.86. Loans are for the most part short time and so far as practicable are made payable during the first term of the college year in order that the money may be available for loan to other needy students.

There was established a year ago what is known as the "L. J. Simpson Scholarship Loan Fund," made possible by the gift of $2,000 to the College by Mr. L. J. Simpson, of North Bend, whereby five annual scholarship loans of $100.00 each, continuing through the four years of the student's college course, will be awarded to worthy students whose needs justify the awards.

The Simpson Fund

The late Captain J. T. Apperson, regent of the College from the date of its establishment as a state institution to the time of his death, provided in his will that a part of his fortune should go to a fund for the benefit of worthy students of the Oregon Agricultural College in the form of a perpetual endowment administered by the State Land Board of Oregon and known as "The J. T. Apperson Agricultural College Educational Fund." This fund is to be loaned to worthy young men and women "who are actual bona fide residents of the State of Oregon and who would otherwise be unable to bear the expense of a college course in the Oregon Agricultural College." The income of this estate is to be loaned to students at a low

The Apperson Fund

rate of interest. Applicants for loans must be recommended by the State Land Board and by the President of the College and the State Superintendent of Public Instruction.

BUILDINGS

During the biennial period new buildings have been constructed, additional equipment purchased, and other improvements made to the extent feasible with available funds. The Forestry Building was completed for occupancy in September, 1917. The cost of this building was $44,500. It is constructed of brick with light gray terra cotta trimmings and is 80 feet wide by 136 feet long. The building comprises a high, airy basement and two stories. The basement accommodates two large laboratories for logging engineering. The first floor accommodates the mensuration laboratory and several classrooms and offices, including the offices of the Dean of the School. The second floor includes the laboratories for technology, dendrology, silviculture, and drafting. The building at present serves the needs not only of the School of Forestry but of the School of Vocational Education and the department of Poultry Husbandry.

Forestry Building

The Library Building was completed for occupancy in September, 1918, the aggregate cost, exclusive of equipment, being $120,961. This building is ample to accommodate the growth of the library for many years, its architecture being such as to permit of stack expansion as time and growth demand. The building consists of two stories and basement in front and three stories and basement in the rear. It is constructed of red brick with gray terra cotta trimmings, and is equipped with a thoroughly modern heating and ventilating system, as well as a modern lighting system. The first floor consists of an entrance hall, two large lecture rooms, library work rooms, two smaller class rooms, and cloak rooms for students. The second and third floors at the front accommodate the large main reading room, which will seat three hundred persons. Back of this room on the second floor are the offices, cataloguing room, and other library work rooms. The third floor

Library Building

consists of several smaller seminar rooms and offices. The fire-proof stack room occupies the northwest corner of the building extending from the basement to the roof. The building throughout is admirably suited to its purpose.

The legislature of 1917 appropriated $65,000 towards the construction of the Library Building. At the time the appropriation was made, it was thought that the building might be constructed in units, and that the appropriation of $65,000 would provide for one of the units. As plans developed, however, it was found impracticable and inadvisable to undertake the construction of the building on a unit plan; and the Regents, after careful consideration, authorized the construction of the building, leaving unfinished the stack room, the basement, and some other rooms less urgently needed. Receipts from the millage tax in the amount of $55,961 were used to supplement the special appropriation of $65,000.

Two smaller buildings for the agricultural work were constructed during the biennial period—a hog barn, at a cost of $5,520; and the Veterinary Clinic Building, at a cost of $9,867. The Horticultural Products Building was constructed, leaving unfinished a considerable part of the interior work, at a cost of $15,332. As soon as funds are available, the interior will be completed.

The Corvallis residence of Governor James Withycombe was purchased by the College for use as a Practice House by the School of Home Economics, at a purchase price of $6,000. This property, adjoining the main campus, is most advantageously situated.

AGRICULTURAL EXPERIMENT STATION

The work of the Agricultural Experiment Station is fundamental in the agricultural development of the State. Oregon soil and climatic conditions present many problems that are unique and that must be solved in order that the State may develop its great potential wealth. Progress in agricultural instruction at the College and efficiency in the Agricultural Extension Service depend upon the results achieved by the research specialists at the experiment stations.

Reduction in the funds available for maintenance and greatly increased costs of operation have seriously restricted the work of the Experiment Station, as pointed out by the Director in his report. Withdrawal of free transportation on the railroads, moreover, and an advance of sixty percent in the cost of publishing reports, and equal or greater advances in the cost of labor, equipment, and supplies, have also handicapped the work of all the stations.

Reduction of Funds and Buying Power, a Handicap

As a consequence, investigational work has of necessity been confined to restricted projects already under way, to the neglect of many others that are crying for attention in the interests of the people. Among the latter are included the Cost of Milk Production; study of Poisonous Range Plants, which annually cause losses to stockmen of $150,000; attention to such important diseases of livestock as contagious abortion, hemmorraghic septicemia, and "walking disease;" soil investigations, including soil surveys and programs of soil fertility; reclamation investigations; land-clearing problems; and investigations with cereals, including "pinched wheat," "frosted wheat," the gluten test of milling quality, and storage problems. While something has been done with all these problems —as much as possible under the circumstances—they have not been given the attention they abundantly deserve. Nor can they until funds are increased.

Investigations Restricted by Lack of Funds

In spite of reduced income, however, and reduced buying power of that income, notable results have been attained. Investigations in egg production have been so successful as to attract world-wide attention. Cereals tested at the Moro Dry-Farm Branch Station have revealed four new varieties of spring wheat that yield an average of from 20 to 30 percent more than the best local spring varieties, with milling qualities superior to Bluestem, the best local variety. Experiments with sulfur as a fertilizer for alfalfa in Southern Oregon have been so successful that the farmers of a single community have purchased sulfur to fertilize over 4,000 acres. An increase of but two tons to the acre, which is moderate, would

Notable Results Achieved in Wide Field

yield to this community an increased income larger than the annual cost of all experiment station work in the State. In livestock investigations, among ten or a dozen important projects the feeding experiments may be taken as typical. Short feeding of steers with the lighter grains, alfalfa, and silage produced gains so rapid and economical that results were questioned, and the tests continued. Three years' work seems to confirm the results as due to the peculiar system of feeding, however, and if tests still in progress verify these results the feeding of silage with alfalfa hay will become an important factor in livestock production.

It is impossible to review here the substantial results of all the work of the Experiment Station in Dairy Husbandry, Horticulture, Soils, Irrigation and Drainage, Field Crops, and other important branches of research. By consulting the appended report of the Director of the Experiment Station, however, information may be found showing the breadth and economic worth of this service to the people of the State.

EXTENSION SERVICE

Agriculture and home economics are the chief fields covered by the Extension Service, though engineering and other studies that help to enrich the industrial or rural life of the State are also given attention. The project basis of work has been regularly adopted as productive of most satisfactory results. The work during the biennium has not only expanded remarkably and achieved practical results of large substantial value, but has related itself to the occupational and home life of the industrial and rural people in such a way as to be of permanent constructive value.

Related to Occupational and Home Life

Sixteen projects, as listed on page 33, form the basis of work in Oregon. To carry on this enlarged program the number of persons on the Extension staff devoting full time to the work increased from 33 to 65; the number giving from one-fifth to one-half time to the work remained about stationary, at 20; while many other faculty members devoted a smaller proportion of their time to Extension duties.

A Rapidly Expanding Program

Publications totaling 180 in number and including 1,117 pages, 160 illustrations, and an aggregate issue of 688,750 bulletins, were issued during the biennium at an expense of $5,649.58.

Extension Schools held in 15 different communities, served 8,527 people in 17 counties.

Farmers' Week gatherings in 1916 and 1917 brought to the College an aggregate of 3146 people, representing every county in the State.

The County Agents, aside from war work, have done much, in cooperation with the farm bureaus, in conducting agricultural surveys, promoting food production and food conservation, land reclamation, soil improvement, bulk handling of grain, livestock improvement, and soil fertility, especially in the use of sulfur for alfalfa meadows.

Home Demonstration Agents. While only a single home demonstration agent was regularly employed at the beginning of the biennium, ten were in the field at its close, and the success of the movement, especially in connection with war service, was such as to commend it to all progressive communities.

Industrial Club Work steadily advanced in importance and interest during the biennium, 16 counties showing their faith in the work by establishing paid club leaders to make the work more thorough and continuous. The aggregate gains of boys' and girls' club work from the standpoint of food production alone amounted to over twenty thousand dollars; but the benefit to the young people, in scientific knowledge, habits of thrift, community service, and faculty for leadership, is of vastly greater value.

Extension Demonstration. Horticultural demonstrations, especially in pruning and spraying orchards, have resulted in much wider use of approved practices, at a notable economic gain. Results of the spraying program demonstrated by extension workers, have resulted in a gain of $100.00 per acre as compared with unsprayed check plots.

Regular projects in Animal Husbandry, Dairying, Poultry Husbandry, Agronomy, Farm Management, Organization and Markets, the agricultural sciences, and farm labor, are reported briefly in the appended summary of the Director of Extension Service, who also reports the results of Engineering Extension, a project in which the College was a pioneer among the technical colleges of the country.

Correspondence Courses, Visual Instruction, and Engineering Extension

The recommendation of the Director of the Extension Service for authorization and adequate support to carry on correspondence courses in Agriculture, Home Economics, and the other fields of instruction peculiar to this institution, should have thorough and sympathetic attention. So should his recommendation for the important work of visual instruction, which, though a comparatively new field, has abundantly proved its worth as a means of serving the people. The field of Engineering Extension, also, in which the College took the initiative, has proved so fertile a means of promoting the interests of shop men and practical engineers (see page 47) that the work has been adopted by many engineering colleges throughout the country and vigorously expanded. The Oregon Agricultural College should be in position to carry forward the remarkably productive courses in Engineering Extension that it inaugurated in 1915 and that have been so highly appreciated not only by the men who directly profited by the training but by the whole group of practical engineers. With adequate funds this work could be made of vast importance to the mechanical and engineering vocations of the State.

COLLEGE FINANCES

The appended report of the College Treasurer gives an account of the receipts and expenditures during the biennium for all phases of the work of the College. Since each of the three main divisions of the College—Resident Instruction, Agricultural Experimental and Research work, and Extension Service—is financed entirely independently of the other two, separate reports are submitted of the receipts and expenditures for each of these divisions.

In previous biennial reports have appeared complete statements of the various sources of the income of the College, including the acts of Congress and of the State Legislature providing for the support of the different divisions of the work of the institution and the amounts received under each. It is not deemed necessary to repeat these statements in the present report.

As a matter of understanding, however, attention should be called to the fact that no part of the appropriations provided for one division of the College can be utilized in support of another. Appropriations for the Branch Experiment Station work, for instance, cannot be used, directly or indirectly, for work at the College proper. The same is true of funds provided for different phases of the Extension Service. All the work of Resident Instruction, of the Agricultural Experiment Station, and of the Extension Service, must be paid for from funds provided respectively for these divisions. In cases where the time of members of the staff is divided between any two of these divisions, their salaries are adjusted accordingly. Some members of the staff, for example, divide their time between the Experiment Station and Resident Instruction, or between Resident Instruction and the Extension Service; but only the actual time devoted to the work of each division can be paid for from the funds provided for that division.

Appropriations Not Interchangeable

For the next biennial period, 1919-1920, it will be necessary, if the work of the College is to be maintained and advanced, that funds be provided to supplement the millage-tax receipts. Notwithstanding the far greater demands upon the institution in caring for increased enrollment with costs considerably in advance of normal, the income from the millage tax is less than the income during the first year of the operation of the law (1915). There has also been a very large increase in cost of maintenance, including supplies, fuel, labor, printing, etc.

Resident Instruction

A report has been filed with the Secretary of State giving details and explanations of the requirements for the next biennium. While it would not be consistent to include so lengthy a statement in the present report, the following recapitulation of requirements and income may be given:

1. RESIDENT INSTRUCTION

Income	1919	1920	Biennium
From the State			
Millage tax, $0.0004 on basis of $927,750,000 valuation	$371,100	$371,000	$ 742,200
From Federal Government			
Morrill-Nelson funds	50,000	50,000	100,000
Interest, Land-Grant fund	11,500	11,500	23,000
Smith-Hughes fund	5,000	5,000	10,000
Miscellaneous			
Entrance fees and net sales	11,500	11,500	23,000
	$449,100	$449,100	$ 898,200
Requirements			
(1) Salaries	$374,325	$393,041	$ 767,366
(2) Miscellaneous maintenance	117,625	115,725	233,350
(3) Repairs	10,000	10,000	20,000
(4) Library books	5,000	5,000	10,000
(5) College Exchange	5,000	5,000	10,000
(6) Farm maintenance	8,000	8,000	16,000
(7) Equipment	10,000	10,000	20,000
(8) Improvements	4,000	4,000	8,000
(9) Contingencies	10,000	10,000	20,000
	$543,950	$560,766	$1,104,716
Excess of requirements over income	$ 94,850	$111,666	$ 206,516

Thus it will be observed that without any allowance for new buildings and with most conservative estimates for equipment, improvements, etc., additional appropriations for Resident Instruction will be necessary amounting to $94,850 for 1919 and $111,666 for 1920, not including the special appropriation that may be required for the construction of barracks and the emergency appropriation authorized by the State Emergency Board covering the last quarter of the present biennium (October, November, December), amounting to $37,433.

Resident Instruction

2. AGRICULTURAL EXPERIMENT STATION

The annual appropriation of $25,000 for the Agricultural Experiment Station, repealed by act of the State legislature in 1915, should be restored. Even this would not make possible any expansion of the Station work but would all be required in covering the increased cost of transportation, publication of bulletins, labor, equipment, and supplies. A Federal representative who spent several days at the College during last July inspecting the work of the Experiment Station reports that "present

Agricultural Experiment Station

conditions are impossible and additional money must be provided from some source" in order that expenditures that cannot be paid from Federal funds may be provided for. The appropriations for the support of the experiment stations in Hood River and Jackson counties should be increased by $1000.00.

3. EXTENSION SERVICE

Extension Service

The legislature of 1915 adopted a resolution assenting to the provisions of the Smith-Lever Act of Congress appropriating money for agricultural and home economics extension work in the several states. The Federal Government required that above the initial appropriation of $10,000 the amount available to each state must be duplicated by the state. The Oregon legislature, however, failed to make any provision for meeting this requirement. In order to receive the Federal appropriation, therefore, it has been necessary during the intervening years to draw upon the general Extension appropriation of $25,000. For the present year, 1918, the amount so drawn is $15,562. The amounts of these appropriations for the 1919-1920 biennium would be $38,535.12. Since the general Extension appropriation of $25,000 by the State is the only money available for meeting expenditures for which other Extension funds cannot be used, it is apparent that it will be necessary during the next biennium for the State to provide funds, in part at least, with which to duplicate the Smith-Lever appropriation. The limitations imposed by the Smith-Lever Act and the regulations adopted by the Federal officials administering the Act are such, in fact, that in maintaining the Extension program a large part of the general State appropriation will be necessary in meeting Extension requirements which cannot be met with Smith-Lever funds. For the present an allowance of $10,000 a year to apply on the amount required to duplicate the Smith-Lever appropriations may be sufficient.

Respectfully submitted,

W. J. KERR,
President

REPORT OF THE SCHOOL OF AGRICULTURE.

To the President of the College,

Sir: During the past two years the School of Agriculture has been called upon to reconcile the demands of the class room and laboratory with the two-fold duty of giving the nation the maximum assistance in food production and in military service. With records quite incomplete it is known that nineteen members of the faculty of the School of Agriculture and nearly three hundred students who were registered in Agriculture during the college years of 1916-17 and 1917-18 are in military service. It is hardly necesary to add that the rapid development of instructional work mentioned in previous reports did not continue through the biennium.

Vocational Courses. Vocational courses have not been as popular as was anticipated. The general satisfaction expressed by both instructors and students, however, with the grade of work done in these classes is encouraging. The value of such courses to young men who for any reason cannot pursue the degree courses is so evident that they have been continued. It is contemplated to make them even more strictly vocational in the future than in the past and a systematic effort will be made to bring them to the attention of such men as can best profit by them. It is believed that they are especially adapted to the needs of returning soldiers who desire a brief course of practical training in agriculture.

Degree Courses. The revised degree courses have proved to be so satisfactory that only minor changes have been made in them and these have had to do with the organization of the work rather than with the subject matter. The work in farm management has been strengthened by giving it departmental rank, and the work in drainage and irrigation has been united with that in soils and organized into a Department of Soils. Experience having indicated that the requirements for graduation were too narrowly specialized to meet the needs of some students, especially those who transferred to the College from other colleges and universities, provision has been made whereby students who preferred not to specialize may, with the approval of the Dean, take a course in General Agriculture with a wide range of electives.

Increased Facilities. The facilities for instruction and research have been materially increased by the completion of the Horticultural Products Building and the Veterinary Building, although neither of these buildings has as yet been fully equipped. More convenient, though temporary, facilities for handling the horses have been provided and the dairy barn has been remodeled to accommodate the rapidly increasing dairy herd and to adapt it more perfectly to experimental work.

Recommendations. Many students whose education was interrupted by the call to military service will return as soon as possible to complete their college courses. It is assumed that at least the normal number will enter College from high schools and other colleges and universities and

that the combined registration of old and new students in agriculture for the year 1919-20 will be not less than 600. Any estimates which are made for the biennium should make provision for at least that number.

Instructional Force. With the return of those members of the faculty who were granted leave of absence for the period of the war, few if any additions to the instructional force will be necessary.

Additional Equipment. Provision should be made, however, for the necessary additional equipment. Owing to lack of funds, practically no equipment has been purchased during the past three years. Reports of heads of departments on file in this office show urgent need of such equipment aggregating not less than $15,000.

Seed Storage Building. The most urgent need of the School of Agriculture at present is a seed-storage building in which to handle and store the hundreds of varieties under experiment; to house the improved and standard varieties of seed which are for sale by the various departments and which are demanded in increasing quantities each year; and to provide a place for experiments in the storage of cereals and root crops as well as seed stock of root crops and tubers. At present much of the farm machinery remains out of doors in order that the machine sheds may be used for storage purposes. It is estimated that a satisfactory building can be provided at an expense of from three to four thousand dollars.

Greenhouses Needed. The next most urgent need is for more adequate greenhouse facilities. The popular conception of a greenhouse is a structure in which to force truck and florist's crops. Greenhouses for instructional and experimental purposes have a much wider range of usefulness. For the instructional and especially for the research work in soils, soil physics, soil fertility, soil chemistry, and soil bacteriology—in plant nutrition, in plant disease, in economic entomology and in plant breeding —greenhouse space is absolutely essential for the best work. The present range of greenhouses is entirely inadequate. Little or no space is available for important investigations. Plans have been prepared for a modern plant which was originally estimated to cost approximately $35,000. It is assumed that the entire plant cannot be provided at this time, but I wish to urge that at least one unit of the new plant be erected at the earliest date possible. No other expenditure of any equal amount of funds would add more to the facilities for instruction and research in agriculture than that required for the erection of one section of the plant desired.

More Land Required. The College is now renting approximately 620 acres of land for farm purposes. Rental of land for College use is not economical, satisfactory, or safe. It is not economical because of high rental; it is unsatisfactory because permanent experimental plots and systems of farming cannot be established; it is not safe because of the fact that land most needed may be sold or renewal of the lease refused. While it is not necessary and certainly not feasible that all of the acreage needed be purchased at once, I wish to urge that some fund be set aside each year for the purchase of the most essential tracts.

Improvements Needed. The following farm improvements should be made as soon as possible. In explanation of the large amount required

for fencing, attention is called to the fact that very little has been done on the College farm during the past ten years.

Anyone who is acquainted with the College farm will recognize the need of completing the drainage system; while the experimental irrigation system is in such a dilapidated condition that it has been almost impossible to use it for the past two seasons.

Fencing:	
For South Farm	$950
For College Farm	480
Paddocks at Dairy and Veterinary Bldgs	575
Drainage, College Farm	500
Irrigation System, College Farm	650
Roads:	
South Farm	425
College Farm	350

Respectfully submitted,

A. B. CORDLEY,

Dean of the School of Agriculture.

REPORT OF THE EXPERIMENT STATION.

To the President of the College,

Sir: In the following pages I shall present a brief statement of experiment station problems and aims rather than report the results of experiment station work. With this report are submitted copies of the sixteen bulletins published during the biennium, which give a much more adequate idea of the nature and progress of the work than is possible in a brief report.

The Oregon Agricultural College Experiment Station includes the home station at Corvallis and the following seven branch stations:

Southern Oregon Branch Experiment Staton, Talent, Oregon.

John Jacob Astor Branch Experiment Station, Astoria, Oregon.

Hood River Branch Experiment Station, Hood River, Oregon.

Eastern Oregon Dry Farming Branch Experiment Station, Moro, Oregon.

Umatilla Branch Experiment Station, Hermiston, Oregon.

Eastern Oregon Branch Experiment Station, Union, Oregon.

Harney County Branch Experiment Station, Burns, Oregon.

The seven branch stations and the home station are so located as best to serve eight of the most distinctive agricultural sections of the State. The specialists of the home station, so far as limited funds will allow, are at the service of the entire State, including branch stations and county agents. The stations at Talent and Hood River serve particularly the important interests of the Rogue River and Hood River valleys; those at Moro and Burns, the vast interests of the dry land agriculture of the Columbia Basin and Interior Oregon. The station at Astoria is engaged upon problems of tide land and coastal agriculture; those at Umatilla and Burns upon the irrigation problems peculiar to their respective sections; while the one at Union is devoted largely to the important livestock interests of Eastern Oregon.

EXPERIMENT STATION WORK HAMPERED.

Reduction in the funds available for maintenance and greatly increased operating expenses have seriously restricted the work of the Experiment Station during the past four years.

The home station is maintained by Federal appropriations ($30,000) provided by the Hatch and Adams Acts and by a State appropriation of fifteen thousand dollars, ten thousand of which is available only to the extent to which it is duplicated by the United States Department of Agriculture.

The Federal appropriation under the Adams Act is not available either for administrative work or for the publication of results obtained, but must be used for strictly investigational work, the outlines of which must be approved in advance by the Office of Experiment Stations, United States Department of Agriculture. The funds received under the Hatch Act are also narrowly limited in their application.

During the biennium, free railway transportation, which was granted by the principal railroads in Oregon for Experiment Station work-

ers, has been withdrawn. The cost of publication of bulletins has increased more than sixty percent; the cost of service and the prices of all kinds of equipment and supplies have so increased that it is absolutely impossible with the funds now available to maintain the work even on its present restricted basis, to say nothing of meeting the increased demands upon the Station for assistance.

Entirely without solicitation, and with the Station unable to respond to it, the demand for experiment station bulletins has increased until our mailing list now includes over 30,000 names. Coincident with this increased demand, the editions have been reduced from 15,000 and 20,000 copies with occasional reprints, to 3,000 or 5,000 copies with no reprints. Not only has the work of the Station been greatly restricted, but results of work done do not reach the farmers for whom they are intended, because of the lack of funds with which to pay publication expenses. It is of great importance that as the work progresses the results obtained be published and distributed for the use of farmers.

To maintain the work of the home Station on its present restricted basis will require an increase of at least ten thousand dollars per annum.

The branch stations at Talent, Astoria, Moro, and Burns were established under a cooperative arrangement by which the respective counties provided the land and buildings, while the cost of maintenance is provided by the State, as at Talent and Astoria, or jointly by the State and United States Department of Agriculture, as at Moro and Burns. At Umatilla the land and buildings were provided by the United States Reclamation Service, the station being maintained jointly by the State and the United States Department of Agriculture. The station at Hood River has no permanent quarters, but is maintained jointly by the State and Hood River county. At Union, the station was established upon land owned by the State, which also provides buildings and maintenance.

The work at most of the branch stations can be maintained for the present on the funds now available. The important work of the Southern Oregon Branch Station, however, has been seriously hampered by lack of land and by insufficient funds. The Jackson county Court, without a single protest, has included in its budget an item of ten thousand dollars for the purchase of additional land for the use of the experiment station and has already purchased a part of the land so much needed. In view of the attitude of Jackson county and particularly on account of the very valuable work being done, I wish to urge that the appropriation for maintenance for the Southern Oregon Branch Experiment Station be increased from five thousand to seven thousand five hundred dollars a year.

I wish to recommend also that an increase from three thousand to four thousand dollars a year be provided for the maintenance of the Hood River Station and that one thousand dollars a year for the years 1919 and 1920 be appropriated for the purpose of clearing, leveling, and draining the tide lands at the Astoria Station.

IMPORTANT AND MUCH-NEEDED INVESTIGATIONS IMPOSSIBLE.

The following pages contain a brief descriptive list of the problems which are now under investigation. It should be understood, however, that many of these investigations, important as they are, are practically at a standstill and that it is impossible to prosecute them vigorously with

the present limited appropriations. It is impossible also to undertake other important investigations that are being urgently requested by various agricultural interests. Among the latter may be mentioned the following:

The Cost of Milk Production. The need for this investigation is instantly apparent in the discussions on milk production in the newspapers for the past few months. If adequately financed the investigation could be completed in eighteen months' time and the results should be of great value to producers, distributors, and consumers alike.

Poisonous Plants on the Range. Poisonous plants are causing to the stockmen of Oregon losses of about $150,000 per annum. A preliminary investigation of this problem has been undertaken, but the losses are sufficient to justify prosecuting the work already begun more vigorously and the extension of the investigation to include the problem of working out a practical system of herd management which will eliminate or at least minimize the losses.

Miscellaneous Livestock and Dairy Investigations. In addition to the above there are many problems of pressing importance, although less general in their interest than those mentioned. Among these are investigations of the actual value of the various kinds of food available to Oregon farmers. This applies to all kinds of feed for livestock, although its importance is not so readily recognized by the general public or even by the farmers themselves. The war demonstrated plainly the very great value of the data which have already been obtained and at the same time clearly indicated the necessity for additional information.

Among the diseases of livestock, in addition to contagious abortion, which need attention are: Walking Disease of horses, prevalent in Umatilla, Moro, and Gilliam counties, and Hemorrhagic Septicemia, which has become more and more prominent, especially in the Coast districts. Control methods for the latter have already been fairly well worked out, but there still remain some points to clear up before the work can be made more effective. Walking Disease, on the other hand, is an unsolved trouble, previous work conducted by various people at different places having been without success.

The depletion of the dairy herds of Europe gives an excellent opportunity for this country to develop the manufacture of foreign types of cheese. The climatic conditions of the coast counties of Oregon indicate that the manufacture of these types of cheese may be attempted there with a greater certanity of success than in any other region known at present.

Soil Investigations. The wealth of Oregon rests largely in the soil, and our permanent prosperity depends upon improving or maintaining the fertility of the soil and at the same time securing the maximum net profit per acre.

The detailed soil surveys should be adequately supported and extended to cover the agricultural areas of the State. Soil survey maps serve as a basis for permanent soil fertility and soil water investigations, and provide for the individual farmer definite information regarding the character of his soil and the best means of handling it to retain fertility under maximum production.

The state of Iowa appropriates $50,000 annually for soil investigations, while Illinois and Indiana each appropriates about twice that amount.

It is fundamentally important that permanent systems of soil management be developed before the virgin fertility of our soils is reduced to the point where profits are uncertain; these systems should provide for maintaining fertility and secure the maximum net profits per acre of land and water.

Reclamation Investigations. Eastern Oregon contains millions of acres of fertile soil. An aggregate area of more than 2,800,000 acres has been included in approved irrigation projects. As compared with acreage, available water for irrigation is relatively scarce. It is consequently of fundamental importance to the fullest development of that section of our State that investigations be made to determine the minimum amount of water and the proper methods of handling soils and crops under irrigation. More than 3,000,000 acres of tide lands, swamp lands, and other wet lands in Oregon are in need of drainage. When it is considered that much of this area consists of the most fertile soils in the State, which are now producing little or nothing of value, it is conservative to say that the drainage of 3,000,000 acres would add not less than $30,000,000 annually to the wealth of the State. No sane business man would care to make the necessary investment of $50,000,000 to $75,000,000 without making an exhaustive investigation of every detail of improvement and the probable result. Individual owners cannot well make such investigations. An experiment station could, if the necessary funds were provided.

Land-Clearing Experiments. According to estimates recently compiled by the United States Forest Service, the United States Reclamation Service, and the Portland Chamber of Commerce, there are 2,668,402 acres of burnt and logged-off land in Oregon. Much of this land is valuable for farming purposes when cleared. An exhaustive investigation of the most economical methods of clearing this land under Oregon conditions would doubtless yield important results.

Cereal Investigations. Probably the most important of these lines of work has to do with the storage, handling, grading, and testing of wheat and with milling and baking tests with the various types now grown in the State.

Wasco, Sherman, Gilliam, Morrow, Umatilla, Wheeler, Jefferson, Deschutes, and Harney counties produce considerable pinched wheat. We do not have authentic information on the relative value of pinched wheat and plump wheat and in its absence farmers must market it to a disadvantage.

Wallowa, Union, Baker, Wheeler, Grant, Klamath, Lake, and Harney counties all produce annually considerable frosted wheat. This wheat is marketed on sample and the farmer has little information as to its value.

Annually, wheat containing more or less smut is unavoidably grown in Oregon. Information is needed to determine the best way of handling this wheat, whether by scouring or washing, and its value in comparison with unsmutted wheat.

Probably the greatest problem is in connection with the milling and baking quality of wheat mixtures such as are commonly found in Oregon.

Wheat having as little as two percent mixture in some cases is discounted three cents per bushel, and five percent in some cases as much as six cents per bushel; when it contains more than ten percent it goes into the class of mixed wheat which practicaly puts it on a sample basis and largely at the mercy of the buyer.

Information is needed on the moisture, temperature, and time required for tempering various wheat varieties for best milling results.

There is no adequate test for determining the gluten test of milling quality of grain in a reasonably short period of time. We believe that lines of investigational work already started in this department will, if supported, develop into a good test which can be used in the purchase of grain on its real value. This test is particularly important in connection with wheat that is partly hard and partly soft of the same variety, or of mixed varieties.

Storage problems needing solution consist, first, of the exact moisture and temperature conditions under which grain begins to fall; and second, a practical means of increasing the moisture content of grain in our dry sections to market under grade to advantage without resulting in the bleaching of the wheat. The wheat crop of Oregon is annually worth from nine million dollars to thirty million dollars. A conservative estimate of the advantage annually to farmers in the marketing of wheat provided the above information was available is five hundred thousand dollars to one and one-half million dollars, depending upon yield and price for the season.

All of the above investigations in the interest of the important livestock, dairy, reclamation, and cereal crops industries are urgently needed; but they cannot be undertaken with any likelihood of success without additional funds.

NOTABLE RESULTS OF EXPERIMENT STATION WORK.

The Experiment Station is a research institution. Its constant endeavor is to learn by investigation; to test, even produce, new varieties, develop new methods, discover new facts and new principles which will be of value in increasing production, decreasing losses, lessening cost of production, and increasing and conserving our greatest natural resource, soil fertility.

As in other fields of investigation, much of the work is valueless. The most carefully planned experiment may yield only negative results. Hundreds, even thousands of selections may be tested before a really superior one is secured. The new method, the new fact, the new principle, developed often at the expense of much labor, may be inferior to the old. **Each step in advance may be preceded by many failures; but a single discovery often returns many, many times the cost of all.**

Value of Crop Pest Investigations. The late E. H. Shepard, a Hood River fruit grower and editor of "Better Fruit," stated editorially that "The apple crop in the Hood River Valley alone will amount to over $1,500,000 for the year 1916, all of which was sprayed under the direction given by the Experiment Station, being practicaly free from fungus. Without the method of treatment discovered and worked out and recommended by the Experiment Station, the apple crop of Hood River, on account of scab, would have very little if any market value."

Results of Cherry Investigations. One of the cherry orchard sections of the State reported losses of not less than $150,000 annually by the failure of the orchards to bear. The Experiment Station has solved the difficulty and has assisted in applying the remedy.

Some Results of Poultry Work. The Experiment Station began its poultry investigations ten years ago with a flock which averaged 85 to 106 eggs for each hen annually. It has developed large flocks which average more than 200 eggs for each hen annually and has distributed from these high laying strains some ten thousand settings of eggs and two thousand breeding males.

Dry Farming Investigations. The Dry-Farming Branch Station at Moro has, for the past seven years, accurately tested hundreds of varieties of grain. Four of the new spring varieties have averaged from 20 percent to 30 percent more than the best local spring varieties, and milling tests show them to be superior to Bluestem, the best local variety. Seed from these varieties is being distributed as rapidly as possible. An increase of one bushel per acre in the yield of spring wheat will add to the wealth of the State annually several times the cost of all of the experiment station work.

A Result of Soil Fertility Experiments. The important discovery by the Southern Oregon Branch Station that sulfur used as a fertilizer materially increases the yield of alfalfa, has been found to apply to large portions of the alfalfa growing sections of Southern and Eastern Oregon. The farmers of one community, following demonstrations by their county agent, have purchased sulfur for more than 4000 acres. A moderate increase of but two tons per acre will add to the wealth of this community alone each year more than the entire annual cost of all experiment station work.

WHAT THE EXPERIMENT STATION IS DOING FOR THE LIVESTOCK, DAIRY, AND POULTRY INDUSTRIES.

The experimental work of the department of Animal Husbandry has been considerably altered by war conditions, which have presented two problems needing immediate solution, and which have made some older projects either impracticable or of less immediate importance. The use of wheat and oats, for example, was practicaly prohibited by war conditions, making it unnecessary and impractical to continue work with these feeds. On the other hand, there is an urgent demand for information on mill feed, potatoes, garbage, salvaged grains, oat hulls, peanut hulls, and other feeds that are ordinarily of little significance.

Cost and Method of Raising Spring Lambs. Data on how to produce spring lambs has been obtained for a period of several years. Owing to rapidly changing and abnormal prices, the investigation should be continued.

Cost of Horse Power. The object of this investigation is to determine the cost of one horse per hour under conditions where all items of feed, harness, and shoeing are charged.

Pasture Yields. This work was undertaken to determine the number of cattle, sheep, or horses that can be pastured on an acre of various types

of pasture. In the case of fattening and growing stock it was also to determine the number of pounds of gain obtained from different kinds of pastures. While much valuable data have been collected it is thought best to continue the investigation for some time yet before publishing the results.

Short Feeding of Steers. This work was undertaken to determine the possibility of finishing steers in less than the usual time by the use of lighter grains with chopped hay and silage. The test began with records kept on steers fed for class purposes, and the results obtained were so remarkable and the steers gained so rapidly and so economically that we continued the work to determine whether our results were accidental or due to the peculiar system of feeding. Three years' work has indicated the latter, but the work will be continued to avoid the possibility of error. So far, the work has been financially profitable even with high-priced feeds.

The Feeding Value of Oat Hulls. Large quantities of oat hulls were put on the market by Portland millers during 1917 and 1918. It has been found that these oat hulls can be used as a substitute for hay in the feeding of cattle and horses and that their value is approximately half way between oat straw and good hay. One ton of oat hulls supplemented with one hundred pounds of oil meal or cottonseed meal is approximately equivalent to one ton of good vetch hay.

Salvaged Grain for Hogs. Certain salvaged grains from the dock fires in Portland were used in this experiment. It was found that pigs would eat a full ration when composed of forty percent salvaged grain and sixty percent barley. A value of fifteen dollars a ton, sacked, was placed on the salvaged grain by the food administrator on our advice.

Value of Garbage and Buttermilk. This experiment was conducted to determine the relative value of garbage and buttermilk as supplements to grain.

The results of our experimental feeding have been of immense value during the war emergency. In peace times the relative values and availability of various feeds do not change much from time to time and farmers have learned largely by experience which are the cheapest and most desirable, but under war conditions the prices and availability of various feed stuffs changed so rapidly that farmers could not depend upon past experience to show the present relative values of the various feed stuffs. Our experiments enabled us to get specific data on such problems as the following: Straw for the wintering of cattle, both with and without supplement such as cottonseed meal and corn silage; the relative values of grain and hay both for wintering and fattening purposes; the percentage of improvement resulting from chopping hay for use in fattening cattle; the relative values of the various standard feeds for hogs such as barley, oats, mill feed, potatoes, corn silage, roots, kale, cocoanut meal, oat hulls, and oat-hull products, salvaged grains, etc. These results were tabulated in the form of brief charts showing the relative values of the various feeds for different kinds of livestock, such as hogs, sheep, and cattle. We were thus able to answer very definitely the many inquiries received.

Poisonous Plants. It is estimated that poisonous plants are costing the stockmen of Oregon about $150,000 per annum. A preliminary survey has been made throughout the range section of Oregon beyond the Cascade Mountains to determine the prevailing species of plants likely to be poisonous to stock, their habitat, species of plants likely to be associated with them, the extent of poisoning occurring, and the most satisfactory means of avoiding poisonous plants or eradicating them. Among the interesting information secured was the definite establishement of the occurrence of loco poisoning in interior Oregon and the discovery of the species of plant, not hitherto reported from the State, which is responsible for this poisoning. The investigation has already shown the seriousness of the losses to the stock men from a relatively small number of poisonous plants and the great need for information on the part of stock raisers regarding the identity of the plants causing the trouble, the situations in which they may be expected to occur, and the means which should be taken to prevent poisoning. This work should by all means be continued and extended with the idea of working out a practical system of herd management which will eliminate, or at least minimize the losses.

Abortion and Sterility in Cattle. Abortion and sterility in cattle are estimated to cause a loss of more than one million dollars to the livestock and dairy industries of the State. Unknown diseases of horses and various other livestock diseases also are causing serious losses. Investigations of these diseases have been undertaken in a limited way, but results can hardly be expected until the investigations have been developed far beyond the limits which are possible with present funds.

Such results as have been obtained in controlling sterility and preventing the introduction of contagious abortion have been presented to the dairymen of Oregon, Washington, and British Columbia, through lectures and demonstrations at the meetings of the various dairy associations. Clinical material for the investigation of sterility has consisted principally of the high-producing cows of Oregon which are sterile. The results as a whole have been satisfactory. Many temporarily sterile cows have become pregnant after treatment. The results of the work of the Station on sterility have also been presented to the veterinarians of the Northwest at association meetings and through lectures and demonstrations at the Short Course for Veterinarians at Washington State College. Several veterinarians have indicated that they are following these methods with success.

Walking Disease of Horses. The work with reference to diseases of horses has not progressed sufficiently for any recommendations concerning their control.

Hemorrhagic Septicemia of sheep and cattle has probably existed in Oregon for twenty years or more. Definite diagnosis was not made until some four years ago. This Station was first to make such diagnosis in sheep and it assisted the State Veterinarian's office in diagnosing many outbreaks in cattle. Methods of control of this disease by vaccination had already been worked out by the United States Bureau of Animal Industry. Such methods have been successful in this State. Through the original diagnosis made here and by the State Veterinarian, the prevalence of the disease has been determined. Many thousand doses of the vaccine are now being sent out annually by the department of Bacteriology.

Infectious Keratitis of sheep has become epidemic in at least two vicinities in Oregon. Diagnoses have been made in the laboratory and methods of control as recommended by European investigators have been followed with success.

Some limited studies of **White Diarrhoea** of poultry have been made. Five thousand birds have been tested and reacting ones have been eliminated. This has resulted in practically eradicating this disease in several of the best flocks of the State.

The Use of Pepsin as a Substitute for Rennet in Cheese Making. The cheese industry is one of the most important agricultural industries of Oregon. At the outbreak of the war in 1914 or shortly afterwards, the restrictions placed upon commerce cut short the importation of rennet stock. The shortage suddenly became acute. Cheese makers had difficulty in obtaining rennet which had been absolutely necessary as a coagulant in the manufacture of cheese. Pepsin had been used experimentally only and then rather superficially as a substitute. Cheese makers began writing to the Experiment Station for information on the use of pepsin. Fortunately, we were, at the time, operating a cheese-factory laboratory, and began immediately investigating the use of pepsin as a substitute for rennet. Within two weeks' time it was possible to publish a preliminary report indicating how pepsin could be satisfactorily used. This report attracted a great deal of attention among cheese makers. As a result the cheese makers with confidence took up the use of pepsin and the Experiment Station rendered a real emergency service. Since that time, the work on the use of pepsin has been continued and the results are published in detail in Bulletin 155 entitled "The Use of Pepsin as a Rennet Substitute in Cheddar Cheese Making."

The Neutralization of Cream and Its Relation to the Finished Product. Investigations have been under way for some time to determine the comparative quality of butter made from sour cream, and butter made from the same cream by having its acidity reduced with one of the neutralizing solutions which are now in quite common use. The importance of this investigation is apparent when it is realized that a very large amount of cream is delivered to our creameries in a sour condition. It is claimed by many maunfacturers that if the acidity in this cream is reduced butter of much better quality can be made. Butter made from high-acid cream does not have a high-keeping quality. It is not practicable, however, to pasteurize high-acid cream, as the combination of casein enclosing a large quantity of fat is lost in the buttermilk. As the practice of neutralization is quite common and the information on quality of the resultant product is very limited, it is advisable that some definite data be published which bear directly on the effect of neutralization of cream on the quality of butter. It will be necessary to continue the work for some time before definite results can be announced.

The Minimum Quantity of Butter Fat Necessary to Produce Normal Development of a Young Growing Dairy Animal. It is important at all times and especially so during the present period of high prices for dairy products that farmers should know the minimum quantity of butter fat necessary to produce normal growth in dairy calves, during the milk feeding period and especially at the time when the young animal is changed from whole milk to skimmed milk. A feeding experiment has

been undertaken to determine this point, and to determine the effects of a supposedly insufficient quantity of butter fat in the ration. While this experiment is well under way the results are not as yet ready for publication.

Vetch as a Dairy Ration. Throughout this State, at least, vetch forms an important crop. It is often used, together with oats, both as a dry roughage and as an ensilage. It is very desirable to know the effects of the vetch plant on the health and vigor of a growing animal and later on a producing animal. An attempt is being made by maintaining an animal on the vetch plant alone and thus magnifying its desirable or undesirable qualities to determine quickly its effects on the growth, health, and reproduction of a dairy heifer.

To Determine the Effect of the Protein Intake on Growth, Reproduction, and Milk Production of Dairy Animals. It is important to know just how wide or how narrow a ration can be and yet yield satisfactory results. In this part of the country the difficulty appears to be that the ration is too narrow. It is important to know if, first, the narrow ration affects in any way the growth production or reproduction of the animal, and, second, whether the widening of the ration by the addition of high-priced carbonaceous feeds would be economical.

To Compare Several Roughages and Concentrates in Their Ability to Produce Milk. The question of what to feed is one that requires much attention. Dairymen must know what is the best feed under various existing conditions. Any project which has as its aim the solution of this problem should receive immediate and conscientious attention.

To Determine to What Extent in Feeding Dairy Cows Roughages May be Substituted for Grain. A problem which has received but little attention in some states and practically no attention here, is one that has to do with the reduction of the quantity of high-priced concentrates fed to dairy cattle. To what extent is it possible to make the home-grown roughages, such as oats and vetch, clover hay, or any other legume, ensilage, etc., replace the concentrates? To what extent will the milk yield be reduced? What is the dividing line of profit and loss in this reduction? Experimental feeding tests to determine these points are under way.

Feeding Experiment with Mill Run and Barley. Food Administration regulations, and primarily the shipping conditions, have created a shortage of mill feed in the Pacific Northwest during the past year. This shortage was not foreseen until late in the summer. Dairymen have used as a concentrated feed the various mill feeds, to a very large extent. It has been impossible for them to secure sufficient mill feed during the last year. Furthermore, neither bran nor shorts has been manufactured, but the two materials have been mixed and are sold in the form of mill run. While the feeding value can be calculated, the actual practical feeding value and the process of using this feed in the ration had not been determined. As soon as this emergency was recognized, the Experiment Station began feeding experiments to ascertain the value of mill run in the concentrated ration of the dairy cow. Experiments were also conducted regarding the use of barley as a feed for dairy cows. Large numbers of dairymen do not recognize the fact that barley, together with certain concentrated feeds of high protein content, can be satisfactorily used as a substitute

for mill feed. This problem is being worked out by the Experiment Station, and while complete results will not be available for some time, a preliminary report will be made within the next month that will be of value.

Wintering Heifers on Cheap Rations. The feasibility of wintering dairy heifers on cheap rations, particularly straw, a little mill run and cottonseed meal, is being investigated. This ration is being fed to take the place of high-priced clover or alfalfa hay. Many farmers are interested in this experiment and many inquiries are received as to the success attained.

Poultry Investigations. The main line of poultry investigations during the past nine years has been breeding for increased egg production. The results of these experiments have been generally acknowledged as highly important. Starting with a flock of Barred Plymouth Rocks that averaged less than one hundred eggs, for each hen a year, in five years we had raised the average to about 135 eggs and the present year, under similar conditions and equal-sized lots, we have secured an average of better than two hundred eggs for each fowl for this breed. With a flock of White Leghorns as foundation stock, averaging one hundred and six eggs for each hen we have increased the yield until the average exceeds two hundred under similar conditions. By crossing these two breeds we have developed a variety called Oregons, that have shown very high fecundity. We secured from this variety the first hen in the world that made a record of over three hundred eggs in a year by trap-nest. Since then we have had several other hens of the same strain exceed three hundred. A pen of ten has averaged two hundred and fifty eggs a year, and many larger pens or yards have averaged over two hundred. The selection has covered not only the first year's production, but the productive life of the hen. We have reared a number of hens that have laid more than one thousand eggs. We had the first actual trap-nest record of a hen laying one thousand eggs in a life time. This opened up the possibility not only of increasing the first year's production of the hen, but adding to the period of possible production.

To demonstrate whether our results were due to some local condition our stock has been tested under various conditions of climate and management. At the Panama Pacific Exposition at San Francisco, we entered three pens of fowls, one of Barred Rocks, one of White Leghorns and one of Oregons in an International Egg-Laying Contest. In a year's contest these pens won first, second, and third places respectively. In the following year at the Missouri contest a pen of five Oregons won second place with one hundred competitors, the Oregons averaging two hundred and thirty-two eggs for each hen. In the same year at the International Contest at Storrs, Connecticut, a pen of ten Oregons won third place with one hundred competitors, the Oregons averaging two hundred and twelve eggs a hen. During the past year at the Storr's Contest, with one hundred competitors, a pen of Oregons won first place with a record of two hundred and thirty-five and two-tenths eggs for each hen. This is the highest record for a pen of ten hens in any contest. At the British Columbia Contest this year, a pen of Barred Plymouth Rocks made a record, considerably in excess of any other breed or pen there, the record being two hundred eggs for each hen in eleven months. At the All-Northwest Contest at Pullman, Washington, a pen of our Barred Rocks has

been first for several months and although the report has not yet been received the record will probably exceed two hundred and forty eggs for each hen for a pen of five hens. Last year the pen that won at the Pullman Contest was the College strain of Leghorns.

Each year there has been a greater demand for this stock, and it is impossible to supply all orders. We have sent out some ten thousand settings of eggs, or one hundred thirty thousand eggs and some three thousand breeding males all with pedigrees showing the egg production of female ancestors for several generations back and all having records the first year of approximately 200 eggs for each hen. The poultrymen receiving this stock have later acted as distributing agents, so that the strain has had extensive distribution in this State as well as in most other states and in foreign countries. As a direct result of this distribution of eggs and males, the increase in production will approximate in value, $250,000 annually, to say nothing of the stimulating effect in years to come or of the further and larger incentive which these encouraging results have given to poultry breeding and to poultry breeders everywhere.

Incubation Experiments. Probably the most difficult part of the poultry business is to hatch and raise the new stock. Losses in incubation and brooding are enormous, the country over. Our experiments, which have had to do mainly with artificial incubation, have shown that the ventilation and the humidity conditions in the incubator are important. When the investigation is completed, it will be possible to give definite information in regard to methods of incubation which should result in a great saving.

WHAT THE EXPERIMENT STATION IS DOING FOR THE HORTICULTUAL INDUSTRY. (CROP PEST AND HORTICULTURAL INVESTIGATIONS.)

Insecticide Investigations. Recent insecticide investigations have been largely centered around a study of possible aid in causing poison sprays to stay in suspension longer, spread more easily, and stick better; and in a study of the chemical, physical, and caustic properties of commercial calcium arsenate. Laboratory tests were supplemented with field trials in a large commercial apple orchard. The results indicate that there is great promise in the use of a spreader added to arsenate sprays for codling-moth control.

A Study of the Economic Slugs of Oregon. An exhaustive study of the life-history, habits, and methods of control of this destructive pest has been nearly completed and the results soon will be ready for publication in bulletin form.

Pruning Investigations. Studies are being made of the effect of winter or dormant pruning, summer or active pruning and various combinations. Some of the results have been reported upon. It has been found that certain types of summer pruning are proving devitalizing to the trees, particularly in those cases where the greater amount of leaf materials formed by the growth of any particular year is removed during the summer. This is to be expected because of the lessened carbohydrate supply. As previously shown, the early or June heading shows in all varieties

a greater proportion of fruit buds and leaf spurs with little or no decrease in the vitality of the tree itself. It seems desirable to consider this investigation as a study in regeneration, (the question being to determine what internal factors regulate a reproductive regeneration) and what a vegetative one. The results from certain phases of the pruning investigations were reported in Bulletin 146.

Strawberry Breeding. Strawberry breeding experiments have continued during the biennium. A number of selections have been produced, several of which give promise of being valuable new varieties. Additional seedlings are coming into bearing each year.

Apple Breeding. Apple breeding investigations have continued through a number of years, and have resulted thus far only in the production of a small number of apple seedlings of known parentage, which have produced fruit. Valuable notes are being taken, however, upon their vegetative character, and as they come into bearing data will have accumulated that will be of real value. This data should afford information on methods of inheritance in the apple.

Cherry Breeding. The work in cherry breeding is making normal progress. Approximately two hundred cherry seedlings have produced fruit. Records have been made on their vegetative and fruit characters and it is believed that among the two hundred are some that are of real merit. A number of additional seedlings of known parentage are expected to produce fruit each year.

In connection with the cherry-breeding work it is proper to mention the cherry-pollination work, which may be regarded as a by-product of the cherry-breeding investigation. It is worthy of note that practically the entire cherry-orchard area in the vicinity of The Dalles has been provided with proper varieties for cross pollination as a result of our investigations.

Nut-Variety Trials. A number of additional varieties have been added to our nut-variety collection during the biennium, mainly through the courtesy of the Office of Foreign Seed and Plant Production, United States Bureau of Plant Industry. Careful records have been made from time to time regarding the vegetative characteristics of different varieties. The work with filberts and walnuts is found to be of particular interest and value to the nut industry of the State. Experiments in walnut pollination have been undertaken at the request of the Western Walnut Growers' Association.

Depth of Planting Investigation. Various varieties of apples, prunes, etc., have been planted at various depths ranging from two inches shallower than in the nursery row to thirty inches deeper. The trees are being measured annually to determine their terminal growth and also their increase in diameter. In a general way the indications are that the shallower the trees are planted the better. On good soils there is little difference noted, but on soils having a heavy subsoil the trees should be planted shallow.

Pear Harvesting and Storage Investigation. This work deals with attempts to determine the best time for harvesting the leading varieties of pears, and the best methods of storing. Fruit was picked at intervals

of three or four days throughout the entire season, and stored under ventilation, car temperatures, and cold storage. In general it was found that the fruit was being picked from one to two weeks too early, and that early picking gives a poor and astringent fruit, which keeps quite well without cold storage; but that the third and fourth pickings are greatly superior in quality, size, and keeping quality, being superior not only to the earlier picked but also to those picked very late. The results and conclusions obtained are to be found in Station Bulletin 154, entitled "Preliminary Report of Pear Harvesting and Storage Investigations in Rogue River Valley."

Onion Fertilizer Trials. Trial Cooperative fertilizer tests designed to test the relative efficiency of various fertilizers for onions on beaverdam land, which have been conducted since 1913, show that super phosphate in amounts varying from 400 to 1200 pounds per acre can be profitably used. In the year 1917-18 four hundred pounds of super phosphate showed an average net gain of $24.20. Eight hundred pounds of this material showed an average net gain of $41.60 while twelve hundred pounds of super phosphate gave a net gain of $63.00. These estimates were based on onions selling for $2.00 per cental and fertilizer at $25.00 per ton.

Broccoli Investigations. Broccoli seed from four different sources tested on the grounds of the Experiment Station show a wide variation in trueness of type and productivity. Imported seed showed an average of 75 percent plants that were true to type, 25 percent producing unmarketable heads, seed locally produced in Oregon produced 86 percent true to type and 14 percent unmarketable. Two strains from a Portland seed house show a wide variation, one being practicaly a duplicate of the locally grown strain, while the other strain produced but 10 percent to 12 percent marketable heads. Experiments with fertilizer for broccoli in the Umpqua Valley indicate that inferior soil can not be brought to such a state of fertility by the use of commercial fertilizers alone as to make it capable of producing broccoli equal to that of naturally more fertile soils. Plots that have been manured have given most satisfactory results both in yield and trueness to type, there being a tendency for plants to overcome the poor types on land that is well supplied with organic matter. Irrigation experiments with tomatoes have shown that the use of water will prevent to a large extent the blossom end rot of that crop. They have also demonstrated the great value of irrigation in the production of late beans and in fact nearly all vegetable crops which have been tested in the Willamette Valley.

Fruit Products Experiments. Experiments have demonstrated the relative merits of non-dipping, dipping in cold water, boiling water, and hot lye water, in prune drying. These experiments have also demonstrated the usefulness of a self-recording thermometer in this work. Some tests in blanching and dipping in brine for beans and corn for evaporation and canning have been demonstrated and the relative canning value of some varieties of tomatoes and apples has been determined. A study has been made of Swiss chard as a canned product, first from the point of view of strains and types, and second, from the point of view of all leaf or all stem or a combination of both.

Orchard Fertility Experiments. Experiments with the use of nitrate of soda as an orchard fertilizer and with cover crops, in the Hood River

and Rogue River valleys have given remarkable results, and tend to revolutionize orchard practices in the Hood River Valley. The yield has been greatly increased and the vigor of the trees has been restored. The results of these experiments have led to further investigations, which show that in plants in general there is a mathematical relation between the nitrate and carbohydrate contents and that to produce certain desired results this factor must be considered. The results of this fundamental investigation have been published as Bulletin 149, "Vegetation and Reproduction with Special Reference to the Tomato."

Peach-Leaf Curl Experiments. This investigation has been conducted by means of spraying tests on the College farm and by the accumulation of data relative to the control of the disease from the different orchards of the State. One fact stands out preeminently; namely, the superiority of Bordeaux mixture both as regards reliability and effectiveness. Spraying may be successfully carried on with this material at practically any time during the winter, provided it is put on previous to the time when the winter buds begin to expand. Other materials tested at Corvallis, include lime-sulfur, Sherwin-Williams dry lime-sulfur, and Scalecide. Some degree of control was obtained with each of these but by no means equal to that with Bordeaux. In the data accumulated from commercial orchards through the State we find records of strikingly successful results from the use of both Bordeaux and lime-sulfur, provided the applications have been made sufficiently early, and earlier experiments at Corvallis have shown results from lime-sulfur nearly equal to Bordeaux. It is noticeable, however, that occasional instances of failure to get satisfactory control with lime-sulfur have occurred throughout the State, where such failures cannot be attributed to too great delay in application or to lack of thoroughness. It is evident that lime-sulfur, for some reasons, under certain circumstances may prove unreliable, although it is usually effective.

Control of Gooseberry and Currant Diseases. We have found that a very effective control can be secured by spraying with lime-sulfur, and with Sherwin-Williams dry lime-sulfur. Sulfur dust, and lead-arsenate combination also have good results. Iron-sulphide mixture, which is often recommended, was far less efficient than any of the other materials used. The spraying applications which gave the most successful results were as follows: The first, just as the leaf structures began to unfold and before any of the leaves were full sized; the second, just before blooming.

Powdery Mildew of the Apple. In experimental spraying for this disease conclusive results were not obtained but the indications are that the sulfur dust application given for the control of the scab and codling moth give better results than lime-sulfur alone, iron sulphide mixture alone, or iron sulphide mixture and lime-sulfur combined, and the conclusion also seems to be justified that the regular scab spray applied thoroughly will keep the mildew down to a point where it will not be regarded as serious.

Brown Rot. Experimental spraying for brown rot was undertaken at Corvallis, Looking Glass, Salem, Newberg, and Dallas; but on account of the absence of weather favorable to the development of ordinary fruit rot on uninjured fruit there was practically no brown rot in the orchards where the tests were carried on except in the case of cracked fruit. The result was therefore negative.

Walnut Blight. On account of the seriousness of this disease and its importance to the rapidly growing walnut industry, experimental efforts have been made to control the disease by spraying. The results, while not conclusive, are distinctly encouraging and lead to the belief that future tests may show the feasibility of controlling this disease by spraying.

Apple and Pear Scab. Experimental spraying for apple and pear scab was conducted at Hood River, Salem, Corvallis, Estacada, Fargo, and Wilbur. The main purpose of the work was to test the comparative efficiency of dust spraying with the method of control by the use of lime-sulfur sprays. The results obtained with dusting sulfur showed this material to be nearly if not quite as effective as the usual liquid lime-sulfur. The cost of the dust in the quantity in which it was applied in these tests was very much greater than the cost of the liquid spray, though the time saved was considerable. The most valuable result of the season's work was the striking evidence of the accumulated effects of good spraying.

Bean Diseases. With the development of the bean-growing industry in the State during the past two years the condition of the crop has attracted more attention than usual. This has resulted in the discovery of several diseases not hitherto recorded from this State. The most important of these are bean blight, which in several widely separated sections of the State destroyed from thirty-five to forty percent of the crop or more on isolated fields; and bean mosaic, which is reported as a serious disease in the East. Comparatively little work has been done on these diseases as yet.

WHAT THE EXPERIMENT STATION IS DOING TO ASSIST IN DEVELOPING THE SOIL RESOURCES OF THE STATE.

Soil is the basis of all agriculture and the maintenance of soil fertility is fundamental to the permanent prosperity of a state. The soil investigations of the Experiment Station center around the proper feeding and watering of plants and the management of the soil to increase and maintain its productiveness. They include:

1. Fertility rotations for the Willamette Valley, the coast region, the dry land region, and the irrigated regions of the State.
2. Fertilizer experiments and cooperative demonstration experiments with the leading soil types of the State.
3. Soil acidity tests and lime trials.
4. Cooperative soil surveys.
5. Soil correction trials with "white land" and "black sticky."
6. Toxicity of alkali and of acid soils to crops.
7. Cooperative tillage and soil-mixture studies.
8. Feasibility surveys for irrigation projects and for drainage projects.
9. Cooperative duty of water and related investigations, including water variation trials, field water capacity studies, studies of root systems water tables, movements of moisture and irrigation water, cost of production under irrigation, water cost under field conditions and with tanks,

irrigation requirements under humid conditions, effect of manure rotation and fertilizer on irrigation requirement, costs of irrigation, effect of irrigation on organic content and its relation to bacterial activity, and nitrification.

10. Experiments on the distribution of water and improvements of irrigation practice.

11. Drainage and improvement of wet soils, including white lands, tide and overflowed lands, irrigated alkali and water-logged lands, and lysimeter and percolation studies.

12. Evaporation and weather studies in relation to soil production.

13. Improvement of water laws.

14. Variations in the wilting point for different crops and other critical moisture points for irrigated soils.

Cooperative Tillage and Soil-Moisture Studies. The object of this work is to determine advanced methods of cultivation for moisture conservation under the dry farming, irrigation farming, and rainfall farming sections of the State. Elaborate tillage experiments are carried on at Moro and Burns that show clearly the importance of early spring plowing and clean summer fallow. Soil moisture determinations are being extended to measure the effectiveness of these treatments and to test out under different conditions comparative effectivenss of cutting of weed growth at the surface as compared with the ordinary system of mulching, for conserving and producing the most profitable yields. The movement and distribution of moisture in dry land and under irrigation is a phase of this work.

Survey and Feasibility of (a) Drainage or (b) Irrigation Projects. The purpose of this project is to give assistance as need arises in shaping out and determining the feasibility of reclamation projects for drainage or for irrigation. It is planned to carry on this project cooperatively with the Irrigation Investigations Branch of the Bureau of Public Roads in the future. On these irrigation projects estimates have been made of the probable duty of water on various soil types and the feasibility of irrigation from an agricultural standpoint. Recommendations have been made as to the best methods of distributing water, types of agriculture best suited, and probable value of irrigation. The projects which have been given assistance during the past year total nine and cover an area of 147,500 acres.

The preliminary drainage surveys have been made largely in cooperation with the irrigation engineer of the College, or the project engineer in certain projects, to determine the feasibility from an agricultural and engineering standpoint. During the past year perhaps two dozen districts or communities have been examined and nine of these will require district organization. These nine projects contain an area of 153,100 acres.

In cooperation with the Extension Service, field drainage systems have been designed for sixty farms, aggregating over half a million feet of tile and serving 5,650 acres. One hundred and ninety thousand feet of this, or about two-fifths, was surveyed and profiles provided farmers.

The average value of the 153,100 acres examined for outlet systems would perhaps run $50 an acre in its present undrained condition, while drainage would increase its productive value to something like $100 an

acre. The amount of field drainage designed and surveyed showed an increase over twice the amount designed and surveyed the previous year, while the Grande Ronde drainage district is one of the largest districts in the State. Altogether, drainage activities have about doubled during the past year.

Cooperative Duty of Water and Related Investigations. The purpose of this project is to determine a reasonable and economic duty of water for the irrigated valleys in Oregon. This season is the fourth year of the investigation, which is carried in cooperation with Dr. Briggs of the Bureau of Plant Industry. The plan followed is similar to that employed the past year, some additional studies have been correlated with this general problem. Preliminary results for two years' work were reported in Oregon Station Bulletin No. 140. Additional soil tanks were provided at Corvallis the beginning of the present season and are being employed to determine whether the wilting point varies with different crops in the same soil.

The results already at hand and further data being secured will be of great value in determining a reasonable duty of water for the various irrigated valleys in the State. Special attention is given to the water requirement, extent, composition, and improvement of wild meadows. Weather conditions over the State in 1917 were a little drier and warmer than normal, and evaporation was a little above average.

The work has been carried out under field conditions largely, applying different amounts of water. Chief crops and important soil areas are employed and weather conditions noted in order to correlate the work. Results are reduced to an acre basis and expressed in terms of largest yield per unit water and maximum yield per unit land, the net profit an acre; and an acre is determined or consideerd in judging results. The total water requirement is also determined in most cases either under field conditions or more accurately by the use of duplicate tank trials.

One of the greatest wastes encountered has been that of over-irrigation in proportion to the capacity of the soil to retain water in one application. Field water capacity studies with cylinders, and, more recently, with lysimeters, have been made to learn the usable water capacity of the different irrigable soils. A quantitive study of root systems has been added to help in arriving more accurately at the total water capacity for the feeding root zone. Water-table studies are conducted in connection with this work and particularly in alkaline or moist regions, and a great number of soil-moisture determinations are made so that much is learned regarding movement and distribution of irrigation water in different soils.

Irrigation requirements nuder sub-humid conditions in Western Oregon are being conducted with field crops and the old duplicate plots have been employed for cooperative trials with vegetables. The effect of manure, rotation, and fertilizer on irrigation requirements is being studied in most of the trials with exact control of conditions on the Corvallis. plots. Two complete rotations of four years each have been finished so that definite results are shown on these plots. Rotation and manure have built up the available fertility and water capacity, greatly benefiting the yields and reducing irrigation requirement in these experiments, the difference running about twenty-five percent. Proper irrigation has increased the

bacterial activity—counts having been made the past three years by the department of Bacteriology. In working out the water costs of dry matter, the composition and ratio of plant parts as affected by different amounts of water have been considered and improvement in the method of distribution of water on coarse soils has been used to reduce the quantity of water applied to such land. A greater diversity of crops has been employed in reducing the amount of irrigation required. Barnyard manure, sulfur, lime, and landplaster have also been very effectively used in this way.

Water cost of wild grasses in representative trials range from 1,000 pounds upward, while the water cost of alsike and timothy ranges around 600 pounds to each pound of dry matter. The total yield of the alsike and timothy or field peas runs about twice as much as the wild hay. This production is secured with less than half the water ordinarily used on wild meadows. Two diked areas of peat lands in Klamath Basin, formerly tule lands, were drained of 3½ inches depth an acre storm water at the beginning of the growing season. Later, about six acre inches an acre were applied last season as supplementary irrigation. The average yield of the tame grasses was about three tons an acre, chiefly alsike and timothy. An appreciable amount of alkali was pumped off in these drainage and irrigation trials, the total solids amounting to 266 pounds an acre, being the net amount removed. Fairly definite methods of improving the wild meadow and alkali lands have been developed. In the reclamation on the peat, drainage is the first step, while on the wild silt meadow better control of the irrigation water is of first importance. The average of all our trials indicates a general field duty of 12 to 17 inches of these lands. With better control of the water, use of tame grasses and legumes, it is believed that it will be possible practically to double the production of about half a million acres of these marsh and wild meadow lands in the State.

Experiments in the Distribution of Water and Improvment of Irrigation Practice. This work is being grouped into a project for the purpose of correlating studies that are being made to secure a most economically efficient distribution of irrigation water on the farm. The project is planned to be carried on in cooperation with Dr. Fortier of the Department of Agriculture. The strip-border method of distributing irrigation water could be used more largely on the gently sloping valley soils of the State, with the more porous soils. The length of run and width of strip or the length of furrow in furrow irrigation are questions which are constantly under observation in our work. The efficiency and durability of different kinds of materials for distributaries will be given further consideration in these studies. Wood flume, concrete, and wood pipe, metal flume, a slip joint and canvas pipes are under observation.

Drainage and Improvement of Wet Soils. The object of this project is to determine the most efficient methods of draining wet land areas of the State. The general plan is to install and study an operation of drains placed at different distances apart and at different depths. Studies of the water table and outflow from these drains are made and after-treatment given to facilitate the entrance of water into the tile. The wet areas under study include four classes of land; namely, white land, seeped

hill land of Western Oregon, tide and overflow land in the lower Columbia and coast region, and the irrigated alkali and water-logged land needing drainage in Eastern Oregon.

Studies of the water table and outflow on white land areas of the College farm have been continued the past year. From these investigations, a fairly definite idea has been formed as to the proper depth, distance apart, and size of tile in white land in the western part of the State. The standard arrived at for typical land of this character is tile laterals four rods apart and three feet deep with capacity of main drain sufficient to remove one-half acre inch an acre from the wet area every twenty-four hours. Since drainage is rather expensive and improvement of white land is rather slow, it is necessary to locate drains and handle the land after drainage, so as to loosen up the soil and facilitate the entrance of moisture into the tile in order to make the drainage enterprise most profitable and successful. Lime, clover, manure, green manure, and combinations of these were employed in these trials to facilitate tile in their operation. On one area of white land drains are installed to study the relative value of gravel as against straw for bedding over tile lines, to assist water in entering these drains in sticky soil. Results thus far are in favor of the straw bedding as being most desirable and far cheaper. It has been thoroughly established that white land can be successfully tiled and there is a great increase in the use of tile for such land. Providing outlet ditches on the district plan will greatly stimulate tiling of individual felds.

There are nearly 100,000 acres of tide land along the Oregon Coast and lower Columbia River. There are perhaps 75,000 acres of overflow land along the Columbia River and other streams in Western Oregon. Protecting levees and outlet ditches are provided for perhaps two-fifths of this area. Very few field drains and almost no tile are to be found in these lands. It is believed that the present productive value of the tide lands with excess water controlled is sufficient to justify extensive under-drainage development in this region. An experimental drainage system has been designed and is partly installed on the Branch Experiment Station at Astoria. The system is designed largely along practical lines but has an experimental section with guarded laterals at different depths and different distances apart. The outflow from these guarded laterals was measured during the past winter season. These plots are being cropped to field peas and oats which promise to give a very heavy yield, in place of the growth of marsh grasses and water-loving plants which formerly afforded poor pasture.

Studies have been made of the water table and subsoil conditions and their relation to the concentration of alkali on the surface over several affected areas in the irrigated sections of Oregon. The lands needing drainage there include (1) those that are alkaline in a virgin condition; (2) those that are water-logged or marsh land in a virgin condition; and, (3) those that have become water-logged and more or less alkaline as a result of irrigation. The relation of irrigation to the water table and the outflow of underdrains have been observed. The amount of alkali discharged from definite areas where measured quantities of water were applied has been observed, and the rate of reclamation studied. Considerable data have been accumulated and partly reported in Bulletin 137 and Bulletin 140 of the Oregon Experiment Station.

Another class of wet land that has been given some consideration is the seeped hill land of Western Oregon. A considerable part of the drainage surveys have been made in such land, with a view to intercept and control seepage or protect the land against erosion. To what extent this drainage will serve as a corrective for acidity should justify a quantitative study.

Eight lysimeter or percolation tanks are being provided and will give more exact control of conditions for studying the percolation of the drainage water in the wet seasons. These tanks can also be used in connection with irrigation studies in the summer season. It is contemplated that different cover crops and lime will be used on these lysimeters on wet soils and their effect on the outflow and composition of drainage water will be studied by analysis of the percolate. It is planned to correlate this work to some extent with the excellent work being done at the Hermiston Station by Mr. H. K. Dean.

Altogether, there is an area of something like 3,000,000 acres of wet land in Oregon in need of improvement by draining. This is an area half as large as the total area of the improved farms at the last census. These lands are generally located within easy reach of markets, are located where there is a long growing season and are generaly rich alluvial soils. The reclamation of large areas of this land is one of the quick, permanent means of increasing food production. The survey and experimental work on the lower Columbia and in the marsh region of Central Oregon should lead to reclamation of some of the largest areas of good but comparatively undeveloped land in the State.

Soil Survey. General soil surveys have been made by the Experiment Station of reclamation projects embracing over two million acres. In cooperation with the U. S. Bureau of Soils, a detailed soil survey has been made of Yamhill county and Washington county.

These surveys determine the location, extent, and composition of each soil type, which is mapped on a scale of one inch to the mile so that the character of soil on each farm is shown. These maps are of great value to prospective settlers and for advising farmers as to management of their soils. Also, the work forms a basis for fertility experiments calculated to develop a permanent system of agriculture.

Crop Rotation and Soil Fertility Experiments. Fairly complete fertilizer and rotation trials are under way on a dozen definite soil types in the State. Three dozen or more simple tests are conducted in addition in cooperation with the Extension Service, through County Agents. The trials are now from one to ten years' duration.

The value of liming for most of the acid soils of Western Oregon has been developed through these investigations. Depletion of nitrogen and organic matter, and the need of clover and legumes on most of the old grain lands, particularly in Western and Southern Oregon, is also becoming more and more evident.

Crop rotation and manure with legumes under irrigation have been found promptly to build up the water capacity and the organic contents where water can be secured. Some soils in the marshes of Deschutes Valley have responded to potash fertilizer, and repeated tests indicate that the red hill soils respond to applications of super phosphate.

Chemical Studies of Oregon Soils and Fertilizers. The sulfur content of Oregon soils has been studied in cooperation with the Southern Oregon Branch Experiment Station. The work has consisted chiefly in ascertaining the sulfur in sulfate form, as it exists in various soils treated and untreated with sulfur containing fertilizer. This particular phase of the work is still in progress but will soon be completed. A joint bulletin containing detailed accounts of the work accomplished is now being prepared for publication.

Lime and Fertilizer Work. In compliance with the State Fertilizer Law, about 50 samples of fertilizer, including simple and complete fertilizers, have been collected and analyzed. No violations of the requirements of the law have been detected.

As per requirement of the State Lime Law which was enacted by the twenty-ninth legislative assembly, about 30 samples of lime have been collected and analyzed. These samples include limestone, hydrated lime, and land plaster. The results of the analyses show that a large number of samples do not agree with the guaranteed composition. It has been shown, however, that these were not deliberate efforts to defraud, but were due to ignorance or misinterpretation of the law; and since this is the first year that the State Lime Law has been in effect it has been deemed advisable to notify manufacturers regarding the violation and suggest means of correcting irregularities.

FIELD-CROP INVESTIGATIONS.

Cereal Investigations. Varietal trials of cereals have demonstrated the highest yielding variety for each section of the State, clearing up many questions and resulting in greater production.

A cereal classification nursery, which has been started for the purpose of developing pure-line strains of leading wheat varieties and in which results have been obtained on nearly seven hundred selections, has given data for a better standardization of cereal varieties and has been useful in supplying information on which to classify wheat varieties under the new Federal and State Grain-Grading Regulation.

Laboratory tests of field-collected samples treated, while growing, with nitrate of soda as compared with untreated samples, has shown a superior quality of wheat when supplied during the growing period with a greater supply of nitrogen. Samples of wheat from legume soils or from soils treated with nitrate of soda are harder in texture and carry a higher gluten content than wheat grown on non-legume soils or untreated with nitrate.

Ear-to-row tests of corn have resulted in several very satisfactory strains of early- and medium-maturing Minnesota 13, which are being distributed in Western Oregon.

Forage Crop Investigations. A vetch-variety trial which extended over several years has shown the superiority of common vetch over all other varieties for hay and for cover crops under Willamette Valley conditions. Vetch cultural trials have indicated the superiority of moderate rates of seeding and from medium to early fall planting. Varietal and cultural trials with "horse beans," have shown that plant to be worthy of culture in the Willamette Valley. Of the miscellaneous legume trials,

annual white sweet clover shows much promise. Purple vetch and Tangier peas are worth extended culture as seed crops. Miscellaneous trials have shown Eureka clover to be unsatisfactory as a forage plant. Miscellaneous experiments include flax varietal and cultural trials furnishing information for the more extended culture of the flax crop in the State.

Hay Experiments. Hay experiments include curing methods, stacking, studies on relation of volume and weight, and studies on the moisture content and moisture movement in stored hay. Recommendations of the Station that hay be cut earlier, stored quickly, frequently with the use of side delivery rakes, and either stacked or put into storage promptly, are being more generally followed.

Control of Grain Smut. Results of the greatest importance have been obtained in connection with our studies on the seed treatment of cereals for control of smut. The commonly reported injury from formaldehyde has been found to result largely from improper handling subsequent to the treatment rather than to the treatment itself. Copper sulphate, although in quite general use, was found to be absolutely unsafe in this State for seed treatment, severe injury resulting even under the most careful handling. The great value of the lime bath in counteracting the copper sulphate injury was demonstrated.

Potato Disease Investigation. The work on potato diseases has revealed the great importance of the use of disease-free seed and the rotation of crops as the most valuable improvement in the present practices in potato growing leading to increased production. The results of these investigations which will have an important effect in reducing the enormous losses from potato diseases are being prepared as rapidly as possible for publication and investigations on storage decay in potatoes have also been undertaken.

WHAT THE BRANCH STATIONS ARE DOING.

With an area greater than the combined areas of New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey and Delaware, Oregon, owing to varied topography, soils and climate, presents a greater diversity in the factors which influence agricultural production than are to be found in all that portion of the United States east of the one hundredth meridian and north of the Ohio river; and the problems which press for solution are correspondingly varied and numerous.

To adapt the experimental work to these widely varying conditions, seven Branch Stations have been established in seven of the distinctive agricultural sections of the State. Some very valuable results are being obtained at these branch stations, only brief mention of which can be made here.

The John Jacob Astor Branch Experiment Station at Astoria was established primarily for the purpose of giving the Experiment Station opportunity to study the problems of tide-land agriculture. The principal lines of investigation so far undertaken are: 1 Forage crop investigations, 2 Soil fertility trials, 3 Root variety trials, 4 Rutabaga seed starting trials, 5 Potato variety trials, 6 Potato seed improvement work, 7 Drainage investigations, 8 Problems relating to feeding and management of dairy cattle under coast conditions.

While results have been obtained which have attracted considerable interest from the surrounding farmers, the work has not yet progressed to the point where definite statements can be made. As more land is cleared and subdued the investigations will be extended to cover other lines of tide-land agriculture.

Careful varietal tests with hundreds of varieties, over a period of six years at the Branch Experiment Station at Moro, have demonstrated that certain varieties of cereals produce from three to six bushels more per acre than the variety commonly grown by farmers of that section. These new and improved varieties have also demonstrated their superiority at the Branch Experiment Station at Burns. Seed from these varieties has been distributed, and the varieties are now so widely grown that abundant seed is available.

Six years' results in an elaborate series of tillage experiments at the Moro Station have shown that (1) yields of winter wheat are appreciably increased when plowing for summer fallow is done early in the spring or when thorough disking of the ground precedes plowing, if that operation is deferred; (2) that the growth of weeds on the summer fallowed ground reduces wheat yields; and (3) that certain commonly accepted dry farming practices such as packing the ground after plowing and the harrowing of winter wheat in the spring do not increase wheat yields. Farmers of the Columbia Basin as a rule have been quick to adopt the farm practices recommended by the Branch Station.

As a direct result of the investigations of the Southern Oregon Branch Experiment Station, irrigation is being more generally practiced, two irrigation districts having recently been formed; thousands of acres of alfalfa are now treated with fertilizer following the station's demonstration of the value of sulfur as an alfalfa fertilizer. As a result of this work, alfalfa is also being widely grown on adobe soils where it was before unprofitable. Marked experimental results in the use of nitrate of soda as an orchard fertilizer have been obtained. The new cover crops, which have recently been introduced by the station, will make it possible to maintain the nitrogen supply in orchards without resorting to artificial fertilizer. The discovery of a new and much more efficient disinfectant for fire blight work will result in a saving of pear trees and labor amounting to hundreds of thousands of dollars annually, while the work with blight-resistant varieties and species of pears promises to revolutionize the pear industry.

Extensive experiments at the Umatilla Branch Station with different methods of applying water to the soils of that section have resulted in demonstrating the economy in labor and water of the border system which is now being rapidly adopted. Experiments with many varieties of trees for wind brakes and of vegetables, small fruits, and grass pastures, have shown interesting results.

The work of the Hood River Station is devoted almost exclusively to problems of importance to the orchard industry. Extremely interesting and valuable results have been obtained and the Station has the very cordial support of the entire community.

All the livestock industry and all the farming of irrigated valleys of Eastern Oregon together form the field of the Eastern Oregon Branch Experiment Station at Union. These important interests cannot adequately

be dealt with by the home Station, owing to its location at Corvallis. Our only means of contact, therefore, is through the branch station at Union. This station has already been of immense value to the agricultural interests of Eastern Oregon through many investigations, some of which have been so valuable that any one of them has more than paid for the entire cost of the station.

Practically all of the hulless barley grown in Union and Wallowa counties are varieties produced at this station. In localities where other hulless varieties are grown in competition with the station varieties, the latter, since they are much heavier yielders, usually command a larger price on the market.

The variety of wheat which has given such good results on the dry-land farms of Eastern Oregon was introduced by the Eastern Oregon Branch Experiment Station. It is of interest to note that this variety was first to reach the two-dollar mark in Chicago. This variety is a bearded wheat; from it the station is now evolving a new variety without the beards but with practically all the desirable characteristics of the parent variety.

The hog raisers of Eastern Oregon have generally used wheat instead of barley, under the impression that the former was much better feed. The Experiment Station has demonstrated that barley gives even better results than wheat in pig feeding, and since throughout the vast areas of Eastern Oregon barley yields much more than wheat the results of these investigations reduce the cost of pork production by just that percentage.

Many farmers fatten their hogs in small dry lots instead of running them on pasture, under the belief that too much exercise will be detrimental to easy fattening. The Experiment Station has demonstrated that instead of hindering fattening, alfalfa pasture increases the gains, makes a better finished hog, and thus lessens the cost from ten percent to twenty-five percent.

The station has also demonstrated that the use of chopped alfalfa hay for fattening cattle would produce gains forty percent greater than with long hay.

This station not only develops and demonstrates new methods but is the source of our only available information along certain lines. Two years ago when potatoes were worthless, the Station provided exact information as to their value for pork production and just how to use them. As a result of feeding experiments which have been carried on for several years, this station has furnished the only accurate information available in the Northwest on the cost and gains of fattening cattle on hay alone and on hay and grain, the amount of feed that can be produced on alfalfa and blue grass pastures, on the value of cut hay for fattening cattle, on the exact money value of shelter in fattening hogs, and the money value of all the different grains, tankage, alfalfa hay, alfalfa meal, cut alfalfa, field peas, and many other feeds for growing and fattening hogs.

While the positive results are the more striking and the more interesting, the negative results are none the less useful. Scores of very common farm practices have been thoroughly tried out at the station and found to be entirely wrong. Yet so firmly rooted have been many of these practices that tests have had to be repeated again and again to

drive home the necessity of a change of method. A fair example is the common practice of feeding hogs grain alone without supplement.

All of the work done is small in comparison with that now in progress, and the cessation or the curtailment of this work at the present time will not only render idle one hundred thousand dollars of equipment but will make worthless a great number of experiments now partly completed, accurate results from which can only be obtained, in most cases, by continuing the work through several years. For example, a number of new varieties of grain are about ready for distribution. To abandon the work now would be to lose all of the progress that has been made. There are also under way extensive tests with dfiferent methods of growing cattle. The final results of this test cannot be obtained until 1920 and closing the tests before that time would mean the complete loss of the work so far done.

BULLETINS ISSUED DURING THE BIENNIUM.

Bulletin No.

140—The Economical Use of Irrigation Water.
141—Report of the Hood River Branch Experiment Station.
142—The Culture of Small Fruits on Irrigated Sandy Land.
143—New Facts Regarding the Apple Scab Fungus.
144—Dry Farming Investigations at The Sherman County Branch Experiment Station.
145—The Evaporation of Prunes.
146—Pruning Investigations. Second Report.
147—Bark Beetles Infesting the Douglas Fir.
148—The Life-History and Control of the Rose-Leaf Hopper as an Apple Pest.
149—Vegetation and Reproduction with Special Reference to the Tomato.
150—Dry Farming Investigations at the Harney Branch Station.
151—A Chemical Examination of the Loganberry.
152—The Western Newt or Water Dog.
153—The Life-History and Control of the Pocket Gopher in the Willamette Valley.
154—Preliminary Report of Pear Harvesting and Storage Investigations in Rogue River Valley.
155—The Use of Pepsin as a Rennet Substitute in Cheddar Cheesemaking.

Respectfully submitted,

A. B. CORDLEY, Director.

REPORT OF THE EXTENSION SERVICE.

To the President of the College,

Sir: Pursuant to the provisions of the Act of Congress providing for cooperative extension work, I have the honor to submit herewith a report of the activities of the Extension Service of the Oregon Agricultural College from July 1, 1916, to July 1, 1918, together with a brief recommendation for future development.

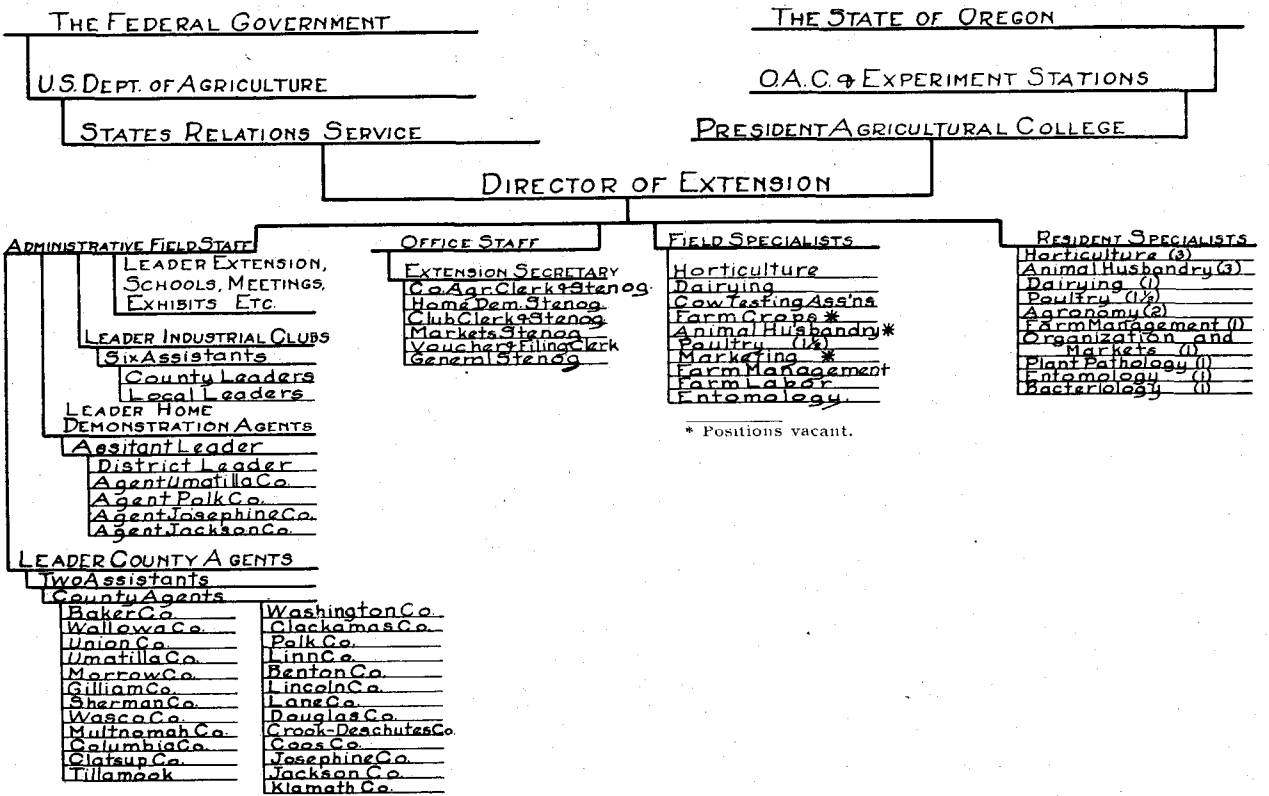
ORGANIZATION.

The Extension Service of the College was authorized by the Regents in 1911. The State Extension Act permitted the organization of the Service in 1913. The initiation of the present type of organization for Extension work was effected in 1914, upon the signing of the General Memorandum of Understanding with the States Relation Service of the United States Department of Agriculture. This cooperative agreement is possible through the terms of the Cooperative Extension Act of May 8, 1914, (Smith-Lever Act).

The Extension Service of the Oregon Agricultural College is charged with the duty of extending the instruction, information, and assistance of the College of Agriculture and Experiment Stations, and of the United States Department of Agriculture, to every portion of Oregon, and to all persons who are not in a position to undertake resident work. By the terms of the Cooperative Extension Act, emphasis is laid on agriculture and home economics, although any measures that may enrich the industrial or rural life of the State are given special attention and assistance.

All work which the United States Department of Agriculture may initiate or do within the State is, by the terms of the Memorandum of Understanding, placed under the direction of the Extension Service. The jurisdiction of the Extension Service includes, in addition to the above, all forms of off-campus instruction, and assistance in such subjects of the College curriculum as lend themselves to extension methods, or can be demonstrated and adapted to the direct needs of the people of the State. This plan of cooperative organization has brought to Oregon a wealth of new and valuable information, direct aid in administration, and large financial assistance. This has made possible greater economy and efficiency in the prosecution of Extension work, and has contrbiuted materially to the effective attacking of problems whose solution has meant an increased enrichment of rural home life.

There is presented herewith, in graphic form, the plan of Extension organization which shows the general relationships and interdependence of all the Extension Service. Starting with the Federal Government and the State of Oregon as the sources of financial support, there is next shown the places from which information and other assistance is secured; then the administrative heads of the work of the Department of Agriculture and of the Agricultural College; next the centralization of the organization in the Extension office; and finally the plan of distribution of cooperative effort throughout the State.



* Positions vacant.

To secure the financial assistance provided by the Cooperative Agricultural Extension Act of Congress (Smith-Lever Act), all Extension work must be on a written project basis. The projects so prepared must be agreed to by the department concerned and approved by the Director of Extension, the President of the College, and the Secretary of Agriculture. Should outside organizations be involved, such organizations become party to these project agreements. The probability of unwise or of wasteful expenditure of state or national funds in a field so large and among such a multiplicity of problems is thus prevented.

The combined experience of the thirty-three northern and western states has shown that the type of Extension organization here outlined has proved most successful, and the project basis of work productive of the most satisfactory results.

FINANCIAL SUPPORT.

The Smith-Lever Act, passed by Congress in 1914, provides $10,000.00 a year for each state accepting the further provisions of the Act. A definite and steady yearly increase above the original $10,000.00 is received, provided the state meets this increase dollar for dollar. For the year July 1, 1914, to June 30, 1915, Oregon received from the federal treasury $10,000.00 for cooperative Extension work. Oregon's allotment of funds from the United States treasury during the past biennium was $43,713.92. For the next biennium the allotment to Oregon under this Act, should the State provide the amount required in excess of $20,000.00, will be $58,535.12. This fund provided by the states in meeting the terms of the Smith-Lever Act is called State Smith-Lever fund. During the past biennium the increasing amount necessary to provide State Smith-Lever funds has been met by taking from the $25,000.00 State Educational Extension fund the sum in excess of $10,000.00.

For the coming biennium the same method of meeting this increase is impracticable. It would leave nothing with which to conduct the general Extension work of the State as contemplated in Section 1, Chapter 110, General Laws of Oregon. Moreover, when this fund is so applied, it is subject to the same limitations and restrictions in expenditure as the Federal Smith-Lever fund, and cannot be used in Extension work "in established schools of the State, for farmers' institutes, demonstration trains, exhibits at fairs," or in similar ways. The restrictions governing the expenditure of both Federal and State Smith-Lever funds, in conformity to the terms of the Smith-Lever Act and to statements and instructions issued by the States Relations Service of the United States Deparment of Agriculture in 1914, are being more rigidly enforced each year.

It is very essential, therefore, that the State Legislature not only continue intact the $25,000.00 fund already available, but make provision for permanently meeting the gradually increasing demand of Smith-Lever offset, and thus perpetuate to the Commonwealth the benefits and advantages of State and Federal Extension work.

To do this would require for the ensuing biennium a legislative appropriation of $38,535.12. This would provide the State Smith-Lever fund until December 31, 1920, only, or until the next regular legislative session. It would appear to be evidence of much greater business foresight for the

State Legislature to provide not only the amount of State Smith-Lever fund for the coming bi-ennium, but, through an enactment making an appropriation $3,705.30 larger each year (up to and including 1923, when the maximum is reached) than the amount required the preceding year, to provide permanently for Oregon the maximum total allotments from the federal treasury, as available under the Smith-Lever Act. The amount of yearly increase ($3,705.30) is based on the rural population as determined by the fourteenth census. The census of 1920 may show a larger rural population in Oregon, which will entitle the State to a still larger yearly increase.

The funds used in the conduct of the Extension Service come from sources as follows:

FROM THE STATE

General Educational Extension (now including State Smith-Lever)	$25,000.00
Cooperative Farm Demonstration (to duplicate funds from the United States Department of Agriculture)	15,000.00
For County Agent Work (to duplicate county funds)	39,850.00

FROM THE GOVERNMENT

Federal Smith-Lever	25,562.00
Cooperative Farm Demonstration (duplicated in part by State funds)	15,700.00
States Relations Service	13,828.00
War Emergency Funds	80,000.00

CHARACTER AND VALUE OF EXTENSION WORK.

The extension work is organized and conducted under the following sixteen projects:

1. Administration.
2. Publications.
3. Extension Schools, Meetings, Fairs and Exhibits.
4. County Agents.
5. Home Demonstration Agents.
6. Boys' and Girls' Clubs.
7. Pig Clubs.
8. Horticulture.
9. Animal Husbandry.
10. Dairying.
11. Poultry.
12. Agronomy.
13. Farm Management Demonstrations.
14. Organizations and Markets.
15. Botany, Plant Pathology, Bacteriology, Entomology.
16. Farm Labor.

In addition to these formal projects, approved by the United States Department of Agriculture, important service and helpful assistance are rendered in other lines of work to as great an extent as limited general funds permit.

The Extension staff, devoting full time to the work, increased during the biennium from 33 to 65 persons. The number giving from one-fifth to one-half time to the work remained about stationary, and includes some 20 members of the resident College faculty. Many additional members of the resident faculty, moreover, devote from a day to a few weeks each year to Extension work.

It has been the aim and the intention, in defining the projects for the biennium, to put into operation and to emphasize those branches of Extension service that are most fundamental, and that reach and serve the largest number of people. To this end, the work of each project leader is outlined in detail at the beginning of the year. Conditions to be met, results to be accomplished, methods of procedure, and territory covered are thus got clearly in mind. Detailed budgets are prepared covering the cost of each line of work, so that each worker knows as definitely as possible, in advance, his entire year's work. The Director of Extension then holds the project leader responsible for the carrying out of the project details and for definite results from the work at the close of the year. We believe this plan provides for the greatest possible economy and highest efficiency in the service rendered.

There follows a very brief statement giving some achievement of value for each project in force during the biennium. A detailed report of each project, giving a full statement of the work, and covering every Extension activity, is on file in the Extension office.

Administration. The resignation of Director R. D. Hetzel, about the middle of the biennium, and the instating of the present Director, very naturally resulted in some slight changes in organization and in the direction of the work. Conditions arising because of war emergencies also had a large influence on work planned and work in progress. Every effort has been directed toward meeting the Nation's immediate needs.

An especially helpful and desirable administrative measure, accomplished during the biennium, is the unification, within those counties wnere two or all are represented, of the main lines of Extension service—County Agent, Home Demonstration Agent, and Boys' and Girls' Club work. Instead of each working as a wholly separate unit, without reference to the plans or operation of the others, they now work through a combined county organization. The work of each is the complement of and supplement to that of the others. Although this united plan has been in operation less than a year, the increased interest and enlarged effect are clearly apparent. There is every indication that the final results will be correspondingly larger and more satisfactory.

Since assuming direction of the work, the Director has spent 178 days in the field; attended and addressed 83 meetings; held 54 Extension staff and faculty conferences, 1614 office conferences with staff members and others relative to the Extension work, and 49 conferences with representatives of the various bureaus and departments of the United States Department of Agriculture. During the same period the Director has dictated and mailed 7708 letters in response to inquiries received and on matters pertaining to the conduct of the work.

Publications. The total number of Extension publications issued during the biennium is 180. This does not include any mimeographed material, three emergency war circulars with an edition of 22,000, or the Extension News. The following table sets out in detail the publications issued, showing subjects covered, number in each subject, number of pages, total

of all editions, and cost, by years. A summary total and a grand total for the biennium are also given:

Subjects	Year	No. Publications	Total Pages	Total Cuts	Total Editions	Cost all Editions
Industrial Club Work	1917	49	194	3	151,550	$ 689.49
	1918	62	240	3	108,700	657.90
Horticulture	1917	12	148	15	68,000	768.38
	1918	7	52	5	68,500	632.32
Home Economics	1917	9	106	29	61,500	662.59
	1918	10	78	1	70,000	627.37
Farm Crops	1917	4	20	2	19,500	74.51
	1918	1	4	1	1,000	11.96
Poultry	1917	5	68	34	25,000	274.69
	1918	1	4	..	5,000	20.53
Dairying	1917	1	16	..	2,500	44.68
	1918	2	24	16	8,000	155.31
Rodent Control	1917	2	8	3	6,000	30.94
	1918	1	4	..	3,000	14.45
Entomology	1917	2	8	3	5,000	43.78
	1918	..	..	..	.....	.....
Organization and Markets	1917	1	16	..	5,000	88.05
	1918	..	..	..	.....	.....
Plant Diseases	1917	1	24	18	5,000	153.03
	1918	1	2	..	5,000	14.66
Animal Husbandry	1917	..	..	..	.....	.....
	1918	1	28	14	5,000	159.63
Miscellaneous	1917	4	5	..	27,000	80.70
	1918	4	64	13	38,500	444.61
Totals	1917	90	613	107	376,050	2,910.84
	1918	90	504	53	312,700	2,738.74
Grand Totals		180	1,117	160	688,750	$5,649.58

Extension Schools, Farmers' Week, Fairs, Institutes, Meetings, etc. During the biennium 15 regular Extension schools were held, serving 8527 people in 17 counties. An evidence of the appreciation of the people of the State for this type of service is shown in the fact that the number of schools requested during the second year of the biennium was double that of the first. The average length of the schools at each point was also increased.

Among the most successful sessions held were the Grain Grading schools of Eastern Oregon, the Pruning school of Hood River, and the Irrigation school at Redmond. The general sentiment in connection with the Extension schools is shown by the following resolution:

> "Whereas, the benefits of the central Oregon Irrigation school, already derived need to be extended and maintained, therefore we, the registrants of this school, respectfully request that necessary arrangements be made to insure the continuance of the school as an annual event."

The two Farmers' Weeks of the biennium assembled at the College a total of 3146 men and women, representing every county of the State. It is interesting to note that, while the attendance was greater in 1916, the registrants of 1917 had a more definite object in coming. Out of a total registration of 1717 in 1916, 399 were undecided or very indefinite in their choice of subjects. In 1917, with an attendance of 1429, but 203 were undecided. In the six subjects most commonly chosen, the registration for the two years was as follows:

Year	Animal Husbandry	Commerce	Dairy	General Agriculture	Home Economics	Horticulture
1916	23	34	29	318	557	11
1917	31	20	27	329	512	6

The Extension staff has rendered service in demonstration judging at fairs as follows:

Year	Number Fairs	Counties	People Met	Number Staff Serving
1916	44	29	18,429	36
1917	35	29	22,640	25

The exhibits of the Oregon Agricultural College at the State Fair, as arranged and supervised by the Extension Service, have been exceptional for their educational value. In 1916, the Home Economics Department, the Eastern Oregon Experiment Station, the departments of Soils, Entomology, Plant Pathology, and Poultry participated. In 1917, the College was represented in Home Economics, Horticulture, Entomology, Farm Crops, Animal Husbandry, Boys' and Girls' Clubs, and Dairying. Similar educational exhibits were placed at the National Apple Show, both in 1916 and in 1917, and at the Land Products Show in 1917. At the Apple Show the Horticultural Department, in a most unique way, emphasized "Eat the right apple at the right time," and "A comparison of the average amount of fruit consumed by the American family 15 years ago and now," respectively.

Telegraphic inquiry from the Secretary of Agriculture asking for a series of patriotic meetings, at which the existing situation as regards agricultural production and war needs should be presented, resulted in a schedule of such meetings being arranged. These meetings were in two series, covering both Eastern and Western Oregon. In all, about 30 points were visited by the speakers assigned, Dr. Kerr and Captain Humphreys. The effect of these meetings was plainly apparent in added response to calls for increased production, and in subscriptions to the Third Liberty Loan.

Other activities falling under this project include the giving of 20 commencement addresses at high schools and thus meeting 10,395 people; attendance and addresses at 46 teachers' institutes within the State; a series of 20 garden lectures to a registered class of 100 at Meier & Frank's auditorium, Portland; a boys' training school at Multnomah County Farm; and three demonstration trains, one in conjunction with the Bureau of Animal Industry, illustrating and explaining wool, and the others Food Preparedness trains.

Correspondence courses and reading circle work are also included. All of the above are reported in detail in the more extended reports on file in the Extension office.

County Agents. The keystone of effective Extension Service is the county agent and the county organization. Systematic effort, well directed and as a unit throughout the county in any line of agricultural betterment or rural improvement, is thus made possible and highly effective. Then, too, the county agent is the recognized medium within the county and throughout the State through which the United States Department of Agriculture in any of its bureaus or departments may secure information for the Nation's welfare, or assist the State in the solution of pest control or crop improvement. He is the paid servant of the county.

His lines of activity are chosen by a representative, democratic, administrative body within the county—the county farm bureau. The complete farm bureau embraces representatives from every community in the

county. Through local and county conferences the members of this bureau determine a complete "program of work" for the year. This program, which usually includes more than the work of the county agent, since it comprehends all phases of extension activity, becomes the basis for the budget item which the county acts upon in considering its appropriation for county agent. Adopted by the farm bureau, and endorsed by the county board through an appropriation, this program thus becomes the basis for expenditures of the county, state, and federal funds available for the county agent work of any particular county. The county agent holds no office in the farm bureau, but helps to direct and carry on its work. He is the local representative of the co-partnership composed of the Department of Agriculture, the Oregon Agricultural College, and the county.

Oregon has given generous response during the biennium to the direct request of the Secretary of Agriculture for the establishment of a county agent in every agricultural county, in order that the food production interests of the Nation in the war emergency could be best cared for and with greatest dispatch. At the opening of the biennium there were 12 county agents at work in the State; at the close of the period, 25 counties are thus served. All the important agricultural counties of Western Oregon and the coast territory, except Yamhill and Marion, have, through the cooperative financial assistance of the United States Department of Agriculture, the State and the county, employed an agent. Most of the Columbia counties also have responded to the Nation's call in this respect, and only the large Central Oregon or the broken range counties are yet unsupplied. The detailed report of the County Agent Leader, on file in the Extension office, gives in a most complete and interesting way the development of this branch of Extension Service. The limits of this report will permit mention of a very few concrete instances of service rendered the State and Nation by these energetic and efficient workers.

War service has engaged the attention of the county agents for the major part of the biennium. This service may be grouped under five heads; namely, (1) increased food production, (2) government surveys on war necessities, (3) location and distribution of the best seed stocks, (4) the farm labor problem, and (5) organized rodent and pest destruction for crop protection.

The increase of 700,000 bushels of cereals, beans, and potatoes in Oregon in 1918 is in a large measure a result of county agent effort. This is shown by the fact that a 50 percent increase in wheat acreage was secured in county agent counties, as against 33 percent in non-agent counties. Results in other food production lines show similar differences.

During the biennium the agents have made or assisted in six surveys at the request of the federal government. These include, (1) the most exhaustive crop, livestock, and labor survey ever made; (2) a farm machinery price survey; (3) a survey of threshing machine owners and operators; (4) a monthly survey and report on grains threshed; (5) a survey on use of nitrate fertilizers; and (6) a survey of surplus or shortage of skilled farm workers.

Survey No. 1 was made in close cooperation with the State Farm Help Specialist. A most striking evidence of the value of the agents

in this type of work is shown in the following summary. (a) Gives returns from 22 county agent counties; (b) returns from two counties with county agent organization but no agent; (c) returns from 12 counties without county agent or agent organization.

	Number Farms	Survey Blanks Returned	Percent Returned
(a)	27,109	13,989	51.6
(b)	4,969	2,327	46.8
(c)	9,517	2,970	31.0

County agents rendered very great service in food production by locating and helping to secure the best seed obtainable in spring and winter wheat, oats, corn, rye, barley, beans, and potatoes. The condensed table below gives evidence of the effectiveness of such service.

Total number farmers assisted in securing seed of above crops	2,697
Total number bushels of all such seed located or secured for farmers	81,363
Total additional acres seeded as a result of Production Campaign	65,349
Total bushels produced on additional acres seeded	699,005
Bushels seed corn saved as result of advice and assistance of county agents	4,864
Persons directly assisted in garden work	3,217

The effective work done in food conservation by county agents and through the county agent organization in the destruction of harmful rodents, moles, squirrels, gophers, etc., can be partly appreciated by noting the fact that 7,083 farmers cooperated in poisoning these pests on 709,600 acres, using about 30 tons of poison, but saving crops to the value of $645,550.00. In one county alone the county agent was instrumental in poisoning the rodents over 275,000 acres. He had 800 assistants in the work and they used 5 tons of poisoned grain.

In the food production through preventive measures, the mole destruction campaign offers some most interesting data because of the commercial value of the pelts. The following table, taken from the report of the State Leader of County Agents, serves to illustrate:

County	Mole Pelts Pooled by Agent	Amount Received for Pelts Sold	Value of Crops Saved
Benton	809	$ 225.00	$ 809.00
Clackamas	2,537	590.00	2,537.00
Columbia	1,400	336.00	1,400.00
Josephine	200	50.00	200.00
Polk	315	73.00	315.00
Tillamook	900	225.00	900.00
Washington	4,389	1,348.00	4,389.00
Coos	900	225.00	900.00
Total	11,450	$3,072.00	$11,450.00

It is definitely known that two Portland firms have this season purchased 22,000 mole pelts. The actual saving, therefore, is not completely covered in the above table, which is based on the statement of the United States Bureau of Biological Survey that one mole will destroy more than a dollar's worth of food in a season.

Space permits mention only in the briefest way of the work of the county agents in land reclamation, soil improvement, bulk handling, labor supplied, and numerous other activities that contribute directly to the advancement of country life and to financial betterment. County agents have been instrumental in the formation and establishment of 6 public and 26 private irrigation systems, serving a total of 45,271 acres; also 7 public and 47 private drainage districts, covering 23,175 acres.

One agent, in an Eastern Oregon county, profiting by the extensive researches made by the Southern Oregon Experiment Station in the use of crude sulfur to increase the yield of alfalfa, has demonstrated that the application of 100 pounds of sulfur to the acre on alfalfa meadows in his county has doubled the yield of alfalfa. As a result of this he has organized an Alfalfa-Sulfur Club, each member agreeing to use from 500 to 24,000 pounds of sulfur on his alfalfa fields. This has resulted in the placing of the largest cooperative order for sulfur for fertilizing purposes ever made—7 car loads. The increase in alfalfa from its use means $80,000.00 additional crop produced. The pooling of the orders resulted in a $3,500.00 saving to the farmers of Crook and Deschutes counties.

The county agents have done noteworthy work in livestock improvement during the biennium. Through their direct efforts pure-bred livestock as follows has been purchased and used:

Stallions	2
Bulls	160
Cows	350
Rams	70
Boars	120
Total	702

Work in prevention of livestock disease is indicated in the demonstration vaccination of 13,625 calves for blackleg and septicemia.

We regret that a full account of the work of the County Agent Leader, his assistants, and the several agents cannot be given here. Such an account, however, is on file in the Extension office.

Home Demonstration Agents. The progress made in Home Economics during the biennium has been most gratifying. Beginning the biennium with a single worker, the work has enlarged and expanded until the close of the period finds ten workers in the field. National emergency conditions demanded the largest possible conservation and greatest efficiency in the home, as elsewhere. Federal emergency appropriations made possible the placing of seven district workers and the employment of additional administrative assistants. This permitted 18 counties to organize and, under the guidance of the Extension representative, take concerted action in conservation lines. The state leaders and home demonstration agents have put on special state-wide campaigns of national significance, as follows: Dairy, Wheatless, Save Sugar, Food Survey, War Garden, "Can the Cockerel," and Child Welfare.

The limits of this report will permit the telling of but a tithe of the service already rendered. A report of the work of one home demonstration agent will serve as illustration. Through her efforts, in only 500 families in the county, a total of 108,507 quarts of fruits, vegetables, and meats were preserved, with a commercial value of $33,512.97. This amount was largely in excess of the record for previous years. Add to this 12,678 pounds of dried fruits and vegetables, worth $1,897.92; 3,180 gallons of pickled and brined provisions; 8,493 quarts of preserves; 29,715 glasses of jelly; 597 quarts of fruit juice, and 642 dozen eggs preserved, with the returns from the campaign yet incomplete, and the importance of the work becomes apparent. A most conservative estimate shows the net money value of this effort to the county to approximate $6,000.00.

The home demonstration agent of another district reports 98 percent of the women of the district pledged for conservation; 88 war-bread demonstrations; 1000 dozen eggs preserved in water glass; 50 home dryers made and used; 20 fireless cookers introduced and in service; 30 schools serving hot lunches to the pupils, following a hot-lunch campaign; and 50 women keeping household accounts and on a budget system.

A summary of the work of the agents shows 14 home departments in farm bureaus organized, membership 302; home economics clubs organized, 139, membership 3,327; demonstrations given, 370, attendance 14,048; meetings held, 970, attendance 29,303.

A statistical record of the State Leader and assistants shows 572 days spent in supervisory and organization work in the field; 38 county and community organization meetings held, and 183 field conferences, in addition to the preparation of a number of study outlines, conservation circulars and bulletins, press articles and leaflets which have been distributed to the number of 42,244.

Industrial Club Work. The Boys' and Girls' Club work has steadily advanced in importance and interest during the biennium. The encouragement and recognition given this branch of Extension Service by the federal government, together with its direct application in meeting the national food emergency, have attracted our young people, and have invested the work with a dignity, value, and respect unappreciated before by most adults. We can give herewith but a very incomplete showing of the effect and value of this work. It deserves publication in its entirety.

The most noteworthy accomplishment during the biennium is the establishment in 16 counties of paid county club leaders, on a fifty-fifty basis, to continue the necessary supervision and direction of the work during the summer months when schools are not in session. The success of this plan has resulted in the employment of year-around county club leaders in seven counties in Oregon. These workers will devote their entire time to organization, direction, and supervision of Club activities within their respective counties. With a county program of work, which embraces county agents, home demonstration agents, and club work, with county leaders in each line, even more satisfactory returns are expected.

Club work is closely linked to the State school system. Two cooperatively employed full-time Club workers represent directly the office of the State Superintendent of Public Instruction. Moreover, the State Superintendent's office conducts the annual Boys' and Girls' State Fair Camp, attendance at which is won in each county through special achievement in the several Club projects.

The epidemic of Spanish influenza, which closed the schools of the State, has also prevented the receipt of the final reports from Club members. The achievements of individual Club members given herewith are, therefore, taken largely from the results of the first year of the biennium. More striking instances can be secured from the past season's work.

Twelve Club projects were conducted during the biennium. While less than one-quarter of the final reports for the past year have been returned, the summary of results now on file is as follows:

Project	*Enrollment	Value of Product	Cost of Product	Profit
Corn	578	$ 2,135.00	$ 365.00	$ 1,770.00
Potato	710	1,325.00	285.00	1,040.00
Garden	3,739	2,023.00	831.00	1,192.00
Canning	1,048	1,804.00	950.00	854.00
Poultry	1,309	3,138.00	1,473.00	1,664.00
Baking	873	489.00	454.00	34.00
Sewing	2,913	905.00	649.00	256.00
Handicraft	482	185.00	127.00	57.00
Belgian Hare	1,069	2,331.00	1,343.00	988.00
Food Preparation	791	546.00	221.00	325.00
Pork	1,280	17,484.00	9,652.00	7,831.00
Sheep	232	1,484.00	546.00	938.00
Total	15,024	$33,849.00	$16,896.00	$16,949.00

In the city of Portland alone there is a total of 5,227 Club members of which 2537 belong to Garden Clubs.

As a single illustration of the money value accruing from Club work we give the financial report of a Club member residing at 928 Mallory Avenue, Portland.

Size of Garden 100 by 325 Feet.

KIND AND AMOUNT OF PRODUCE		
Potatoes, 2,500 lbs. at 2½c	$62.50	
Cabbage, 400 lbs. at 1¾c	7.00	
Corn, 150 lbs. at 4c	6.00	
Beans, 50 lbs. at 10c	5.00	
8 crates tomatoes	3.20	
Carrots	1.50	
1 sack dry onions	2.00	
50 lbs. seed onions	4.00	
7 citrons	1.40	
60 sunflower heads	2.00	
30 crates cucumbers	3.00	
9 pumpkins	1.80	
12 squash	.60	
Total		$100.00
EXPENSES INCURRED		
Rent of garden	$ 7.40	
Plowing	9.00	
Seed	7.45	
Labor	25.00	
Total		48.85
Net profit		$ 51.15

There were canned for home use from this garden, 48 quarts of tomatoes, 48 quarts of beans, 12 quarts of corn, 60 quarts of pickles, 36 quarts of chili sauce, and 12 quarts of citron.

Reports similar to the above are on file for nearly every project.

Horticulture. Results of the projected horticultural work were given in detail in the Director's annual report for 1917. The work for the remainder of the biennium is, in large measure, a continuation of that already reported.

A continuation of the spraying demonstrations for the control of apple pests and diseases, in different localities than previously reported, proves convincingly the value of spraying as indicated below:

*Exclusive of Portland Clubs.

Area sprayed, 3 acres; trees 11 years old, 55 to the acre. Sprayed 5 times during the season. Cost of spray materials and labor, $18.22 an acre.

Results secured: Clean fruit, 80 percent; remainder scabby, russet, wormy, or injured. Check trees left for contrast showed clean fruit, 8 percent; injured, 92 percent.

On the sprayed basis and a yield of 200 boxes an acre, there were produced:

160 boxes clean fruit at $1.50	$240.00
28 boxes scabby fruit at 65c	18.20
16 boxes russet fruit at $1.00	16.00
4 boxes wormy fruit at 50c	2.00
	$276.20

On the same basis the unsprayed trees produced $24.00 worth of clean fruit, $93.60 of scabby, and $40.00 russet and wormy, or a total of $157.60. The gain for spraying, therefore, would be $100.38 an acre.

These spraying demonstrations have directly influenced the spraying practice of 2,058 acres of apple orchards.

The Hood River Pruning school, already mentioned, resulted in the adoption of advanced pruning practices on over 1,200 acres of orchard in that county alone.

In the pruning work elsewhere throughout the State, 6,935 acres of orchard have been influenced, and 1,085 people have actively cooperated. The miscellaneous service rendered has covered a diversity of matters, among which were three successful field excursions for apple, prune, and walnut growers, respectively.

During the biennium the horticultural interests have been served in 77 localities of the State, in cooperation with 2,672 people, and influencing directly the production of 17,383 crop acres.

Animal Husbandry. The Extension service rendered in animal husbandry during the biennium has been possible only through the strength and resourcefulness of the Agricultural College department. No regular field specialist has been available. The department representatives have done over 150 days field work, held 45 livestock meetings, met and assisted directly or indirectly about 7,000 stockmen and farmers, in addition to the numerous letters written and inquiries answered on livestock topics.

In cooperation with the Bureau of Animal Industry, a wool demonstration car was operated in the Eastern Oregon counties most interested. This trip required two weeks, ten stops at the most favorable points being made. The increased interest in sheep and wool and improvement of the industry, even under the most trying conditions, attest the value of this work.

Dairying. Dairy Extension work covers all branches of the dairy industry, production, manufacturing, and marketing. Two full-time specialists and representatives of the College department conduct the work. The cash returns for dairy products in Oregon are above $20,000,000.00 annually, exclusive of dairy cattle. It is impossible, therefore, in this condensed report to do more than mention a few of the results of the work of the biennium.

The field work includes feeding, breeding, record keeping, construction of farm buildings and silos, organization of testing associations, bull associations and marketing associations, assistance to creameries, and, in fact, the rendering of help in the solution of any dairy problem.

A few of many concrete results secured during the biennium follow: Seven cow-testing associations with 3,270 cows, organized and at work; 23 silos erected and in use; 74 head of pure-bred cattle, representing three breeds, purchased for six different associations or individuals; 14 pure-bred bulls purchased for herd sires; 181 dairy meetings held; 480 farm visits made on specific problems; 5,822 letters written in reply to dairy inquiries; 53 visits to creameries, and 31 conferences with boards of directors on creamery problems.

Poultry. Extension service in poultry husbandry at the close of the biennium is cared for by two specialists, one giving full and one half time. During a part of the biennium no field specialist was employed, and the work was limited to the correspondence handled by the head of the Poultry department.

The projects in force at the close of the biennium include Organization, Culling and Selecting, Poultry Farm Demonstrations, and Poultry Records. These will be conducted cooperatively, using the county agent and the county organization to assist.

During the biennium over 9,000 people have been given direct assistance in some phase of poultry production. Culling demonstrations have been the most popular line of work, and these have resulted in the sale of hundreds of unprofitable fowls.

Agronomy. Extension service in agronomy includes that rendered in farm crops, irrigation and drainage, soils, and farm mechanics. There is no Extension project in which there is a wider or more insistent demand for help. This is clearly shown by the summary of the report of the farm crops service of the past year which follows:

Grain elevator and bulk handling meetings	21
Grain grading schools	4
Tractor demonstrations	2
Field seed certification	9
Conference and special meetings	14
General meetings	numerous
Correspondence (letters)	2,250
Press bulletins and news articles	55
Days in field on staple crop problems	220

The elevator meetings noted above represent work in 7 counties. The work consisted, first, in showing the advantages of bulk handling of grain; second, preventing wasteful expenditure of money on elevators of too large capacity. The second phase of this work resulted in a reduction of size in seven of the elevators projected, or a direct saving of well over $100,000.00.

In drainage and irrigation 110 drainage systems were designed or surveyed during the biennium, the tile drains so designed totalling 90 miles in length. These systems, too, have been largely installed. They serve 8,434 acres of land. When completely installed and working, the increase in production from such land approximates $80,000.00. Fifteen drainage projects were organized, including 84,850 acres. Construction work is already done on about 16,000 acres. Ten irrigation projects have been

given assistance. The area covered is 22,500 acres. Six irrigation pumping plants to serve 200 acres have been installed. Equally satisfactory returns have been received in the work on soils.

Farm Management Demonstrations. In farm management demonstrations less service has been rendered than desirable because of the resignation of H. F. Keyes early in the biennium, and later because of the transfer of W. L. Kadderly to the position of Assistant County Agent Leader. The demand for farm management service, however, has grown tremendously, added interest and impetus being given by the income tax law. This work applies directly to the filing of correct income tax schedules.

Through the cooperation of county agents and county farm bureaus the work has been sustained. Farmers in 21 counties have been given assistance; 512 one-year and 87 two-year farm analysis records have been taken; 172 records have been personally analyzed and corrected to farmers' needs; 743 farmers are being helped in keeping accounts; 95 farmers have been given other definite assistance in farm management, and 32 farmers have been helped to complete and balance the year's business.

The disturbed work of the biennium shows but 111 days spent in the field, 29 meetings, 109 conferences, 384 farm visits, and a total of 1277 people met directly in the prosecution of the work. The securing of an experienced leader, the county agents of ten counties making this a part of their program of work for the next year, and the cordial support given the work by the bankers of the State make it safe to predict a more satisfactory report for the coming biennium.

Organization and Markets. The field work in this branch of Extension service has been interrupted during the biennium by the transfer of G. L. Hurd to the federal Bureau of Markets, and the transfer of F. L. Ballard to the position of Assistant County Agent Leader.

The work of the biennium has included two lines only—investigation and organization. The two projects of investigation were marketing of dairy products and marketing of potatoes. On these a progress report only has been rendered. War conditions made it advisable to abandon temporarily the investigational projects.

Very active service has been rendered in organization. The Deschutes Valley Potato Growers' Association, almost immediately after the final organization meeting, sold 11 cars of fancy potatoes at 35 cents a hundred above the best individual price offered or received. This Association of some 50 potato growers will produce, grade into four grades, and market their crop.

War conditions brought about a serious shortage of grain sacks, and organization for bulk handling became imperative. Cooperation was effected with the United States Grain Standardization office and the College department of Farm Crops in conducting a bulk-handling campaign. The first part was a vigorous organization campaign for immediate results; the second part, a campaign to awaken interest and provide for definite results later. Farm storage was emphasized in both halves of the campaign. As soon as the Field Specialist began this work, the demand for his services far exceeded the time available. Meetings were

held at 25 points in Eastern Oregon. At 17 of these points elevator companies were incorporated, all, with one exception, under the straight corporation law of Oregon.

The counties thus served include Union, Baker, Morrow, Gilliam, and Wasco, each at two points; Wallowa and Umatilla, each one point; and Sherman, five points. The construction of the elevators is already entirely or nearly completed at nine of these places.

Other organization service includes that rendered the county agent of Baker County in a potato growers' association, the Rockhill Telephone Company, the Sherwood Farmers' Exchange, and others.

Following the elevator organization work, the installation of a uniform accounting system, in cooperation with the United States Bureau of Markets, was advanced and will doubtless be adopted by the 30 farmers' elevators of the State. With the original elevator capacity of Oregon one and one-fourth million bushels of grain, and the average annual crop thirty-five million bushels, the value of this organization and construction work by the Extension service may be appreciated.

Much additional work was done throughout the biennium of which a complete record is on file.

Botany, Plant Pathology, Bacteriology, Entomology, Etc. The results of Extension service in these natural sciences are less apparent than in some of the preceding work. During the biennium, however, the total financial saving resulting from this work reaches an immense figure.

In bacteriology the manufacture and distribution of legume cultures are of incalculable value, yet to measure this service in dollars is difficult. The inspection of dairies in the State, in cooperation with the State Food and Dairy Commissioner, is also difficult to measure by a money standard, but the results in health and sanitation are immeasurable.

The plant disease survey and control, the potato inspection and certification, and similar lines of work under plant pathology, are more generally recognized and the results more easily measured. In smut control and eradication, the field men reached 6,421 farmers direct, held 122 meetings, gave 150 seed treatment demonstrations, distributed 5,619 circulars giving treatment directions, and were instrumental in placing 1000 smut posters in conspicuous public places.

In entomology the continued service in the control of clover and garden pests, the demonstrations in the reduction of aphis damage through "aphiddozers," and the most successful campaign in Harney County in the control of grasshoppers, are among the outstanding lines of work of the biennium.

Farm Labor. War conditions made the establishment of a Farm Labor Specialist a necessity in the Extension Service organization. This phase of our work, therefore, does not cover the entire biennium, but dates only from November 3, 1917. The work is cooperative with the office of Farm Management of the United States Department of Agriculture.

At the suggestion of the United States Department of Agriculture, the office of the Farm Labor Specialist was located in Portland, although his work is directed through the Extension office. Through the courtesy of the Portland Chamber of Commerce an office room, fully equipped,

in the Oregon Building, was provided. The Chamber of Commerce, too, has rendered invaluable assistance in other ways, without which much of the work done would have been impossible.

The first large undertaking was the crop and labor survey, to which we have referred under County Agents. This survey was made in cooperation with the State Labor Commissioner, and is unquestionably the most exhaustive survey of the State's agricultural resources ever made. In 22 counties the survey was made by the county agents through their county councils; in two counties, the work was done by county agent organizations; in one county, a volunteer committee selected by the Farm Labor Specialist was responsible for the returns, and in 11 counties, the work was handled through other forces. The average returns secured through these agencies have already been given under County Agents. Some exceptions to the averages are worthy of mention. The Jefferson County survey was taken by a committee of three selected by the Farm Help Specialist. They secured reports from over 75 percent of the farms of the County. Marion County, containing, with one exception, more farms than any other county of the State, returned only a 15 percent report. Wallowa, a county-agent county, returned an 88.8 percent report, the highest in the State. Sixty percent of the producing farms of the State, with a total area of 5,631,254 acres, reported. The summarizing of all these reports was made possible by the cooperation of the commercial students of the Salem high school. One hundred and one students voluntarily, under the direction of Mr. J. W. Brewer,, devoted an entire week to this work. This report has already been published.

Two wage-scale meetings have been held, at which both spring and fall wages were agreed upon, to the satisfaction of both employer and employee.

A somewhat drastic sample ordinance, dealing with idlers, was suggested to the towns of the State. This ordinance was enacted and enforced in 53 towns.

Oregon farms and orchards have in the past depended largely on seasonal labor from manufacturing centers, saw mills, etc. The call to shipyards this year prevented this usual supply of transient help, and the situation was further aggravated by the large number of country boys and farm operatives who entered military service. The necessary help in strawberry, raspberry, loganberry, and cherry picking was provided through the Boys' Woking Reserve and the Women's Farm Reserve. One thousand three hundred and twenty boys, women, and girls were placed directly in these harvest fields. Their total subsistence cost was $4,383.32, the wages earned $10,325.68, and the value of the crops harvested $26,011.36. In addition to this help supplied, there were 500 professional men, clerks, city employees, etc., who signed an agreement to go to the harvest fields on call. Almost 50 percent of these spent their vacation period assisting in crop harvest.

The State Director of the United States Department of Labor writes to the Farm Labor Specialist: "We have more than doubled our farm placement this year, and much of our success has been due to your aid." As these offices worked in the closest harmony throughout, and without duplication, it is easy to see the far-reaching effect of this work.

The Extension Farm Labor Specialist concludes his report by saying: "At no time throughout the past season has there been any serious shortage of farm labor. * * * If the same cooperation is accorded the coming year as given during the past, it will not be difficult to meet the situation."

Engineering Extension. Under ordinary conditions we would report engineering extension under Extension Schools. The events of the past year, however, have so advanced this work, and the demands for larger service in this line are so great, that it is accorded this special recognition.

Through the assistance of George M. Cornwall, some three years ago, engineering extension was attempted. During the past biennium the work has been fully established, until now it goes thoroughly into the technique of engineering and leads to professional standing. As an evidence of the success of the work, and in support of the request for still greater enlargement, the record of recognition of those having taken the work is given:

Mr. B advanced from local position paying $1,620.00 to traveling inspector, United States Fleet Corporation, at $3,000.00.

Mr. D advanced from local position at $1,500.00 to inspector, United States Fleet Corporation, at $2,400.00.

Mr. G, now inspector United States Fleet Corporation, at $2,400.00; formerly operating engineer at $1,600.00.

Mr. W, first engineer United States Transport Dix, at $2,400.00; formerly operating engineer at $1,500.00.

Seven others, all of whom have been registrants and regular attendants at the extension engineering courses, have been advanced proportionately to those mentioned.

In 1916, the engineering extension course was given in 11 lessons; in 1917 the course was increased to 17 lessons, and in 1918 to 42 lessons.

PLANS FOR NEXT BIENNIUM.

The basic policies and fundamental principles of the Extension organization and service are well established and generally recognized. The plans for future development and the policies which govern them are in harmony with those of the States Relations Service. With the retention of these harmonious relations, no change except that of normal growth and expansion is anticipated or desired.

EXTENSION LEGISLATION.

To make the Extension Service most effective, and to meet the demands made upon it, changes in the Extension laws now in effect should be made. The original Extension law of 1913, published as Chapter 110, General Laws of Oregon, 1913, should with generous limitations be reenacted. This would involve the repeal of Chapter 281, Laws of 1915, and would provide an appropriation sufficient to meet the offset required under the Smith-Lever Act, as mentioned under "Financial Support" in this report.

Under the amendment cited (Chapter 281, Laws of 1915), the funds required from the State, to secure Smith-Lever in excess of the original

$10,000.00 yearly, are directed to be paid from the general Extension appropriation of $25,000.00. The severe limitations upon the use of both Federal and State Smith-Lever funds so deplete the Educational Extension fund that the Extension Service is unable to conduct certain lines of work of great value and importance. We mention in this connection the fact that but 5 percent of Smith-Lever funds can be used for publications, and our necessary publications at present amount to considerably more than this percentage. We have no funds to enlarge our engineering extension to include forestry, highway construction, and allied lines. Smith-Lever funds are not applicable to Farmers' Week, exhibits, demonstration trains, institute work, high-school visitation, correspondence courses, commerce, and the like. In fact, the funds are already depleted to such an extent by the requirement to use the State Extension fund as Smith-Lever offset, that they are inadequate to meet present needs. As the amount required increases by $3,705.00 yearly, the ensuing biennium will completely exhaust this fund, leaving the College without any fund with which to do this work, or forfeit Oregon's share of Federal funds in the form of Smith-Lever increase.

As indicated in the last biennial report, it is important that a strong series of correspondence courses be established. Personal experience and the evidence presented by other states indicate that there is no activity that may be productive of larger support and satisfactory returns. It is safe to predict a very large enrollment as soon as courses are announced.

Visual instruction material, accompanied by syllabi, for information, instruction, entertainment, and social service, presents an untouched but extremely fertile field for Extension Service. The range of possibilities in this field are practically unlimited, since cooperation from the United States Department of Agriculture and from many commercial organizations, such as the International Harvester Company, may be secured.

The limited extent to which we have already entered the engineering field, and the response and results secured, indicate the possibilities of larger expansion. The work already done has brought expressions from members of the engineering organizations highly complimentary and commendatory.

These enlargements and this helpful expansion are impossible, however, with the restrictions imposed in Chapter 281, Laws of 1915, and with no other provision for meeting the gradually increasing amounts required for Smith-Lever.

If possible, the legislature should provide an appropriation to duplicate the Smith-Lever fund, as contemplated in the Smith-Lever Act. At least $10,000 a year must be provided by the legislature; unless this is done, it will not only be impossible to enlarge the work, as contemplated by the Federal Act, but work now in progress must be discontinued.

ACKNOWLEDGMENT.

In closing we take pleasure in acknowledging the cordial and helpful cooperation the Extension Service has received from the State Food Administration, the State Council of Defense, the State Officers, the Farmers' Organizations, the Railways, the Women's Clubs, many Chambers

of Commerce and particularly that of Portland, the Superintendent of Schools, the State Bankers' Association, from many prominent men and women of the State, and from those farmers and housekeepers who have so generously and willingly rendered the Extension Service helpful and appreciated assistance. We are especially pleased to acknowledge the loyal support and unstinted assistance of the Extension Staff. Their unflagging energy and faithful application to duty have made possible the service here reported.

Respectfully submitted,

O. D. CENTER,
Director of Extension Service.

REPORT OF THE SCHOOL OF HOME ECONOMICS.

To the President of the College,

Sir: As Dean of the School of Home Economics, I have the honor to submit the following report:

ORGANIZATION.

During the first year of the biennium 1916-1918 the administration of the School of Home Economics was assigned to a committee consisting of the Dean of Women and the heads of the departments of Household Science and Household Art. On the date of October 1, 1917, the administration was changed by the appointment as Dean of the Professor of Household Science, who had been connected with the School of Home Economics since 1911, for the first four years as Assistant Professor of Household Science and for the two following years as Head of the Household Science department.

The School of Home Economics, which had for many years been divided into only two departments, Domestic Science and Domestic Art, was reorganized during this biennium; it now consists of the four divisions, Household Science, Household Art, Household Administration, and Home Economics Education.

Present Organization. As the departments are now organized, Household Science includes all the food courses and the institutional management work. The Household Art work consists of all the clothing and textile work, in addition to some applied arts courses. The Household Administration department consists of the courses which have for their purpose the training of students in the more efficient methods of administering a home, or in scientific management. The courses included in this department are House Sanitation, Home Nursing, Home Management, Mothercraft, and Practice House. In June, 1917, a new division, including the methods and practice teaching of Home Economics, was formed, and was named the Home Economics Education department. This division is one for which the School of Home Economics and the School of Vocational Education are jointly responsible.

Future Organization. In order to develop the work of the School of Home Economics most effectively two new divisions should be formed. The Home Economic courses in Art, now given in the Art department, should be combined with the Applied Design, House Decoration, and Costume Design courses now given in the Household Arts department, to form the basis for an Applied Design department. The establishment of such a department would undoubtedly result in a greater application of art principles to household problems. The Institutional Management courses, which are now given in the Household Science division, should form a separate department. The demand for women who have been trained in the scientific management of institutions is increasing rapidly. This training is designed to prepare women to purchase institutional equipment wisely, to plan its arrangement to save labor, to plan meals

according to the demands of individuals under various conditions of health and environment, and direct the preparation and service of these meals. The value and need for such training cannot be doubted. The School of Home Economics has just begun to develop this work, but with the establishment of a department and with adequate facilities for conducting the work there is no reason why the Oregon Agricultural College should not be one of the leading institutions in developing this work.

Heads of Departments. The heads of the existing departments are women with exceptional training, experience, and executive ability, especially well qualified for the positions they hold. They have been fortunate in drawing to their departments strong women who are devoting themselves wholeheartedly to their work. With proper organization, with such a staff, and with adequate facilities for the work and proper support, the school cannot do other than prosper.

REGULAR WORK.

During the past biennium the standard of work in all of the Home Economics classes has been raised and the work intensified, less time being spent on the preliminary courses of foods and clothing. This has been made possible by the increase and advancement of Home Economics work in the high schools, resulting in better preparation for the student entering the Home Economics courses in college.

Household Science Courses. In the Household Science courses great stress is placed not only upon the principles underlying the processes of cookery, but also upon the study of food materials in relation to the daily dietaries of families. This is a very important phase of the work, since so much inefficiency and illness today results from the improper selection and use of foods.

Practice Work. The department of Household Science has for many years felt the need of greater opportunities for more practice for the students in planning and preparing meals. This need is being partly met by the opportunity afforded in the planning, buying, and preparing of meals in the Practice House, which furnishes a large family unit, and the Boarding House, a small institutional unit. The skill, the speed, and the confidence which students acquire in this course, as well as the putting to the test of their theories, is proving most valuable.

Institutional Management. By the further practice in management through acting as assistant managers of the women's residences and the S. A. T. C. mess halls, the students are receiving valuable training which should enable them to fill most excellent positions as dietitians and as institutional managers. This work is of value not only to the group of students just mentioned, but also to those who will have the problem of managing the cafeteria in public and high schools. Many of the teachers of Household Science have this responsibility.

Household Arts. In the Household Art studies more emphasis has been placed on the textile side of the work, in response to the conviction that a thorough knowledge of materials and the ability to choose and buy wisely is important for every woman. In the laboratory work design is stressed along with technique and every effort is made to

train the judgment of the students, to develop good taste in dress, and to create a desire for simple, refined, conservative, hygienic, and artistic clothing. An advanced course in textiles is offered in which the principles of economics, of hygiene, of psychology, of sociology, and of art are applied to clothing. The elective courses formerly called "Basketry" and "Hand Weaving" have been changed to Applied Design courses. Very little work in basketry and weaving is given but rather a training in various lines of Decorative Art, the purpose being to develop still further the students' tastes and lead them to **desire** and **use** good color, good line, and good form in their everyday surroundings.

Household Administration. The value of the courses in House Administration depends upon the ability to focus the information of all Home Economics or service courses in such a way as to use this information to produce the greatest efficiency of the individual in her relation to her family and community. This means the proper use of time and money, and should therefore result in thrift. Two courses which have recently been established in this department are Mothercraft and Practice House. The former course is of much interest and great importance to women who expect to go into their own homes or who expect to have contact with children in the capacity of teachers or dietitians. The latter course, which was established two years ago, has given most excellent results. A large percentage of our students go into their own homes; and since the home is the most important factor in the training of the young, we consider it wise for every young woman to have systematic training in house management with the Practice House as a laboratory. This house enables the school also to test for efficient home-making the training given in all the Home Economics courses.

The Training of Teachers. Until 1917 the possibility for giving adequate training in methods in teaching Home Economics was limited, owing to the lack of a field for practice work. In June, 1917, a division of Home Economics Education for which the schools of Home Economics and Vocational Education are jointly responsible, was formed; and an agreement was made between the city schools and the College whereby practice teaching could be given in the public schools of Corvallis. In this way teaching under real conditions was made possible, and a much longer time devoted to it than under the old regime. By thus providing a means of more practice teaching, one of the necessary requirements for the Smith-Hughes teachers was met.

WAR WORK.

General. The School of Home Economics has not been unmindful of its responsibility and opportunity in meeting war conditions. The food and textile situation, and the reason for economy and conservation followed by ways and means of conserving, as well as the practice of thrift, have been kept before the students. Many homes throughout the State have been reached and much interest created. As a result many have followed very closely the Food Administration program of conservation, and according to the teachings of the School have planned economical

wardrobes, utilized clothes that have formerly been discarded, remodeled garments, and made children's clothes from the discarded clothes of adults.

This war work has been accomplished by:

1. Students carrying the knowledge gained into their own homes and communities.
2. Talks and demonstrations given by members of the teaching staff to women's clubs, teachers' meetings, Parent Teachers' associations, High Schools, Red Cross units, fairs, county meetings, caterers' associations, managers of clubs, fraternities, sororities, and commercial clubs.
3. Press articles and literature distributed.
4. Food and clothing exhibits.

   A permanent exhibit of attractive children's clothes made from adults' garments that had been discarded because out of style, faded, or partly worn has been prepared by the Household Art department and not only used for class purposes but also loaned and used quite extensively throughout the State in connection with fairs, clubs, and like organizations. Much interest in the conservation work has been created through its use.
5. Clothing and Food courses given to
   a. Oregon Agricultural College students not registered in the School of Home Economics.
   b. Women of Corvallis.
   c. Homemakers of the State under direction of the Director of Home Economics, but conducted by Home Economics teachers of the State.

Administrative Work. In August, 1917, the Dean of the School of Home Economics was appointed by Mr. Herbert Hoover, Federal Food Administrator, Director of Home Economics for the Federal Food Administration for Oregon. This office has demanded much of her time. Her duties have been to deal with the Home Conservation of the State. She has had charge of the conservation courses which have been generally offered by the Home Economics teachers to the housewives throughout the State, and under the auspices of the Food Administration she has made a lecture tour of the State, reaching grade and high-school students as well as adults. Much of the material published by the Food Administration has been distributed from her office and correspondence for this work alone has amounted to approximately forty-five hundred letters for the year.

NEEDS.

Additional Space. The rapid development of Home Economics and the limited facilities for the work make the immediate completion of the second wing of the Home Economics building seem imperative. For some time it has been impossible to accommodate the Home Economics work in the present unit. Regardless of the fact that all available space has been used, wood rooms, and dressing rooms have been converted into offices and still these small offices are over-crowded and some instructors are without office space. The Rest Room has often been resorted to as

a class room, and recitations are still being conducted in the laboratories, which are not adapted to such work. In some laboratories two recitations are being conducted at one time. Lecture classes have for some time been conducted outside of the Home Economics building, the Dairy and Agricultural buildings having been used. A Household Art laboratory and a lecture room have been located in the new Library building. The conducting of work outside of this building makes supervision difficult and inadequate. Furthermore it necessitates either duplication or the carrying back and forth of all demonstrative and illustrative material.

Institutional Management Quarters. At present there are no rooms in this building available for developing the institutional management work. In order to start this work it has necessitated the renting of the first floor of an apartment two blocks from this building. The rental of this, which the School of Home Economics is forced to pay, is excessive but there is no other choice.

Assembly Room. For a school of 400 students there should be an assembly room. At the present time there is no available room large enough to hold the entire group of students registered in this school. This congestion and the handicap resulting can be overcome by the erection and equipping of the second unit of the Home Economics building. This unit would afford for the School of Home Economics for several years ample office space, lecture rooms, laboratories, institutional management rooms, and an assembly room, and would result in much greater growth and efficiency in the School of Home Economics.

Practice House Should be College Property. The purpose of the Practice House is to give students training in scientific management which implies the least expenditure of time and effort on the part of the management and the worker. In order to accomplish this there should be a few changes made in the Practice House because of the poor arrangement and inadequate equipment in much of the working space. This would involve a very small expenditure, but would result in greater efficiency to the school. Such changes could not be made on rented property. Ownership will result in ability to make needed repairs and improvements. The Practice House, in fact, should be a part of the permanent equipment of the School of Home Economics.

One of the most imperative needs of the School of Home Economics is either an elevator for the present unit of the Home Economics building, or an adjustment of the present stairways to make them more hygienic.

Equipment. No money was appropriated this year for Home Ecnomics equipment. With a growing school there is constant need of replacing and adding new equipment, and without such provision much unsatisfactory work results.

Library Books. The need of a large appropriation for library books and periodicals cannot be too strongly emphasized. In order to do the most effective work it will be necessary for us to build up our departmental libraries.

FUTURE.

Although the primary function of Home Economics is to train the student for the most important of all professions, homemaking, there is also a very great service it can render in helping to supply the demand for well-trained Home Economics teachers, Home Demonstration Agents, and other Extension workers, Dietitians, Institutional Managers, Nurses, Milliners, Dress Makers, and Public Health workers. The opportunity of the School of Home Economics for training these trade workers and public health workers is very great, and the College should meet its obligations in this field to the fullest extent possible.

Service for Teachers in the Field. The School of Home Economics also looks forward to the future when it can be of more direct service to the great number of its graduates who have already gone out into the teaching field. While it is the policy of the School to keep in touch with its graduates and render assistance whenever possible, there has been no organized system with a definite head to carry on the work. It is the hope of the School that a supervisor of Home Economics be director of such a department and through a well-planned follow-up system render a greater service. In visiting schools throughout the State the supervisor would have an opportunity to learn at first hand the problems and needs of the various teachers and localities. This material should be valuable in planning courses of study in the educational department. The plan of State supervision of Home Economics would thus be of value to the College as well as to the graduates.

Demand for Graduates. The majority of Home Economics teachers in our State are graduates of the Oregon Agricultural College. Some of our most recent graduates are in the dietitian service, others are holding teaching, extension, or dietitian positions in California, Arkansas, Colorado, Idaho, Illinois, Iowa, Indiana, Kansas, Massachusetts, Maryland, Montana, New York, Virginia, Washington, Wisconsin, and Nevada. Many of these are college and university positions carrying salaries from $1200 to $2200.

Impetus of War. The war has given a great impetus to the development of Home Economics. Last year Mr. Hoover made a general appeal to college women urging them to study courses relating to foods. It is not uncommon now to see magazine articles and editorials which emphasize the fact that it is a patriotic duty of the American people to understand balanced rations and their food demands in order to utilize foods most profitably. The part that Home Economics women have been playing in meeting conditions of the war as regards the food and clothing situation has brought the subject most favorably before the public and has been, and will continue to be, the means of influencing many women to take up this line of training.

Increase in Enrollment. There has been an increase of 16 percent in the enrollment of Home Economics students during the past biennium, and the registration for the fall of 1918 gives us reason to believe that this year's enrollment will show a normal increase. Of the present enrollment of 395 women in this school, 21 percent are from Alaska and Canada, and from fourteen states other than Oregon. Many of these are

transfers from other institutions. This fact, along with the demand for the graduates, attests the worth of the service being rendered by the School of Home Economics and is sufficient evidence to justify the belief that our School is receiving increasing recognition throughout the country.

Factors Aiding Growth. With the reputation the School is establishing, with proper facilities for conducting the work which it anticipates, and with the maintaining of a well-trained staff, which it now has, devoting their efforts wholeheartedly to the best interests of the College, the School of Home Economics of the Oregon Agricultural College is bound to grow.

Respectfully submitted,

AVA B. MILAM,
Dean of the School of Home Economics.

REPORT OF THE SCHOOL OF FORESTRY.

To the President of the College,

Sir: A recent report stated that the forest schools of the colleges and universities of the United States had furnished for military service a greater percentage of their undergraduates than any of the other departments of institutions of higher learning. Whether or not this statement is true, the following is certainly significant:

During the college years 1916-17 and 1917-18, fifty-six and sixty-six men, respectively, enrolled in the School of Forestry. Of these, fifty-three have entered military service. While this constitutes a splendid military record, it resulted in a decided disorganization of the School.

In addition to the exodus of students, the School has suffered the loss of three members of the faculty. Professor J. P. Van Orsdel, due to war conditions, felt impelled to re-enter commercial life. Professor E. M. Buol resigned in the middle of the college year 1917-18 to enter military service with the Twentieth Engineers, and Professor H. S. Newins left in May to enter the production division of the Signal Corps as inspector of airplane woods. It has been impossible to replace these men. It thus appears that the war has deprived the School of its instructors as well as of its students.

Logging Engineering. Events have justified the establishment of this course. All of the twelve men who graduated in Logging Engineering with the Class of 1917 had good positions open to them. When war was declared the entire number offered themselves for military service. Nine were accepted. Of these, three are holding important positions with the spruce division of the Signal Service. Those who did not get into military service are in responsible positions with lumbering concerns. Due to war conditions, only four men graduated in Logging Engineering with the Class of 1918. Three entered military service, in which one, R. K. Wilmot, recently died. Another is employed as a logging engineer.

Enrollment for 1918-19. Only thirty-six men enrolled in the School of Forestry for this college year. This small enrollment is due to four things. First, military service, as indicated above, has taken nearly all of the upper classmen. Second, without instructors to give the work ordinarily presented by those who have left, only a limited amount of work could be given. Men did not enroll because they knew that they could not get the work they desired. Third, men feared enrollment in forestry would make assignment to the spruce division certain. They desired over-seas service. Fourth, the emphasis placed by the War Department on engineering training led men who, under normal conditions, would have entered the School of Forestry, to take up some branch of work in the School of Engineering.

Cooperation with the Industry. The Federal Forest Service preserves a very helpful attitude toward the School, furnishing opportunities for practical field work for undergraduate students and remunerative employment for graduates. Practical loggers have always shown a lively

interest and a willingness to assist in every feasible way. Undergraduate students have repeatedly been given opportunities to perform field work in logging camps at much inconveneince to owners, but with much profit to the students. Costly equipment has been loaned to the College by manufacturing concerns and manufactured-wood products in the form of sash, doors, and sawn lumber have been generously contributed by sawmill companies.

The Future. It is certain that many of the men who left College to enter military service will return to complete their training. It is equally certain that, due to the magnitude of the lumber industry in the Northwest, many young men will want to prepare themselves to engage in it. Since modern industrial methods are being applied to the industry, operators are coming to realize the necessity for employing trained men. Naturally they are looking to the colleges to supply these men. The Government of the United States has evidently adopted a settled policy of forest development. This means that there will be a constant demand for trained foresters both in this and in other states. There should be a constant effort on the part of the School to supply this demand.

There will be an increasing demand for trained men to harvest the timber crop of the State. Oregon has the largest crop of standing timber of any state in the Union. This tremendous economic resource should be gathered economically and efficiently. This is a plain duty. Whether or not this is done depends upon the ability of those directing the work. They can be highly efficient men if the School of Forestry of this College is maintained at a high degree of efficiency. It can be an efficient organization with reasonable financial support.

Respectfully submitted,

GEO. W. PEAVY,

Dean of the School of Forestry.

REPORT OF THE SCHOOL OF ENGINEERING AND MECHANIC ARTS.

To the President of the College,

Sir: I have the honor to submit the following biennial report for the School of Engineering and Mechanic Arts for the period ending June 30, 1918.

The organization of the School and the courses offered remain practically as they were at the time of the last report except for the restoration of the course in Civil Engineering. This act of the Board of Higher Curricula at its annual meeting in 1917 enables the College to offer again the standard course in Civil Engineering with the optional groups leading to highway, irrigation, and structural engineering in the senior year.

The general courses now offered in this School are:

Electrical Engineering,
Civil Engineering,
Mechanical Engineering,
Industrial Arts.

There are also two-year's vocational courses offering a choice of major work in woodwork, blacksmithing, foundry, and machine shop, together with courses in mathematics, English, history, drawing, and elementary science. The status of these courses and of the students taking them was normal up to June of the present year.

War Conditions. On June 15, 1918, the College began intensive training of soldiers in vocational courses, under contract with the U. S. Government. The first detachment consisted of 247 men assigned to courses in Auto Mechanics, Blacksmithing, Carpentry, Radio Operation. At the end of the contract period a second detachment of the same number of men succeeded the first in the same lines of work. At this writing a third detachment of 526 men is pursuing vocational courses in:

Auto Mechanics,
Blacksmithing,
Carpentry,
Radio Electricity,
Foundry,
Machine Shop,
Radio Operation,
Surveying,
Topographic Drawing,
Tractor Operation.

The course in Tractor Operation accommodating 100 men is given in the School of Agriculture. This leaves 426 men to be taken care of in the shops and laboratories of the School of Engineering. All of this work is vocational, or Section "B," as defined by the Committee on Education. With these large classes in shops and laboratories six hours a day, it will readily be seen that much equipment is in constant use

and not available for use by our engineering students of the College grade known as Section "A" men.

Section "A" includes all men in the service who are taking the regular courses in engineering.

The place allotted to trained engineers in war work and the publicity given this subject by Government Officials and others, have greatly stimulated the desire for engineering education among college students. In December, 1917, the War Department issued an order permitting men of good standing in regular engineering courses in college to enlist in the Engineer Enlisted Reserve in order to complete their college training before entering active army service.

With the inauguration of the Students' Army Training Corps at the College this year, students were encouraged to enter engineering courses. By order of the Committee on Education and Special Training of the War Department, all engineering courses were placed upon a two-years' basis, extending through the twelve months of each year. Non-essentials were eliminated and definite intensive courses provided for the purpose of fitting the men for active duty at the earliest possible moment.

The result of all this activity has been a sudden increase in the number of students in engineering to a figure never before reached or regarded as possible.

The School of Engineering was confronted with the difficult problem of caring for more than three times the normal number of students and at the same time making radical changes in curricula, and all of this with rooms and equipment insufficient to satisfy the normal demands of the institution.

Thanks to the hearty cooperation of members of the faculty of other schools and the untiring efforts of our own staff members, these problems have been solved, for the present at least. All of the work is being regularly given by experienced teachers and under conditions not greatly differing from normal. When faculty members of other schools or departments have undertaken work in the School of Engineering they have been assigned to work which they were well qualified to undertake. Some instances are: Professor Robinson of the department of Architecture, and Professor Brandon of the Industrial Arts department, now giving practically full time to Mechanical Drawing, Professor Peck of the department of Landscape Gardening, giving nearly half time to Surveying, Professor Teeter of the Irrigation department, now giving nearly full time to Mechanical Engineering. With these experienced men working in full harmony and in cooperation with the engineering staff members, I feel that no apology is necessary for the quality or quantity of work accomplished in the School of Engineering under the unusual conditions with which we are surrounded.

Future Outlook. No very definite plans for the future can be made until the policy of the War Department and the Committee on Education is worked out and published. In general, the importance of engineering training in state institutions will be clearly established by the present crisis. It was to these institutions that the Government appealed first for assistance in the training of men for engineers and for mechanics.

While the results may not have been entirely satisfactory, yet the response was so hearty and the effort so sincere that the service could hardly fail to be of real value.

Changes of great moment in methods and curricula of engineering schools will be hastened by the war. Just what these changes will be when peace is fully established no one seems to know. Dr. C. R. Mann has just published in Bulletin No. II of the Carnegie Foundation, the result of a very thorough and exhaustive investigation of engineering education in this country. His opinion seems to be that the time is at hand for some very marked changes both in subjects taught and in methods of teaching. He admits, however, that each institution must study its own peculiar problems and work out the solution.

It seems probable that the demand for men trained along engineering lines will be greatly enhanced during the reconstruction period following the war. It seems also that engineering schools will have to study the demands of industry and offer courses that will meet the requirements, eliminating non-essentials; and finally that precedent established by long years of academic practice will have to be broken and give way to a searching analysis of the real problems involved.

New Engineering Building. In former reports attention has been frequently called to the need of more room for the work of the School of Engineering. It was pointed out that there were not enough recitation rooms for classes, and that instructors were required to shift from room to room and from one building to another in order to meet their classes. It has also been pointed out that the engineering laboratory work was given in three different buildings widely separated and in rooms entirely unsuited to the purpose.

Needs which were well defined two years ago are now acute and extremely urgent. The increase of over 300 percent in the number of students handled in the School of Engineering has created a situation which could not have been handled at all except for the fact that room was made available in other buildings by a temporary decrease of students in some other courses. As an illustration of this statement, there are 278 students taking mechanical drawing in the Horticultural building, 163 in gas engine laboratory in the Forestry building, 155 reciting in engineering subjects in the Administration building. All of this is regular work of college grade. There are also 174 students in Section "B" receiving instruction in radio operation, radio electricity, and automobile laboratory in the Forestry building. This arrangement would not be possible in normal times, since these rooms would be in use by other students. Under such conditions, moreover, the work is carried on at a great disadvantage and with consequent loss of efficiency. Apparatus and equipment must be often transferred from one building to another across the campus. Supervision is difficult and there is a certain loss of interest on the part of both students and faculty. The only remedy for this unsatisfactory condition is a new engineering building, conveniently located near the present engineering groups, and designed to meet future requirements.

This building should have not less than 36000 square feet of floor space. It should provide accommodations for all of the engineering laboratory work, now given at widely separated points on the campus. It should also provide drafting and class rooms for civil, mechanical, highway, and irrigation engineering, and should have an assembly or lecture room for all engineering students. Such a building should cost not less than $100,000, and have ample equipment to make it at least the equal of any engineering building in the Northwest.

Such a building and equipment would place the School of Engineering in a position to render a most valuable service to the young men of this State in giving them the training which they must have if they are to take their full share of work and responsibility in developing the resources and building up the industries of Oregon.

Respectfully submitted,

G. A. COVELL,
Dean of the School of Engineering.

REPORT OF THE SCHOOL OF MINES.

To the President of the College,

Sir: I submit herewith the following report on the work of the School of Mines for the past biennium.

Departments of the School of Mines. The organization of the School of Mines includes the following departments: Mining Engineering, Geology, Metallurgy, and Ceramic Engineering. The last-named department, Ceramic Engineering, has been temporarily discontinued since September, 1918, owing chiefly to lack of sufficient demand by students for work along these lines during war times.

Degrees Offered. Four-year's courses leading to the degree of Bachelor of Science in Mining Engineering, Mining Engineering in Geology, and Ceramic Engineering are offered, except that the last named degree, Bachelor of Science in Ceramic Engineering, is temporarily discontinued until work in the department of Ceramic Engineering is resumed. Advanced degrees of Mining Engineer, and Mining Engineer in Geology, are conferred upon the completion of the requisite amount of graduate work. The degree of Bachelor of Science in Mining Engineering (Geology) is offered this year for the first time, and has been added in order to meet the demand for specialists in economic geology or geologic engineering.

STUDENT ENROLLMENT

	1917-18	1918-19
Degree courses	41	48
Service courses	75	78
TOTAL	116	126

The above figures show an increase over 1917-18 of nearly 15 percent in student enrollment in the School of Mines for 1918-19, in spite of the fact that more than half of the mining students who were in College last year joined various branches of the military service, and therefore did not return. The above figures also show that the enrollment of students in service courses in the School of Mines has been about the same throughout the biennium. It will also be noted that the number of students enrolled in service courses in the School of Mines is nearly double that of students registered for degrees in Mining Engineering or Geology. With the return to normal conditions which will follow the period of the present emergency, the number of students enrolled in service courses may reasonably be expected to be 50 percent greater than the figures shown here, due to the fact that several departments in the College have been obliged to eliminate geology from their curricula in order to conform to the requirements of the S. A. T. C.

New Equipment. During the college year 1917-18, the following new ore-dressing equipment was added to the metallurgical laboratory: small laboratory-size concentrating table; small laboratory-size jig; small laboratory-size classifiers; small laboratory-size flotation machine; and small laboratory-size automatic feeders.

Faculty. During the past biennium several changes in the faculty of the School of Mines have been made. Edgar K. Soper was appointed Dean of the School of Mines at the beginnning of the college year 1917-18 to fill the vacancy resulting from the resignation of former Dean Henry M. Parks. Charles Edward Newton was appointed Associate Professor of Metallurgy at the beginning of the college year 1917-18 to fill the vacancy made by the resignation of Professor Will H. Coghill. Vacancies in the Mining Engineering department and Ceramic Engineering department, resulting from the resignations of Mr. George Elwin Stowell, and Professor Ira A. Williams have not yet been filled.

Service Courses. The work of the School of Mines may be classified under two distinct heads: (1) technical work in Mining Engineering, Geology, Metallurgy, and Ceramics for students who are candidates for any of the degrees offered in the School of Mines, or for special students not candidates for any degree, but who are taking their major work in the School of Mines; (2) special service courses offered to meet the demands of other schools or departments of the College for students who are taking their major work in these other schools or departments. For example, students in the department of Agronomy, School of Agriculture, are required to take studies in geology, and therefore a special course and section in Agricultural Geology is given for such students. Again, a special course in Forest Geology is offered for students in the School of Forestry. Special courses in Engineering Geology are offered for students in the School of Engineering who desire to include geology in their course of study. A special course in the properties and use of explosives is given for members of the Students Army Training Corps who desire to enter either the engineering or artillery branch of army service. The demand for these special courses in Geology, Explosives, Metallurgy, etc., for students other than those registered in the School of Mines is constantly growing, and hence this division of the work of the School of Mines is continually increasing in importance.

Mineral Determinations. The School of Mines is called upon to examine, identify, and analyze a large number of samples of ores, rocks, and minerals which are sent in to the School from every section of the State. The volume of this work, which increases each year, requires considerable time from the various instructors, and the tests require the use of chemical reagents and supplies, the total value of which amounts to a considerable sum each year. During the past year arrangements have been made to charge the sender of samples the regular commercial rate for assays and analyses in order to cover the expense of this work for which no appropriation is made.

New Courses and Other Changes in Curriculum. Since September, 1917, the following new courses have been added to the curriculum of the School of Mines:

(1) Problems in Economic Geology.
(2) Interpretation of Geologic and Topographic Maps.
(3) Explosives: their Properties and Use, for members of the S. A. T. C., engineering and artillery branches.
(4) Military Mining and Geology, for members of the S. A. T. C., engineering and artillery branches.

(5) Excavation and Quarrying, for members of the S. A. T. C., engineering and artillery branches.
(6) Mine and Metallurgical Design.
(7) Excavation, Explosives, and Blasting (for mining students).
(8) General Metallurgy.
(9) Metallurgy of the Minor Metals.
(10) Engineering Geology.

Another important change in the curriculum of the School of Mines during the past biennium, has been the merging of the work in Chemical Engineering, formerly offered in the School of Mines, with the new department of Industrial Chemistry, which was created at the beginning of the college year 1917-18.

Reorganization for Students Army Training Corps. At the opening of the college year October 1, 1918, it became necessary completely to reorganize the work in the School of Mines to conform with a similar reorganization throughout the College, to meet the demands of the War Department in providing the approved courses of study for members of the S. A. T. C. This reorganization and revision is still under way [November 10] but the following important changes have already been effected:

(1) The college year which was formerly divided into two semesters of approximately four and one-half months each, is now divided into four quarters of twelve weeks each.
(2) The courses in the School of Mines have been revised to meet the new conditions resulting from the change to the four-quarters system.
(3) Certain courses have been temporarily dropped from the curriculum of the School of Mines, and certain new courses of immediate military value have been added to meet the requirements of the Committee on Education and Special Training of the War Department.
(4) The requirements for the various degrees conferred by the School of Mines have been changed to conform with the requirements of the S. A. T. C. The degrees of Bachelor of Science in Mining Engineering and Mining Engineering (Geology), are now conferred upon the completion of two years, or eight quarters of intensive training. The new degree courses follow the general plan of the model courses in Mining Engineering and Geology submitted by the Committee on Education and Special Training of the War Department.

Additional Help Required. The vacancy in the department of Mining Engineering, resulting from the resignation of Mr. George Elwin Stowell is still unfilled. An Assistant Professor or Associate Professor of Mining Engineering will be required to complete the staff of the School of Mines, and provide adequate instruction in Mining Engineering subjects.

Respectfully submitted,

E. K. SOPER,
Dean of the School of Mines.

REPORT OF THE SCHOOL OF COMMERCE.

To the President of the College,

Sir: In compliance with your request of November 5 I am handing you herewith a brief report on the activities of the School of Commerce during the biennium ending June 30, 1918, with estimates and recommendations for the biennium ending June 30, 1920. My report of June 30, 1916, was somewhat exhaustive so that the present report is little more than a supplement. Since comparatively few are familiar with the history of the School of Commerce, I would suggest that reference be made in your report to the last biennial report containing historical data on the commercial courses since they were introduced into the College in 1867.

ENROLLMENT.

The scope of the work in the School of Commerce is shown in the following table on enrollment.

TABLE I. ENROLLMENT OF STUDENTS IN COURSES OF THE SCHOOL OF COMMERCE

Year	Registered Commerce Students	Students Registered in other Schools
1915	170	1,015
1916	173	995
1917	212	1,096
1918	298	1,305
1919 (to Oct. 19)	463*	1,230

*This number includes men who were later transferred to other departments, so that the final number may be considerably reduced.

TABLE II. GRADUATES IN COMMERCE

Year	No. Graduates
1915	19
1916	14
1917	22
1918	*11

*Total since 1907, 172.

INSTRUCTIONAL WORK.

Except for the reorganization of the courses of study, due to the war, there have been few changes in our instructional work. One course has proved so successful as a war emergency course that I am recommending that it be a permanent feature of our work; namely, the course in Civil Service. There is a great opportunity in this work, and I recommend that as facilities make it possible we expand this course so as to cover practically the entire field announced by the Drexel Institute of Philadelphia. We are encouraged in this work by the recognition given it by the Civil Service Commission, in a letter from President McIlhenny as follows:

"The Commission desires to state that an examination of your catalogue discloses the fact that you are already giving all the courses prescribed in the Drexel Outline at this time. It will, therefore, be unnec-

essary for you to arrange special courses, and you are hereby authorized to prepare students for certain Civil Service positions in your regular advertised courses."

In connection with the Civil Service course we should offer work in stenotypy. This will require considerable initial outlay for equipment, but an additional fee should be charged to cover the cost.

There are two courses, however, which we are not giving and which ought to be made a part of our work; namely, a course in Business Statistics, and a course in Government Accounting. The latter course has been given as a war course and though given under considerable difficulty, it has proved interesting and effective. There is no literature on which to base the instruction for this course, but it is doubtless in a process of preparation.

Social Leadership is another course which is being emphasized by our department of Economics and Sociology. The growing demand for our work by students in other departments, shown in the preceding tables, indicates that we shall have to develop courses as they are required, and I have reason to believe that we are entering upon an unprecedented period of expansion in the work of the School of Commerce. It is the adaptability of the commercial courses to various vocations of life which has earned for the School of Commerce of the Oregon Agricultural College a considerable reputation beyond the State.

Our course in Cost Accounting needs to be greatly strengthened and developed. There is a new science which is attracting a great deal of attention; namely, Financial Engineering, or the "science of rendering service at the least cost." This is a subject which has been emphasized by the School of Engineering and should be given attention in every industrial department of the institution. To fill the vacancy caused by Mr. R. M. Howard's resignation, we should secure an expert in Cost Accounting to develop this subject in cooperation with other departments interested.

The war has made evident not only the opportunities but also the responsibilities of the United States in Latin America. During the past years, some of our men have been going to the Latin American countries to render expert service in their special fields. A course in Latin American Institutions should be introduced into the department of Government and Business Law. The desired course contemplates a brief study of the resources of the countries, the peoples, and their governments.

There is still another course which must be developed as soon as the institution settles down to its normal condition; namely, the course in Commercial Education. This course is given under the direction of the School of Industrial Education and is in charge of Dr. Elmer W. Hills. The function of this course is to give special training to prospective teachers of commercial subjects. Although the special course is not outlined, a limited opportunity will be afforded graduate students in Commerce, and others who are qualified, to work on special problems relating to teaching.

Our courses of study are completely analyzed in my last biennial report.

To summarize, we should introduce the following additional courses:

1. Advanced Cost Accounting.
2. Governmental Accounting.
3. Business Statistics.
4. Social Leadership.
5. Latin American Institutions.
6. Stenotypy.

The work of the School of Commerce has been limited in scope to courses leading to the Bachelors' degree. While this has retarded the growth of the School in its more advanced courses, it has had the effect of strengthening the work already offered. It will be the policy of the School in the future to bring every course up to the highest standard of efficiency.

No important changes are contemplated other than those indicated above and no new courses can be introduced without approval of the Board of Higher Curricula.

As a result of the growing demand for commercial courses from other departments, a very important change of policy was made three years ago. The courses in the Junior and Senior years were made entirely elective, the only requirement being a certain number of credits in Commerce courses. The result is that the student may, with greater freedom, major in Commerce and minor in other courses, or major in some other school and minor in Commerce.

EXTENSION ACTIVITIES.

Let me call your attention to the extension activities as sketched in my last biennial report. These activities have kept pace with the growth of the institution and I think it is fair to say that the School of Commerce is doing its share in the extension work of the College. Work reviewed in my last report included rural conferences, short-course lectures, and itinerant schools in which the School of Commerce had taken an active part. Special service of the department of Economics, particularly in the Bureau of Markets, was mentioned. The work of the School included not only lectures in Oregon on accounting methods, economic subjects, business and rural law, office training, and the teaching of commercial subjects, but also lectures in various parts of the United States by members of the School who are recognized as authorities in special fields. The correspondence work in Farm Bookkeeping, Agricultural Economics, Business and Rural Law, and Stenography was also specified as a valuable field of the School's Extension service. These various lines of Extension work are characteristic of the School during this biennium as well as the last.

The collaborative work with the Bureau of Markets has been continued. This summer the writer made an extensive trip through the cotton belt of the United States, investigating the accounting and business practice of cotton ginneries. While having no direct connection with our work, the investigation has the effect of bringing the institution before the country and of adding important material for use in our classes.

Special credit is due the department of Government and Business Law for its activity in the War Aims courses. Below is a summary of the number of men the department has reached in these courses:

1. July 1 to Aug. 15—War Issues lectures to detachments of 250 men.
2. Aug. 15 to Oct. 15—War Issues lectures to detachments of 250 men.
3. During College Year—War Aims lectures to 500 detachment men, Class B.

Note—The lecture series to the detachment men includes eight lectures given to the men in groups of from 50 to 100.

4. For about 1200 Class A men, one lecture a week on War Aims given in groups of 100 to 150 men.

The department of Economics has also done very effective work. Dr. Macpherson has lectured on Economic Causes of the War to the Class A men, numbering about 1200, in groups of 100 to 150.

No less important is the course in War Paper Work which has been given jointly by the departments of Business Administration and Office Training. Upward of two hundred men have taken this work and have contributed in no small degree to the efficiency of the military office work.

CHANGES IN FACULTY.

There have been few changes in the faculty since my last biennial report. During the summer of 1917, Mr. H. T. Vance accepted a position with the American Linseed Company and he is now vice-president of that institution. We were fortunate in securing Dr. Elmer W. Hills to succeed Mr. Vance. Though he is at present serving as a commissioned officer in the army, he will be permanently connected with the institution as head of the department of Office Training and Commercial Education.

Dr. L. A. Rufener, who was assistant professor in Economics, severed his connection with us last spring to accept a position in the Civil Service at Washington. Dr. Wm. H. Dreesen succeeded him last September.

Miss Lillian Burns and Miss Bertha Whillock have been added to the faculty of Office Training.

Mr. R. M. Howard has been granted a leave of absence from the instructorship in Accounting to accept a commission in the army.

ROOM.

In my last biennial report I made the following statement with reference to the equipment and room. "The School is now almost completely equipped for efficient work. Our policy is to purchase nothing that is not imperatively needed. We have no dead equipment; all is in constant service in class rooms and laboratories." We now own fifty-five standard typewriters which are in constant use in our department of Office Training, compared with eighteen rented machines in 1912. That year the entire School was comfortably quartered on the third floor of the Agronomy Building. Now that space is occupied by the laboratories, and it is necessary to occupy some of the biological laboratories at times by overflow sections in Office Training and Accounting. To illustrate the congested

condition of our quarters: I am giving a course in Government Accounting, using three different rooms without suitable desks. While we shall do our best with our limited room, we must anticipate considerable enlargement of quarters. In 1916 I stated that my preference would be to vacate our present quarters and be assigned to the rooms then occupied by the Library and the department of English, as soon as the new Library was completed. Now that other plans have been adopted for the use of those rooms, it becomes necessary for us to plan for expansion either in the Agricultural Hall or elsewhere. It seems to me that the only feasible plan is for one of the departments to vacate their present quarters and to divide the rooms thus made available with other departments. It would probably be more convenient for the department of Government and Business Law to move than for either of the other departments.

IMPROVEMENTS.

Additional room for the Office Training department is essential to maintain the standard of our work. Plans for securing the necessary room, and for providing adequate facilities for thoroughly modern training, have been drawn up in detail and submitted to the Superintendent of Buildings.

EQUIPMENT.

The great increase in our enrollment in Office Training compels us to provide additional facilities for the laboratories of the department of Accounting and Office Training. These facilities should include additional locker cabinets for 160 students, five new machines for the course in stenotypy, a mimeograph, noiseless typewriter, and other equipment of a minor or miscellaneous nature.

FINANCE.

Elsewhere I give a summary of the expenditures of the two years ending June 30, 1918, and estimates of the requirements of the present biennium.

Respectfully submitted,

J. A. BEXELL,
Dean of the School of Commerce.

REPORT OF THE SCHOOL OF PHARMACY.

To the President of the College,

Sir: I have the honor to submit herewith a report of the School of Pharmacy for the past biennium with a statement of the condition of the School, and certain recommendations regarding its future development.

It is a pleasure to be able to report that even under war conditions which required frequent adjustment of the work, there has been a decided improvement in the affairs of the School over the preceding biennium. There has been a substantial increase in attendance; the standard of work has been advanced; the courses of study have been revised and strengthened; new equipment has been provided. All of this has added greatly to our facilities for efficient work.

Courses in Pharmacy Recognized. During the past biennium the work of the School has been improved and standardized in accordance with the best practice in schools of pharmacy. The work now offered is of such character that it is recognized by the New York State Department of Higher Education, which has registered our three courses. The advantage of this registration is that our courses are rated in the class with those offered in the best schools of pharmacy in this country. Our students will now receive full credit for all work completed in all other schools similarly registered.

At the 1915 Convention of the American Conference of Pharmaceutical Faculties, our School was admitted as a member. The object of this organization is to promote the interests of pharmaceutical instruction. As it exacts high requirements for admission and membership, only the better grades of schools of pharmacy are eligible for membership.

Effect of War Conditions. Although there has been a decided shortage of drugs on the market during the past biennium, due to the war, I am pleased to report that this shortage did not in any way alter the nature of our laboratory courses. This was due to the fact that we ordered some of our supplies in large quantity in 1914, and this stock, together with what we could easily purchase, made it possible to give the same experiments as before the war.

Instructors in Military Service. Several of our instructors entered military service, and as this was true in every school in the country, we were unable to engage qualified assistants to replace them. This condition made it necessary for the regular staff to teach heavy schedules; however, we offered all courses and accomplished as much as during normal times.

Courses of Study. Our work is now standardized so that we require full four-years high school work as a prerequisite for graduation from all courses. This high requirement prevails only in the best schools of pharmacy. The vocational course which was offered for two years, and which required only two-years high school for entrance was discontinued, and a three-years course, leading to the degree of Pharmaceutical Chemist was substituted. The School now offers a two-, three-, and four-years course.

Attendance. There has been a gradual increase in attendance during the last two years, and during the present year our attendance increased 108 percent over last year. It is gratifying to note that students come to us better prepared than in the past. With better student preparation, much better college instruction is possible.

Instructors Needed. With the increase in attendance and the raising of standards in all courses, there is naturally more work to be done by the staff. With higher requirements, more personal attention to each student becomes necessary, especially in laboratory courses.

In addition to our regular teaching schedule, we have been compelled to teach all courses in pharmaceutical chemistry for the department of Chemistry, as this department was unable to engage an instructor. The three additional courses are: Alkaloidal Testing, Drug Assaying, and Food and Drug Analysis.

As these are junior and senior courses, and consist principally of laboratory work, they take up a great deal of our time that should be devoted to our strictly pharmacy subjects.

During the past biennium, correspondence and executive work have almost doubled in amount. It requires all spare hours of the Dean to take care of these details, some of which could be taken care of by a properly qualified assistant.

In the interest of the profession, the School of Pharmacy should publish something each month in the drug journals published on the Pacific Coast. Under present conditions this is not possible, as our time is taken up with regular instructional work. I, therefore, recommend that another assistant be employed who could assist in instructional work as well as in all other work of the School.

Drug Laboratory Needed. Each year druggists of this and other states send in more drug samples to be tested. Some of the work can be done by the small amount of equipment we have on hand. We are compelled, however, to return many samples without the desired information as we are not equipped for general work. We expect the cooperation of the practical druggists, but unless we are in position to assist them in solving their problems, we do not come up to expectations. Not only is practical analytical work of benefit to students and faculty, but it would eventually be the means of establishing one or more fellowships in the School. This is one of the very few schools of pharmacy that does not maintain a drug laboratory, and in order to serve the profession of pharmacy in a scientific way, a laboratory should be established.

Drug Garden. In my last report, I called attention to the necessity of establishing a drug garden at the College. Not only is this of importance to improve drug cultivation in this State, but it is indispensable for instructional work. From the interest shown in drug cultivation during the past two years, I am of the opinion that it will soon become an important industry in Oregon. This State is peculiarly adapted to drug cultivation, but before the work can be successful, experiments must be conducted to improve cultural conditions.

Graduates. I am pleased to report that all of our graduates are successful in their different lines of work. To date, none of our graduates

has failed to pass the examinations of the State Board of Pharmacy, and their averages are certainly creditable. From reports of military officers in charge of army and navy medicinal departments, I have learned that many of our graduates are successful in the lines of work in which they are engaged. Many are acting as instructors, others as chemists and dispensers in base hospitals in this country and abroad. A large number are engaged in various lines of work in the Sanitary Corps; others are commissioned officers, either in the army or navy.

Department of Pharmacy Made a School. At the meeting of the Board of Regents in June, 1917, the original department of Pharmacy was raised to the rank of a school. This action was a decided stimulus to both faculty and students, as it placed our work on a higher plane. Our graduates now receive full credit from graduate schools and others, notably from schools of Medicine, for all work completed in this institution.

Digitalis Campaign. When war was declared, the School of Pharmacy organized a campaign for the collection of wild digitalis, or foxglove, for use in the Medical Department of the army and navy. The plan of the campaign was that citizens of the State should collect and dry digitalis leaves according to specific directions, and send them to the School, transportation charges prepaid. At the School the leaves were sorted, repacked, and sent up to the College of Pharmacy at the University of Minnesota, where they were standardized and made into tincture. From this point, the preparation was sent to the Medical Department of the Army, whence it was distributed to cantonments in this country and abroad.

Digitalis is the most reliable remedy for many diseases of the heart, especially those resulting from shell shock.

Most of the shipments sent to the School were collected by children of the public schools. Two large shipments were sent to the Government, totaling over 1400 pounds of the dry leaves, or sufficient for several hundred million doses.

Respectfully submitted,

A. ZIEFLE,

Dean of the School of Pharmacy.

REPORT OF THE SCHOOL OF VOCATIONAL EDUCATION.

To the President of the College,

Sir: In compliance with your request for a brief report on the work of the School of Vocational Education, I have to say that the organization of the School was authorized by the Board of Higher Curricula in June, 1918. The present organization, therefore, has had a very brief existence.

Purpose and Scope. The chief purpose of the School is to prepare teachers for the public schools in a comparatively limited field, including at present Agriculture, Commerce, Home Economics, and Industrial Arts. There are two main lines of work: (1) continuation of the training of teachers for the general high school departments in the special subjects, as conducted in this institution for the past nine years by the department of Industrial Education; (2) the training of vocational teachers to give courses under the provisions of the Smith-Hughes Law to pupils in the schools preparing for direct entrance upon a vocation.

The School will continue the first line of work and for the immediate future this will require the larger number of teachers. The practical character of the instruction in these branches is recognized and an effort made to fit the pupils in the schools to some extent for vocational demands. There are a number of difficulties in the way of attaining complete success, among which are the attitude of school officials and communities, the lack of definite standards for the content and method of instruction, the failure of the educational leaders to agree upon the place and function of vocational education in our system of public education.

The Smith-Hughes law and its Board of Administration have set up definite standards and placed specific requirements upon the states in their use of the Federal subsidies. The purpose is to provide vocational training for boys and girls of fourteen years of age and above that will fit them for immediate entrance upon an occupation. This training must be of less than college grade. The Federal appropriation must be matched dollar for dollar by the states or communities participating, or by both. There are two main lines; namely (1) Agriculture and (2) Trades and Industries, including Home Economics. The Federal Government provides separate funds for each and an additional fund for the training of teachers of these vocational branches. The State Board for Vocational Education has designated the Oregon Agricultural College as the institution in Oregon for the training of all Smith-Hughes teachers.

While this vocational training is meant to fill a gap in the present system, the fact must not be lost sight of that the majority of the boys and girls in Oregon schools will not come under its influence for some years at least. The sort of education for which the work of this institution prepares teachers has its place in a scheme of general education. In other words, the subjects of Agriculture, Household Economy, Commerce, and Industrial Arts should have a place in every school curriculum. Therefore, the work of the School of Vocational Education is broader than its title. It must be said, however, that a good part of the teacher-training may be common to both the vocational and the general education purposes.

Federal Funds Conditional. For the present year the Federal Government subsidy for teacher-training, all of which is available for the Oregon Agricultural College, amounts to $5,138.91. No part of this fund can be expended without an equal appropriation by the State. Since the passage of the Smith-Hughes law by the national congress there has been no session of the Oregon Legislature. In order to make use of the teacher-training funds, it has been necessary, therefore, to duplicate the amount used with money from the College raised by the millage tax. This must be done, of course, at the expense of other projects having a prior claim. The Legislature will be asked at the 1919 session to pass a law accepting the provisions of the Smith-Hughes Law and appropriating sufficient money to match the Federal funds.

Budget Apportionment. The salary budget of the School for the year July 1, 1918, to June 30, 1919, submitted in the annual report last spring, shows the following apportionment of Smith-Hughes funds used in payment of the cost of training vocational teachers: Agriculture, $1483.66; Home Economics, $2291.25; Trades and Industries, $1364.00.

Teacher Training. In the development of the courses it has been found that the instruction for Home Economics teachers can be based wholly upon Smith-Hughes standards, thus qualifying every young woman taking our course in Home Economics education for Smith-Hughes teaching positions. The training of vocational teachers in Trades and Industries is so specific that comparatively little of it can be done on the campus. These teachers must be experienced tradesmen, and recruits must therefore be found in the different trades and organized into classes for pedagogical training. Some of these will come to the campus for that training, but the large majority must be trained in itinerant schools. Such schools or courses are being conducted in the city of Portland by our department of Industrial Education. Teachers of Agriculture can be trained in the institution, and, in fact, under the Oregon standards, none but graduates of college courses in Agriculture are eligible for these teaching positions.

Handicap of War. The war has made serious inroads upon the work of the School. It affects the courses in Agriculture, Trades and Industries, Manual Training, and Commerce. There are about a half dozen men of mature years who are taking one or more courses with a view of preparing to teach Agriculture. There are no men students preparing to teach Trades and Industries, Manual Training, and Commerce. There are also few women to teach Commerce. An effort was made to enlist women in the courses usually taken by men, but without success during the first quarter. There is good reason to believe that immediately after the close of the war, the registration of men will not only be restored but increased. The industrial and agricultural revival will increase the demand for trained workers, and naturally these will require teachers. The program of the School should include an immediate campaign to recruit students, both women and men, for these courses. The public schools of Oregon are at present much undermanned in industrial arts and commerce teachers and the demand, which we have not heretofore fully met, will be greater than ever.

Teacher Appointments. The placement of new teachers each year from the graduating class has numbered from 50 to 75 during the past three or four years. In addition, from 30 to 50 reappointments of former graduates are made annually, representing in most cases promotions. In recent years many of these appointments have been to positions in neighboring and more remote states which include those in normal schools, colleges, and universities as well as in elementary and high schools. A majority of the positions have been secured through the recommendation of the Appointment Committee, which will operate in the future through this School.

In conclusion, I have to say that the organization of the School, as effected July 1, 1918, seems to be adequate for the growth and development of the School during the biennium 1918-20.

Respectfully submitted,

E. D. RESSLER,

Dean of the School of Vocational Education.

REPORT OF THE SERVICE DEPARTMENTS.

To the President of the College,

Sir: On September 1, 1918, eleven of the departments of the College which render instructional service to two or more schools were united into an administrative unit under the term Service Departments. The departments concerned are: Art and Architecture, Bacteriology, Botany, Chemistry, English, Entomology, History, Mathematics, Modern Languages, Physics, Zoology and Physiology. In thus grouping these various lines of instruction it is believed that there may be a fuller appreciation of the requirements of the several schools and a constant broadening and strengthening of the instructional work rendered.

War Conditions. Because of the establishment of a unit of the Students Army Training Corps at this institution, some reorganization of courses has been necessary. Since the regular work in most of the departments was well adapted to the requirements of war training such changes mainly involved the adaptation of the class schedules from the semester to the quarter system. One entirely new course, designed to train students for the Sanitary Corps, was instituted with success by the department of Bacteriology, assisted by the departments of Chemistry, Zoology and Physiology, and Modern Languages. Courses in War French and War Aims English were added to the regular curriculum.

Future Outlook. It would be premature definitely to outline future policies at this time. Naturally with changing conditions, educational as well as economic, revision of many of the courses offered becomes a necessity. The nature of such changes can be determined only after a thorough study of all phases of the problem, since some part of the work of every student in the institution would be influenced. Increasing effort should be directed toward the development of teaching from principle and the removal of instruction from the field of empiricism alone. Considering the responsibilities which graduates from some of the more technical and professional schools may be reasonably expected to assume, the suggestion that curricula requiring the equivalent of five academic years for completion be established, merits serious thought. Whether a part of this time should be spent as a graduate year, is also a matter to be investigated. But even on the present four-years basis, there is real need for liberalizing and broadening the instructional work in the immediate future. It is my firm belief that time and space can and must be found for such courses along with the more technical subjects.

At the present time most of the departments are fairly well provided with room and equipment; none is so severely handicapped that good work is an impossibility. Specific needs must be cared for as the type of work given may demand and funds are made available. It seems unnecessary to make individual recommendations at this time.

Respectfully submitted,

E. J. KRAUS,
Dean of the Service Departments.

REPORT OF THE LIBRARIAN.

To the President of the College,

Sir: I have the honor to submit the following report of the Library for the biennium ending June 30, 1918:

The New Library Building. It is my pleasure to begin this report by informing you that the need and the ideal of our College are at last realized in a Library building adequate to our needs. The building is very simple and dignified as befits the one building which is the greatest source of help and inspiration to this College of vocational and scientific learning. It exemplifies in harmony of proportion and coloring and in adaptability to the library needs of the College, the art which we desire to teach our Oregon boys and girls and which can be taught effectively only by association and absorption. From its simplicity, harmony, and adaptability to service, I cannot but consider it the most artistic building on the campus.

In a pioneer College such as ours, in a State where resources are not yet largely developed, it has been necessary for the President and Board of Regents of the College and the legislators of Oregon, to consider the development of the institution as a whole. Such being the case, the Library has been administered under very hampering circumstances, and it is at the end of a long ten years' wait that we at last find ourselves furnished with a building adequate to the need of this rapidly growing College. Unfortunately, some very necessary parts are not yet finished, notably the permanent book stacks, but, owing to the war, the legislature could not appropriate the full amount for the completion of the Library, and with patience we await the time when this can be done. The book stacks are quite necessary, since at present our loan desk assistants are obliged to carry many of the books needed up and down the stairs, a service which should not be required of these young women.

Size of the Library. The library consists of 35,814 catalogued volumes, 664 uncatalogued, 4463 U. S. government documents, 6400 State documents, 1858 catalogued pamphlets and about 40,000 uncatalogued. The library subscribes for 463 periodicals, chiefly scientific and technical. We receive as gifts, subscriptions to 110 periodicals. The library has noted with appreciation that in spite of the great increase in cost of publication during the war, very few of the agricultural periodicals have withdrawn their gift subscription to the College.

Library Staff. The library staff consists of the Librarian and seven assistants, two of the latter, the order clerk and stenographer, working only half time. There is in addition a library page whose work does not exceed three hours a day. Our additional work at the library loan desk requires greater help than usual. This can be furnished, I think, by additional library-page service instead of a regular librarian. Formerly our page requirement has been for $250.00 a year; but this year, besides our usual page help in putting away books and doing other mechanical work, we shall have to have additional page help to assist in waiting on the loan

desk certain hours when the work is too heavy to be cared for by one assistant. It will be cheaper and equally effective to use a page as assistant than to hire an extra library assistant. In addition to the regular staff of the library, therefore, I recommend the employment of two pages, three hours a day each, at twenty-six cents an hour. This would make the whole page assistance for the year amount to $333.20 a year, in place of $250.00 for former years.

In this report I should like to call your attention to the excellent proof we have received recently of the capability of our staff. During the summer the College Librarian was called upon to give service as Hospital Librarian at Camp Lewis. This threw nearly all the responsibility of the executive work of the library upon the members of the staff, especially upon Miss Lewis, Assistant Librarian, and Miss George, the head of the Continuations Department. These shouldered the added responsibility with the utmost good cheer, and carried it most satisfactorily. Aside from personal character, which cannot be discounted, I think a part of the excellent capability of our staff is due to the fact that their average of education is very high. Out of a staff of eight all but two are college graduates. Three of the staff have received from five to six years' university training which includes special library training, one other member has received a very fine library-school training. The members of the staff have had also a number of years' experience in an agricultural college library and understand requirements and values much better than less experienced members would.

At about the time the moving of the books from the old library to the new was due, the Librarian was prostrated by a serious illness and the moving had to be left in the hands of the other members of the staff. Although, owing to the classification of our library, it was not difficult to make the plans and accompanying schedules which would promote rapid and unconfused moving, it did take cool heads, executive ability, and sweet tempers to get the work accomplished as quickly and smoothly as was done. Those who moved the books were our generous faculty men, who came to the rescue of the Library when it was discovered that hired help could not be found. This moving of the library during the war year by our faculty men will remain a very interesting bit of history connected with our Library.

Service. The regular service of the Library consists in the circulation of books, reference work for students and faculty, the purchase of books and other library material, and their preparation for use.

The Library is open every week day from 8:00 A. M. to 10:00 P. M., with the exception of the lunch hour each day and Saturday evenings.

Besides the regular service common to all, classes are conducted for freshmen, teaching them how to use the Library. This has been a very valuable service, and has permitted us to administer our Library with a smaller staff than could otherwise be done. During the Winter Short Course and Farmers' Week, the Librarian has given lectures on library material and how to obtain it; also lectures before the mothers attending the various courses and conferences in household economics on reading for the farm home, especially children's reading.

A considerable amount of reference work has been done for persons residing in different parts of the State. We have had a number of calls

from college librarians in different states for material outlining our course of teaching the freshmen how to use the library.

As in former years the Librarian has been called upon by the Extension Service to give lectures upon call in different parts of the State on Library material for the home, especially children's literature; whenever these lectures have been given before parent-tachers' associations, great appreciation has been expressed. Our teachers over the State seem keenly alive to the influence of reading upon the child's life.

The Library was called upon for an especial war service. The Board of Regents was asked to lend their Librarian to Camp Lewis Library as Hospital Librarian for the summer. The favor was promptly granted. This was not only a very interesting service for the Librarian, but one greatly needed at the Camp. The American Library Association has had great difficulty in finding mature, motherly women who have the requisite knowledge of books, for hospital librarians, and they expressed great appreciation of the generosity of the College in lending their Librarian to meet this need.

The Librarian spoke before the educational section of Oregon Federation of Women's Clubs and before the Pacific Northwest Library Association on the library work of our camps, especially the hospital library work.

Salaries. In a special report I am recommending certain increases in the salaries of members of the Library staff. There is beginning to be a dearth of trained librarians, so that salaries of librarians have risen rapidly during the last few years. Members of our staff have recently received offers from other institutions much beyond their present salaries. The women for whom I am recommending advances in salaries are all college graduates, and have served this institution until their experience here has become a special asset. If they had chosen teaching as their profession and shown the same capability as they have in their library service there is no doubt that they would be receiving much better salaries than they are at present.

It is unjust to degrade the profession of the Librarian by paying lower salaries than those of the teaching profession. The college librarian occupies one of the most vital positions in the scheme of education; but such are economic laws that we cannot keep up the necessary standard of ability and education unless we pay adequately for it.

Concerning library service and the salaries of library workers, I quote the following extract from "The New Republic" of October 26, 1918, page 360:

"Library service could be, and should be, one of the most important of public utilities. It is a flexible service; it ought to be a part of the vital process of democracy; it is a condition precedent to the general diffusion of knowledge without which the most important decisions in the State must be entrusted to minorities. It goes without saying that the library staff which is to perform this all-important democratic service must be intelligent, skilful and enthusiastic. How do we go about procuring such qualifications? By a system of scandalous underpayment. In New York City, which is served as efficiently as can be expected from an understaffed organization, we have been paying librarians at rates ranging from $50 a month to a rate of $150, and the Board of Estimate, though avowedly

democratic in its programme and purposes, has left these figures unchanged. Other cities pay even worse; that is the only possible excuse. There are no manual trades in the city in such a sorry case."

Needs. One of our chief needs is that as soon as possible the steel stacks shall be added to the new Library. As soon as practicable also the basement of the building should be completed.

The new library building makes our second and greatest need stand out imperatively. We have a beautiful and convenient new building, but, after all, the building is not the Library, it is only the house for the Library, and we are not building up our **Library** to meet the needs of the different departments. Our school is forging ahead with all the splendid energy of the western pioneer, and like all pioneers we are obliged to build from the very bottom. We have not a Library having all the necessary foundation books for the work of each department, as in older schools. Our appropriation for books and periodicals and binding should exceed that of the older schools of our rank, because of our lack of fundamental material for the different departments, and yet, since the School went on the millage-tax basis, we have not had funds assigned to exceed $5000 any year for building up our Library and meeting all the library needs of our many rapidly growing departments. These departments cannot of necessity grow normally and substantially, as our energetic, conscientious teachers and research men feel that they should without adequate library material. How keenly our faculty feel this is manifested by their appeals to the Librarian, and I have no doubt that if their reports to your office were consulted for this especial recommendation they would show vividly how our faculty feel this need for additional library material. We are on the eve also of great reconstruction in many departments of education, especially engineering and all phases of industrial education. Almost a new literature in many departments will appear within the next two or three years. This need can only be met by added funds.

Every hour spent in our beautiful new building but emphasizes the desire to make it a reality and not a show, a house whose greatest beauty lies not in its proportions and coloring, but in the knowledge which its shelves furnish to make this College what it desires and aims to be, the best institution in the State for building up a practical and broadly educated young manhood and womanhood.

It is not possible to meet our library needs in a manner at all adequate to the legitimate demands, on a sum less than $10,000 a year.

This report consists largely in requests for additional funds, but it is perfectly evident to any business man that such an institution as the library of an active, effective, growing college, especially of a scientific nature, cannot meet the demands of its situation without adequate funds. I have therefore ventured to call your attention to our needs in such detail as to give you a clear view of them.

Respectfully submitted,

IDA A. KIDDER,

Librarian.

REPORT OF THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN.

To the President of the College,

Sir: I have the honor to submit the following report of the work and plans of the Department of Physical Education for Men.

Physical Education in the Oregon Agricultural College includes:

1. Gymnastics, Individual and class Instruction.
2. Athletics, Intercollegiate and Intramural.
3. Physical Examinations.
4. Therapeutic (corrective) Exercises.
5. Hygiene.
6. Teacher's courses in Physical Education.

The main policy is the development of a system that has in mind the general participation of all students in the various activities for the purposes of developing organic vigor and conserving health.

The number of men students registered in the department for required and voluntary work and attending regularly is as follows:

1916-17—1st semester	.....	1125	
2nd semester	.....	832	(war conditions)
1917-18—1st semester	.....	684	" "
2nd semester	.....	530	" "

The Health Service Department and the Department of Physical Education made arrangements for conducting health examinations of all the men in the College.

During the year 1917-18 two hundred and thirty men reported regularly for medical gymnastic treatment—for the correction of various physical defects.

Athletic sports and contests have been the chief feature of the system of physical training. Physical exercise is best accomplished through sports of all kinds and these sports are the most exhilarating and consequently the more profitable when the spirit of competition is introduced.

Intramural athletics has been developed on a large scale until now ninety percent of the students participate regularly in some form of competition. The students now recognize the graduations of athletic achievements and honors through the various organized groups; namely, inter-fraternity, club and independent leagues, inter-military company, inter-school, inter-class by school, and inter-class and inter-collegiate squads. The inter-collegiate teams are made up principally of students who have passed through the intra-mural degrees of development.

We regard inter-collegiate athletics as a legitimate form of athletics for the students and as occupying a place in the undergraduate life. By designating coaches officially as members of the faculty with faculty titles and with responsibility to the College and student body like that of any other teacher, we are giving notice that we regard inter-collegiate athletics as an incidental part of our general scheme of physical education.

The College is adequately equipped for all forms of outdoor athletics. The gymnasium building provides ample space for all indoor activities, but much of the work is ineffectively carried on on account of inadequate facilities. There is great need for gymnasium and wrestling mats, apparatus, lockers, and a drying room. The unfurnished rooms now used regularly for departmental work should be completed and furnished to meet the needs of the men. No system of physical education is complete without a swimming pool, and the students of O. A. C. are deserving of a pool that will be adequate for teaching swimming to all and conducting an extensive program of aquatic activities.

Respectfully submitted,

A. D. BROWNE,

Director.

REPORT OF THE DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

To the President of the College,

Sir: I submit to you the following report of the department of Physical Education for Women.

Aims of the Department. The aims of the department are primarily to care for the physical well-being of the average normal college woman, although special attention is given the abnormal case as far as is consistent with the other work of the department.

The aims in general may be classified as—

1. Upbuilding of general health.
2. Maintaining of bodily vigor.
3. Strengthening of vital organs.
4. Detection and correction of postural defects.
5. Detection of other physical defects, accompanied with advice as to the need of medical attention.
6. Teaching of proper care of the body.
7. Teaching of principles of team play, true sportsmanship, and cooperation.
8. Acquiring of womanly grace.

Scope of Work. For the attainment of the aims of the department various lines of work are taken up. If the bill now before the Legislature calling for physical education in all Oregon public schools passes, there will be a great demand for teachers who are also physical instructors. Young women will apply to this department for special training, and there should be added to the courses a normal training department to meet this demand.

At present the scope of work includes—

1. Practical Gymnastics.
2. Corrective Gymnastics.
3. Physical Examinations.
4. Medical Examinations.
5. Hygiene Lectures.
6. Athletics.
7. Dancing.
8. Sports.
9. Theory Classes.

Enrollment. The enrollment for each of the four semesters of the biennium is as follows:

	1916-17	1917-18
First Semester	464	573
Second Semester	523	564

Prescribed Work of the Department. A physical and medical examination is given to each student, with the assistance of the Health Service; classification for work is made from these examinations. Instead of taking countless and tiresome measurements, the department inquires into the personal physical habits of the students. They are questioned as to hours spent in sleep, exercise, study, habits of eating, drinking, etc. Personal conferences and follow-up work give these examinations practical value.

An hour's exercise daily is the ideal to be attained, but under present conditions involving long hours of laboratory work on the part of our students, the practical requirements for all young women are two hours a week spent in general activities, chosen from dancing, swimming, athletics, and games. In addition, all first- and second-year students are required to spend two hours a week in classes of practical, formal, or corrective gymnastics, according to their physical needs.

A system of inter-class, inter-sorority, inter-campus and town, and inter-dormitory games in the various sports is being fostered to arouse a more general interest in women's athletics, to replace the more highly specialized inter-collegiate games which train the few to the exclusion of the many.

Needs of the Department. (1) An extra floor large enough for team games is very badly needed for three reasons: First, so that basket ball, volley ball, captain ball, and many other games can be offered in a sufficient number of classes to meet the urgent demands of the greatly increased number of women; second, so that the esthetic and folk-dancing classes, which are now crowded into a small, poorly ventilated room in the basement, can be offered to the large number of students who really desire such training; third, so that there will be a place for classes in light gymnastics for those whose physical condition is such that they cannot stand the work in general gymnastic classes but whose posture does not demand special corrective work. These students represent no small percentage of our enrollment, and they are now necessarily neglected, to a large extent, on account of crowded conditions; since the main gymnasium floor is in almost constant use for general gymnastic classes.

(2) In the way of apparatus three or four Swedish booms are needed quite urgently. The boom is a large piece of apparatus accommodating a considerable number of class members at a time. While a great deal of gymnastic apparatus is too strenuous for the average college woman, there is no one piece so universally adaptable to so many forms of exercise for women as the Swedish boom.

(3) The shower bath facilities are entirely inadequate for the large number of students. A gymansium should be a health center, giving a positive impetus to hygienic living. This cannot be done when there is constant congestion in the bathing quarters.

(4) A swimming pool, exclusively for women, is one of the big needs here. Enthusiasm runs so high that the twenty-four classes each week are undesirably large in spite of the fact that the pool is very small, dark, and unhygienic, and conveniences practically nothing at all. Since the pool has been given over exclusively to the women, many more women are swimming and many more would come out for this important training if there were only room for them.

Respectfully submitted,

MABEL LEE,

Professor of Physical Education for Women.

REPORT OF DEAN OF WOMEN.

To the President of the College,

Sir: I have the honor to submit herewith a report of the work of the Dean of Women for the past biennium. I am also including a statement of needs and plans for future development.

Original Policies Continued. The work of this department for the year 1916-17 was carried out on the lines planned for 1915-16. The time devoted to the work as chairman of the Executive Committee of Home Economics was so great that it quite overshadowed the work of Dean of Women; hence it seemed inexpedient to continue that work after 1916. With this change, it became possible for the Dean of Women to do much more intensive work with the young women and more nearly to develop the ideals which had been set as a goal. The work of the past biennium has been administrative, academic, social, advisory, and supervisory in character.

Administrative Duties. The administrative duties included the work on committees such as the Scholarship Committee, the Student Affairs Committee, the Employment Bureau for the girls, the Advisory Board of the Young Women's Christian Association, the Bible Study Committee, the Executive Board of the Women's League, the Clara H. Waldo Committee, Forum Committee, and the Pan Hellenic. The work of the Scholarship Committee is valuable in that it enables the Dean of Women to assist the weak student and to incite the indolent to greater effort, and incidentally to discover the cause of deficiencies. The work on the Student Affairs Committee aims to furnish the Dean of Women an opportunity to establish her ideals of a sane and refined but simple social life on the campus; to permit her to provide sufficient social relaxation over the week-ends to keep the students contented. So far as possible, it has been carried out according to the students' point of view. All social affairs have been carefully supervised and properly chaperoned.

Employment Bureau. By request of the National Young Women's Christian Association, the Bureau of Employment was turned over to the office of the Dean of Women in the spring of 1918. Up to date this year, employment has been found for over fifty young women, nineteen of whom are working in private families. At the rate of working three hours a day, in return for room and board, they would be giving 3800 hours of time, while at the rate of thirty cents an hour they would earn $1140. Over fifty are working at various kinds of occupations, including care of children, laundry work, washing dishes, general house work, clerical work, clerking, work in telephone offices, banks, theme correcting, and waiting on tables in the halls of residence. Many hundreds of hours of time are being given by these busy young women to earning part of their expenses while in College.

Academic Work. The academic work includes the teaching of Personal Hygiene to 260 girls through a lecture once a week. Perhaps the

most important part of the academic work is covered by the personal conferences which girls seek in connection with the arrangement of their courses and the amount of credits to carry.

Social Activities. The social life of the students is wholesome and not excessive. The most painstaknig care is exercised to assist in every way to provide the young people with just what is needed and best for them in their social diversions. A high standard is maintained. During the period of the war the social life has been of the very simplest, no refreshments of any kind being served.

Advisory Relationships. Obviously, the most vital and valuable part of the work of this office cannot be put into a report—the advisory relation of the Dean to the girls. Many hundreds of personal confidential and group conferences have been held during the past biennium—talks on innumerable subjects to all groups have been given. During the past biennium, the advisory work of this office has been much intensified. Practically all the young women come frequently for advice and suggestions on varied subjects. The past year this particular work has extended to the men. They have sought the help of the Dean of Women in various ways; she was asked to speak in every fraternity house and club and before the entire student body of men on various subjects of special interest to them. This opportunity of getting in touch with the men has been of great aid in increasing influence in matters of conduct and social life on the campus as a whole; and has resulted in an ideal condition of cooperation and understanding on all matters of interest to men and women alike. Bible and leadership classes have been conducted, and plans for organizations presented with gratifying results in the growth and steady progress of the young women in many directions.

The Women's League. The Women's League formed in 1916 has progressed and has afforded opportunities for the girls in leadership and initiative. Concerted war work was carried on by means of this organization. Nearly all the young women took the courses in First Aid and many contributed generously to all war activities, bought Liberty Bonds, War Stamps, and gave money to French orphans and Belgian children.

Sororities. The Greek letter organizations on the campus have made steady and most satisfactory growth. Though we had only one national sorority in 1915 we have now seven national and four local organizations. Through the local Pan Hellenic, these groups are conducted most sanely and carefully. They are doing much to help our housing problem. In the fall of 1917, the large enrollment of young women could not have been properly cared for if it had not been possible to allow two sorority groups at the time of registration to move into houses. Waldo and Cauthorn Halls were crowded to their utmost capacity even after these two groups moved out. These organizations on our campus stand for scholarship, democracy, and loyal support to the College which makes their existence possible. A Grand Officer of one of the national sororities when a visitor on the campus recently, declared that the sorority conditions here were the best she had ever seen. This desirable condition is due to the splendid spirit of cooperation and democracy evidenced by the members who constitute these groups.

Down Town Girls' Club. Another organization which has developed greatly during the past biennium is the Down Town College Girls' Club. From a very small beginning this club has grown until over one hundred girls have attended the meetings. This organization is doing a great deal to create coordination and cooperation between the work and life of the girls on the campus and off.

Advisory and Supervisory Work. The advisory and supervisory work of the office is carried on through personal interviews with all girls; through calls on the town girls and those who are residing outside of the halls in order to earn their living; through frequent meetings, large and small; and through participating whenever possible in all the social affairs of the men and women. Conferences were held with all the Seniors and Juniors last spring in order to urge them to spread the gospel of the value of a college education amongst their high school friends at home. The correspondence includes letters to all prospective women students, and during the year, to many anxious mothers, and to girls who have attended College before but have not returned. Many letters of recommendation have been written and letters of inquiry on various subjects answered.

Loyalty of Women. Owing to the establishment of the S. A. T. C. on the campus and the serious epidemic this fall, many of the plans for the further development of the work of this department have been delayed. The splendid spirit which all the young women showed under the trying days of change of residence, owing to the taking over of the women's gymnasium and halls of residence by the Government for the men, indicates their great loyalty to country and college.

Addresses. Contact with people of the State has been gained by numerous addresses in Portland and elsewhere before the Association of Collegiate Alumnae, the Oregon Federation of Women's Clubs, Parent-Teachers' Associations, Welfare Club, National Educational Association, Conference of Women Deans, all the high schools of Portland and other high schools of the State.

NEEDS.

Housing. The emergency which has placed the women in halls in small groups has made several facts clear, the chief of which is that the small group system when the groups are scattered is fatal to the democratic spirit which we guard so jealously—each group is more homelike but interchange between the groups at such distances is almost impossible under the busy life the girls lead. Waldo and Cauthorn Halls have filled a great need on the campus, but they should be fitted up for the men **not in organizations,** under the direct supervision of a Dean of Men—**but not until** we can have for the women halls of residence on the unit plan on the campus. Such halls should be built for the women as soon as possible if our enrollment of women is to increase as we desire it to increase.

Woman's Building. As stated in my 1915 report, the greatest need on the campus for the women is a woman's building which should contain an assembly room for the women's use, social parlors, the Dean of Women's offices, rest and study and committee rooms.

The women should have a swimming pool for their sole use.

Faculty and Students. In my last report, I stated that I thought there was need of more personal and social contact between faculty and students. This need still exists. A little time taken for recreation on the part of the faculty inevitably leads to higher efficiency and produces better understanding between teacher and student.

Future Development. The opportunities and responsibilities of the department of a Dean of Women are so limitless that it is impossible to outline definite plans for future development. Suffice it to say that the ideal is to direct all efforts toward the finest development of true womanhood and leadership; to advise women in the selecting of their work so that they may best be prepared to serve wherever they may be placed, and to assist in every possible way to secure the best welfare of the students as a whole, and to aid in the highest development of our College in every regard.

Respectfully submitted,

MARY E. FAWCETT,
Dean of Women.

REPORT OF THE COLLEGE HEALTH SERVICE

To the President of the College,

Sir: The College Health Service, established in 1916, is maintained by funds derived from regular student fees, twenty-five percent of such fees being devoted to this purpose. The service, in normal times, comprises a Medical Adviser, with headquarters at the Health Service Building and a resident graduate nurse, who is in attendance at the same building. The aim of the service is to promote the health of all the students. This aim is sought through medical examination, through consultation during office hours, through attendance of the Medical Adviser upon those in hospital and those ill at their residences, through sanitary inspection and through supervision in case of epidemics. The service is free to all students, except as each contributes to the fund through the general fee paid to the College at Registration.

For the year 1916-17 the Health Service received 7,400 office calls, made 541 home calls, and treated 2,900 cases. The average number of treatments for each case was less than 3, the greatest number was 71. For the year 1917-18 no complete report is available. Between January 1, 1918, and April 15, the date the Medical Adviser left for war service, he had treated over 4,000 cases and made an average of 30 house calls per month. He had performed 30 operations for the removal of tonsils and 75 other minor operations. In addition he made 300 army medical examinations and many examinations for the civil service.

The College Health Service for the first term of the college year 1918-19 was divided between the S. A. T. C., under whose auspices the men were cared for, and the regular College Health Service, under the immediate charge of a Resident Nurse, who devoted her attention almost exclusively to the women students of the College. The regular Medical Adviser, on leave of absence in war work, had died in service October 13, 1918.

The facts of this report, therefore, are compiled from (1) the Report of the Commanding Officer, S. A. T. C., Oregon Agricultural College, to the Adjutant General U. S. A., (2) the Report of the local Contract Surgeon of the S. A. T. C., and (3) the Report of the Resident Nurse of the College Health Service. All these reports cover the same period; namely, from October 1 to December 31, 1918.

The Resident Nurse, ministering especially to women students, with headquarters on the ground floor of the Home Economics Building, held consultation hours, attended the sick at their residences, and referred to local physicians such cases as needed special medical attention. Between October 1 and December 31, 1918, she received 1,400 calls from women,* paid 207 visits to the sick, and referred 234 cases to local physicians. Among the cases reported were 159 of Spanish influenza, 1 pneumonia, 2 mumps, 7 tonsilitis, 16 bronchitis, 2 lagrippe, 202 coryza, and 2 appendicitis, besides burns, sprains, indigestion, constipation,

*There were seven additional calls from men students.

hives, etc. Most of the work done by the resident nurse was prophylactic, seeking to prevent the development of disease. So successful was her effort in this regard, combined with cooperative efforts in instructing students how to detect the symptons of disease, especially influenza, and to guard against it, that in spite of the general prevalence of influenza and the actual development of a considerable number of cases among College women, no deaths occurred among women students at the College throughout the fall term.

At the opening of College on October 1, eight physicians of Corvallis and neighboring cities were engaged to conduct the necessary physical examinations preliminary to the induction of men students into the S. A. T. C. In cooperation with the Medical Officer and the Dentist, stationed here with the detachments of U. S. troops, these physicians looked after the health of the men students during the opening days of College. Physical examinations were conducted in the Forestry building, but the headquarters of the Medical and Dental officers was in the Health Service building, and remained there throughout the fall term.

When the influenza epidemic became manifest in the S. A. T. C. the College authorities cooperated with the military authorities in a rigorous effort to control it. The third floor of Waldo Hall used as barracks for men was converted into a hospital. Rigorous inspection of companies to single out those who showed signs of sickness, segregation of the sick with careful nursing, instructions to all students in preventive and precautionary measures, the establishment of prophylactic supply stations for men and for women, and the prohibitation of all general meetings where people might congregate and spread the infection, were among the steps taken to curb the epidemic. In spite of precautions, during the second week of the College term the number of cases ran close to two hundred. An urgent appeal to Military Headquarters for expert medical assistance in handling influenza resulted in the assignment to the College of Major Charles Cross, M. D., who arrived from California on October 17. That night Major Cross telegraphed the Department Surgeon, Western Department, requesting complete equipment for a military hospital to supply the emergency hospital provided in Waldo Hall. He introduced his telegram with the following statement:

"Epidemic appears well in hand and improving daily. Total yesterday one hundred ninety-five cases. Today one hundred thirty-nine, of which ninety-six are sick in hospital, forty-three sick in quarters. No deaths so far. Two cases seriously ill. One case pneumonia, fifth day, and doing well. Patients housed and treated under excellent emergency conditions."

With the assistance of Major Cross and the devoted and efficient cooperation of the physicians of Corvallis, who put their services at the disposal of the S. A. T. C. throughout the entire period of danger, conditions were skillfully handled.

The situation as a whole is admirably summed up in the Report of Colonel Alred C. Sharpe, Commanding Officer, who says:

"The influenza epidemic resulted in a total of 785 cases. The top floor of Waldo Hall was set aside for a hospital and placed under charge

of Contract Surgeon Bosworth, and the necessary nurses. Every precaution was taken by segregation and quarantine to check the spread of the discase, with the result that it was soon under control and by November 15th had entirely disappeared. The precautions taken and the careful nursing no doubt may be credited with the small percentage of deaths, a total of 4 out of 785 cases."

From the final report of the Medical Department, S. A. T. C., Oregon Agricultural College, I quote the following, which completes the period of the S. A. T. C. following the departure of Major Cross, who came merely to assist in an emergency:

"The Medical Department has been in command of Contract Surgeon R. L. Bosworth since November 7, 1918, assisted by Contract Surgeon E. W. Howard, and Enlisted Personnel of eleven men including 1 Sergeant, 5 Privates, and 5 Hospital Orderlies.

"A Post Infirmary has been maintained continually, which has been open to receive patients from 7 a. m. to 8 p. m. daily. A night orderly has been quartered at the Infirmary to handle emergency cases. An average of sixty patients daily has been cared for.

"A Thirty-bed Hospital on third floor of Waldo Hall Barracks has been maintained to care for all medical and surgical bed cases. This Hospital has been running to capacity practically all the time, employing from 2 to 12 graduate nurses besides 6 hospital orderlies. An efficient diet kitchen has also been maintained in connection.

"The sanitation conditions have been of the best, special attention being given to ventilation, heating, and sewerage. An incinerator has been in operation for the disposition of waste. All Barracks have been steam heated, electric lighted, well ventilated, and equipped with modern sanitary plumbing."

In a word the influenza situation for the period covered by this report is summed up in the statement of Major Cross, in a public address just before his departure, when he declared that the epidemic had been more successfully controlled at the Oregon Agricultural College than at any center of military training in the country where an equal number of men were concerned.

Respectfully submitted,

U. G. DUBACH,
Chairman Board of Control.

REPORT OF THE REGISTRAR.

To the President of the College,

Sir: As Registrar, I submit herewith my report covering the two College years of 1916-17 and 1917-18. The data tables are divided into four parts as follows:

Part 1. Student Enrollment.
Part 2. Composition of the Student Body.
Part 3. Courses Offered.
Part 4. Degrees Conferred.

PART I. ENROLLMENT.

The enrollment statistics as given in all tables take account only of resident instruction, there being no enumeration of correspondence courses, extension and itinerary schools, etc.

Table 1. Comparison of Enrollment by Sex.

Schools	1916-17 Men	1916-17 Women	1916-17 Total	1917-18 Men	1917-18 Women	1917-18 Total
Agriculture	569	7	576	419	6	425
Commerce	149	63	212	112	186	298
Engineering	364	1	365	318	1	319
Forestry	85	...	85	59	1	60
Home Economics	...	412	412	...	413	413
Pharmacy	57	6	63	44	24	68
Optional	8	53	61	3	24	27
Music	16	31	47	16	42	58
(Summer School (Short Courses	1,146	831	1,977	1,065	720	1,785
Totals	2,394	1,404	3,798	2,036	1,417	3,453

It will be noted that the total enrollment for the second year of the biennium is slightly less than the total for the first year, the decrease in the short courses amounting to 192 and the decrease in the long course enrollment totalling 152. The depletion of the colleges generally throughout the country began with the Mexican trouble in the spring of 1917. Before commencement of that school year scores of high school and college students rushed into military service with the enrollment results as indicated above.

The details of the loss or gain by departments, as shown above, indicate that the loss in Engineering, Forestry, and Optional students lacks only two of being off-set by the gain in the schools of Commerce, Home Economics, Pharmacy, and Music, the largest individual loss being in the school of Agriculture, which was most affected by the great labor shortage at that time.

The demands for men in the Army, in industrial plants, and on the farms became so insistent in the spring of 1917 that 672 students withdrew before commencement of that year. College officials considered the cause of withdrawal for these purposes so justifiable that proportional credits for the semester's work were given those students who

withdrew for military reasons or to enter those industrial enterprises necessary to the maintenance of the Army. The freshman class alone of 1916-17 lost more than two hundred members by reason of such withdrawal. Both the sophomore and junior classes lost more than one hundred members each. The total withdrawals for the two years were as follows:

Table 2. Withdrawals from College for Military or Industrial Reasons.

	Army 1916-17	Industrial 1916-17	Total 1916-17	Army 1917-18	Industrial 1917-18	Total 1917-18
Freshmen	26	194	220	25	67	92
Sophomores	32	117	149	39	46	85
Juniors	39	70	109	29	22	51
Seniors	40	52	92	52	28	80
Graduates	3	11	14	3	1	4
Vocational and Optional	28	60	88	13	37	50
Totals	168	504	672	161	201	362

During the two years of the biennium the relative number of women registered in long courses increased materially. Exclusive of the course in Home Economics given primarily for women there were 161 registered in 1916-17 and 284 in 1917-18.

Table 3. In Courses Other Than Home Economics, Women Were Registered as Follows:

	1916-17	1917-18
Agriculture	7	6
Commerce	63	186
Engineering	1	1
Forestry	..	1
Pharmacy	6	24
Optional	53	24
Music	31	42
Total	161	284

In connection with Table 4, showing the comparison for the two years by classes it is worthy of special note that in spite of the large number of students who withdrew for military reasons in 1916-17, as shown by Table 2, the enrollment in both the freshman and sophomore classes for 1917-18 exceeded the enrollment for those same classes in 1916-17.

Table 4. Comparison of Enrollment by Classes.

	1916-17	1917-18
Vocational	126	71
Freshman	565	584
Sophomore	366	383
Junior	239	223
Senior	211	180
Graduate	56	20
Special	150	122
Optional	61	27
Music	47	58
Short Courses	1,977	1,785
Total	3,798	3,453

PART II. COMPOSITION OF THE STUDENT BODY.

The information relating to the composition of the Student Body as shown in the following five tables is derived from answers given by

students to various questions printed on the registration cards. It indicates broadly our constituency geographically, economically, and scholastically.

Table 5. Geographical Distribution of Students.

	1916-17			1917-18		
A Oregon Counties	Long Courses	Short Courses	Total	Long Courses	Short Courses	Total
Baker	21	5	26	21	8	29
Benton	314	724	1,038	302	706	1,008
Clackamas	34	28	62	39	32	71
Clatsop	26	7	33	20	10	30
Columbia	13	10	23	12	9	21
Coos	22	44	66	26	37	63
Crook	11	13	24	5	6	11
Curry	1	3	4	6	4	10
Deschutes	..	..	..	2	15	17
Douglas	37	34	71	32	20	52
Gilliam	5	7	12	5	5	10
Grant	4	1	5	6	1	7
Harney	5	4	9	4	3	7
Hood River	20	19	39	11	8	19
Jackson	38	29	67	31	15	46
Jefferson	..	..	..	..	11	11
Josephine	18	23	41	17	11	28
Klamath	14	7	21	17	5	22
Lake	3	3	6	3	1	4
Lane	44	94	138	34	65	99
Lincoln	11	10	21	9	13	22
Linn	55	167	222	56	168	224
Malheur	7	7	14	25	8	33
Marion	83	121	204	84	93	177
Morrow	5	18	23	2	6	8
Multnomah	271	172	443	288	128	416
Polk	40	69	109	30	60	90
Sherman	5	15	20	6	10	16
Tillamook	10	18	28	6	7	13
Umatilla	38	24	62	35	24	59
Union	31	14	45	24	13	37
Wallowa	4	5	9	3	5	8
Wasco	8	45	53	17	43	60
Washington	32	60	92	25	55	80
Wheeler	1	2	3	3	2	5
Yamhill	40	63	103	31	42	73
Totals	1,271	1,865	3,136	1,237	1,649	2,886

Geographical Distribution of Students.—Continued.

	1916-17			1917-18		
B Other States	Long Courses	Short Courses	Total	Long Courses	Short Courses	Total
Alaska	9	1	10	1	..	1
Arizona	1	4	5	1	..	1
California	177	28	205	149	40	189
Colorado	7	3	10	6	..	6
Connecticut	1	..	1	..	..	..
District of Columbia	..	..	..	3	..	3
Hawaii	3	..	3	2	..	2
Idaho	46	4	50	40	16	56
Illinois	18	2	20	9	..	9
Indiana	7	..	7	5	2	7
Iowa	7	2	9	3	1	4
Kansas	6	..	6	8	1	9
Maine	3	..	3	..	..	..
Maryland	2	..	2	..	..	..
Massachusetts	4	1	5	..	..	..
Michigan	2	..	2	5	5	10
Minnesota	4	2	6	4	..	4
Missouri	1	..	1	1	1	2
Montana	18	3	21	13	4	17

Nebraska	5	..	5	3	3	6
Nevada	3	..	3	1	1	2
New Hampshire	1	..	1	1	1	2
New Jersey	1	..	1	..	..	..
New York	4	..	4	6	..	6
North Carolina	..	..	..	1	..	1
North Dakota	1	3	4	3	6	9
Ohio	8	1	9	8	5	13
Oklahoma	6	..	6	2	1	3
Pennsylvania	5	..	5	6	..	6
Philippine Islands	..	..	..	3	..	3
South Dakota	2	..	2	4	1	5
Tennessee	1	..	1	..	..	..
Texas	2	.	2	1	..	1
Utah	5	1	6	2	..	2
Vermont	..	..	..	..	1	1
Washington	147	43	191	108	41	149
West Virginia	1	..	1	..	..	..
Wisconsin	3	..	3	3	1	4
Wyoming	1	..	1	3	..	3
Totals	512	99	611	405	131	536

Geographical Distribution of Students.—Continued.

C Foreign Countries	1916-17 Long Courses	1916-17 Short Courses	1916-17 Total	1917-18 Long Courses	1917-18 Short Courses	1917-18 Total
Australia	1	..	1	..	..	..
Canada	9	9	18	11	5	16
China	2	1	3	5	..	5
Denmark	1	..	1	..	..	..
England	3	1	4	..	..	..
Finland	1	..	1	..	..	..
Germany	1	..	1	..	..	..
Ireland	..	..	..	1	..	1
India	11	2	13	4	..	4
Japan	2	..	2	..	..	..
Nicaragua	1	..	1	..	..	..
Norway	1	..	1	..	..	..
Russia	2	..	2	..	..	..
Scotland	1	.	1	1	..	1
Argentina	1	..	1	1	..	1
Sweden	1	..	1	2	..	2
Turkey	.	..	..	1	..	1
Totals	38	13	51	26	5	31

Summary	1916-17	1917-18
36 Oregon Counties	3,136	2,886
39 Other States	611	536
17 Foreign Countries	51	31
Totals	3,798	3,453

The democratic spirit manifested by students at the Oregon Agricultural College has come to be one of the distinguishing characteristics of the student body. There are two factors in particular which have tended to bring about and encourage this spirit of democracy. These are Student Self Support and Student Self Government. For several years Student Self Government on the campus has been a demonstrated success. For several years also a large percentage of our student body has been partly or wholly self supporting. As shown by Table 6, 81 percent of the entire student body was partly or wholly self supporting in 1916-17 and 77 percent in 1917-18.

Table 6. Student Self Support.

	Percent of Student Body 1916-17	1917-18
	%	%
Entrely self supporting	42	39
One-half self supporting	27	27
Partly (less than half) self supporting	12	11
Not at all self supporting	19	23
Totals	100	100

Table 7. Occupation of Parents or Guardians.

SUMMARY	1916-17	1917-18
Agriculture	491	518
Railroading	14	15
Mercantile	103	108
Miscellaneous business	219	277
Business Management	6	8
Financial and semi-legal	47	42
Manufacturing	6	9
Government service	30	25
Artistic professions	2	3
Scentific	1	1
Professions	75	80
Retired	145	111
Unskilled labor	125	130
Skilled labor	161	165
Not given	396	176
Totals	1,821	1,668

Table 8. Ages of Students.

	1916-17	1917-18
Average age of men	19	20
Average age of women	20	19

Table 9. Schools From Which New Students Were Received.

OREGON	1916-17	1917-18
157 High Schools	508	515
26 Colleges or Universities	33	39
OTHER STATES		
29 High Schools	227	185
27 Colleges or Universities	85	71
FOREIGN COUNTRIES		
7 High Schools	9	9
2 Colleges or Universities	3	1
Totals	865	820
193 High Schools	744	709
55 Colleges or Universities	121	111
Totals	865	820

PART III. COURSES OFFERED.

Part III shows the number of courses offered in the College in the various schools and departments. It should be noted especially that the figures of these tables do not in any way afford a basis for comparison of the instructional work of the several departments for the reason that each course listed in the Catalogue is here counted as one course regardless of whether that course is given one, three, or five times a week or whether it continues through one or both semesters of the college year. The tables do serve, however, to indicate the scope of

the work of various schools and departments. The different full-year courses offered during the biennium total 755 in 1916-17 and 767 in 1917-18. Of this total the school of Agriculture offered the largest number with an average of 218 different courses for each of the two years. Engineering ranked second with an average of 133 courses each year.

Table 10. Summary of Courses Offered.

	Long Courses		Sum. Sch. and Short Courses		Totals	
Schools or Departments	16-17	17-18	16-17	17-18	16-17	17-18
Agriculture	215	221	3	12	218	233
Commerce	70	70	12	12	82	82
Engineering	132	135	22	15	154	150
Forestry	34	36	*	*	34	36
Home Economics	37	35	18	18	55	53
Mines	41	41	*	*	41	41
Pharmacy	30	30	..	..	30	30
Service Departments	196	199	19	29	215	228
Winter Short Courses	..	..	506	424	506	424
Totals	755	767	580	510	1 335	1,277

PART IV. DEGREES CONFERRED.

During the biennium the College offered the Bachelor of Science Degree in 32 different departments, Master of Science Degrees in 19 different departments, advanced Engineering Degree in 9 different departments, and a Graduate of Pharmacy Degree in one department. In addition to these, short-course certificates were offered in 8 departments and a diploma in the School of Music, making in all 70 departments offering the Baccalaureate and the advanced degrees, certificates, and diploma.

Table 11. Degrees Conferred and Certificates Granted.

		1916-17		1917-18
Master of Science:				
Agriculture	8		3	
Home Economics			2	
Electrical Engineer	1	9		5
Bachelor of Science:				
Agriculture		77		54
Commerce		25		12
Engineering—				
Chemical	4		1	
Civil	4		2	
Electrical	9		8	
Highway				
Industrial Arts	10		7	
Irrigation	1			
Mechanical	12		12	
Mining	5	45	3	33
Forestry		6		2
Home Economics		72		64
Logging		12		5
Pharmacy				4
Graduate in Pharmacy		8		13
Music Diplomas		2		1
Vocational Certificates		25		23
Totals		281		216

*The summer work in Forestry and Mining is given in the field. Practical problems are assigned the students in the forests and mines of the Northwest.

DISTRIBUTION OF DEGREES CONFERRED

	1916-17							1917-18						
	MS	EE	BS	PhG	Music	Voc	Total	MS	EE	BS	PhG	Music	Voc	Total
Oregon Counties(28)	7	1	177	4	1	14	204	3		125	11	1	15	155
Other States (14)	1		54	4	1	11	71	1		46	2		6	55
Foreign Countries(6)			6				6	1		4			1	6
Totals	8	1	237	8	2	25	281	5		175	13	1	22	216

Table 12. Graduating Classes, by Sex, 1917, 1918.

	Men	Women	Total
1916-17	182	99	281
1917-18	131	85	216

Table 13. Ages of Graduates, Classes 1917, 1918.

	1916-17	1917-18
Lowest	20	21
Highest	41	45
Average	23.9	24.8

Each year a large number of students enter the Oregon Agricultural College as transfers from other Colleges or Universities. Without considering such transfers who withdrew before graduating but listing only those who completed their courses there were 78 such transfers as members of the graduating classes during the biennium, 37, or 13 percent of the class in 1916-17, and 41, or 19 percent of the class in 1917-18.

Table 14. Members of the Graduating Class Who Transferred From Other Colleges or Universities.

	1916-17	1917-18
No. senior students entering by transfer	37	41
No. institutions represented	26	31
No. states represented other than Oregon	13	22
No. foreign countries	1	2

JUNE, 1918—GRADUATES

MASTER OF SCIENCE DEGREES

AGRICULTURE

William Homer Maris, Portland, Multnomah
Thakur Mahadeo Singh, Sultanpore, India
Howard Marshall Wight, South Bridgton, Maine

BACHELOR OF SCIENCE DEGREES

AGRICULTURE

Juliette Norma Anderson, Portland, Multnomah
Troy Bogard, Woodburn, Marion
Roy Couch, La Grande, Union
Jack Marion Eakins, South Pasadena, California
John Lawrence Finney, Astoria, Clatsop
Howard Godel, Portland, Multnomah
Medric Greer, Dundee, Yamhill
Homer Wallace Grow, Fairfax, Vermont
Fred Jacoby, Toledo, Washington state
John Mitchell Lewis, Corvallis, Benton
James Gregory Paull, Corvallis, Benton

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILITARY SERVICE

Albert Hope Amis, Corvallis, Benton
James Daniel Baldwin, Blue Lake, California
Emerson Perry Black, Ferndale, California
Francis Gerald Bolin, Portland, Multnomah
Walter Carpenter, Ashland, Jackson
Lloyd Wilbur Coleman, Berkeley, California
Ralph Orval Coleman, Canby, Clackamas
Leo King Couch, Wallowa, Wallowa
Argus Harold Davidson, Meridian, Idaho
Eric Englund, Corvallis, Benton
Reuben Everett Fenner, Cadillac, Michigan
Chester LaVerne Firestone, Vancouver, Washington State
Philip Tuthill Fortner, Chicago, Illinois
Leaman Lee Graves, Kansas City, Kansas
Edwin Hartley, Marshfield, Coos
Leo Hollenberg, Corvallis, Benton
Paul Farnum Holmes, Los Angeles, California
Tung Ming Hung, Amoy, China
Ronald Ewart Jones, Brooks, Marion
Philip King, Portland, Multnomah
Walter Joseph Kocken, Cleveland, Douglas
Eugene Francis McCornack, Klamath Falls, Klamath
Cedric Stuart McMaster, Corvallis, Benton
Elvin Winfield McMindes, Milwaukee, Wisconsin
Albert Otto Meier, Hillsdale, Multnomah
Harold Milton Mills, Parma, Idaho
Frederick Washington Nestelle, Bellingham, Washington State
Alfred Weaver Oliver, Salem, Marion
Palmer Patton, Corvallis, Benton
Howard Clifton Ray, Roslyn, Washington State
Albert Roy Reber, Kansas City, Kansas
Albert Joseph Schoth, Oregon City, Clackamas
Raymond Selph, Los Angeles, California
Herman Al Stone, Woodburn, Marion
William Raymond Stow, Corvallis, Benton
Orson Straughan, Pendleton, Umatilla
Glenn Smyth Strome, Eugene, Lane
Benjamin Garrison Thompson, Shedd, Linn
Cecil Adelbert Thompson, Portland, Multnomah
Richard Congle Williams, Newberg, Yamhill
Stanley Worley, San Francisco, California
William SoRelle Wright, San Gabriel, California

FORESTRY

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILITARY SERVICE

Oscar Byers, Portland, Multnomah
Harry William Elofson, Salida, Colorado

LOGGING ENGINEERING

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILITARY SERVICE

Caryl Hazeltine, Oakland, California
Willard Johnson, Corvallis, Benton
Lawrence Martin McCaffrey, Corvallis, Benton
Charles Adelbert McCollum, Salinas, California
Richard Kenneth Wilmot, Portland, Multnomah

HOME ECONOMICS

Fay Armstrong, Corvallis, Benton
Mary Elizabeth Barker, Oakland, California
Bess Barton, Puyallup, Washington State
Ruby Evangeline Beers, Corvallis, Benton
Ethel Anita Brinckerhoff, Oakland, California
Edith Eleanor Chandler, Kenilworth, Illinois
Doris Aileen Clark, Seattle, Washington State
Marion Bernice Forest, Portland, Multnomah
June Creel, Forest Grove, Washington
Mildred Elizabeth Crout, Portland, Multnomah
Helen Frances Dougherty, Baker, Baker
Edna May Freyler, Corvallis, Benton
Maren Gribskov, Junction City, Lane
Phila Henrietta Hall, Corvallis, Benton
Josephine Marion Hammond, Silverton, Marion

Marion Hodgson, Ashland, Jackson
Marie Katherine Howells, Medford, Jackson
Ruth Kelly, Portland, Multnomah
Inez Knowles, La Grande, Union
Kittie Gertrude Kyle, Corvallis, Benton
Dorothy Lane, Los Angeles, California
Hazel Claire Lankins, Hubbard, Marion
Gladys Loretta Legg, Portland, Multnomah
Annie McDonald Lindsay, Corvallis, Benton
Annis Love, Eugene, Lane
Alice McCornack, Marcola, Lane
Lula Litten May, Grass Valley, Sherman
Leta Meacham, Weiser, Idaho
Sophie Edis Mesher, Portland, Multnomah
Charlotte Elizabeth Moody, Pasadena, California
Myra Luclile Moore, Corvallis, Benton
Beulah Inez Morgan, Corvallis, Benton
Ruth Morton, White Salmon, Washington State
Martena Ruth Neal, Santa Cruz, California
Amy Christine Niblen, Portland, Multnomah
Rae Partin, Summer Lake, Lake
Nola Payne, Alsea, Benton
Mary Eleanor Pitney, Junction City, Lane
Nellie Irene Polson, Mt. Vernon, Washington State
Ada Jeannette Reed, Portland, Multnomah
Agnes Theresa Redmond, Portland, Multnomah
Mary Alice Rogers, Corvallis, Benton
Rena Schott, Salem, Marion
Bertha Lucile Shedd, Shedd, Linn
Elva Lourene Smith, Portland, Multnomah
Maude May Skidmore, Curtin, Douglas
Leone Adell Smith, Carnation, Washington
Amanda Henrietta Wagner, Laurel, Indiana
Eva Yates, Corvallis, Benton

THE FOLLWING STUDENTS ARE ABSENT IN INDUSTRIAL OR TEACHING POSITIONS

Carrie Castle, Berkeley, California
Wilda Counts, Grants Pass, Josephine
Beulah Gustavia Gilkey, Corvallis, Benton
Lizzie Dyson, Dahlia, Washington State
Emma Ione Glines, Waldport, Lincoln
Hallie Winifred Glines, Waldport, Lincoln
Ruby May McLagan, Tangent, Linn
Mabel Huff-Richardson, Corvallis, Benton

CIVIL ENGINEERING

Arthur Christ Lee Jetley, Narrows, Harney

THE FOLLOWING STUDENT IS ABSENT IN INDUSTRIAL OR MILITARY SERVICE

Wilber Arthur Runyan, Portland, Multnomah

ELECTRICAL ENGINEERING

Clarence Krueger, Corvallis
Stanley Howard Myers, Corvallis, Benton
Conrad Walter Werth, Portland, Multnomah

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILITARY SERVICE

Douglas Ivan Bates, Portland, Multnomah
Howard Wesley Cooper, Milwaukie, Clackamas
Glen Corey, Hood River, Hood River
Ernest William Louie Happold, Klondike, Sherman
Jesse Pimm, Corvallis, Benton

INDUSTRIAL ARTS

Lars John Ericson, Corvallis, Benton
Hiram Chester Smith, Corvallis, Benton

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILITARY SERVICE

Melvin Hiram Ellestad, Central Point, Jackson
Lawrence Wallace Mack, Dufur, Wasco
David Nathaniel Nordling, Colton, Clackamas
David North, Corvallis, Benton

MECHANICAL ENGINEERING

George Cook Carpenter, Washougal, Washington State
Homer Ferguson, Portland, Multnomah
Leroy Roland Guthrie, Corvallis, Benton
Bryan Towne McMinn, Portland, Multnomah
Ben Mason, Puyallup, Washington State
Francis Parker Myers, Corvallis, Benton

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILI-
SERVICE

Everett Willoughby Dye, Oregon City, Clackamas
Hugh Pillsbury Ford, Eugene, Lane
Neal Kelly Ford, Eugene, Lane
Archer Olin Leech, Corvallis, Benton
Jennings Bryan Lorence, Monmouth, Polk
Homer Blair Morris, Yamhill, Yamhill

MINING ENGINEERING

Leaton Alanson Rice, Corvallis, Benton

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILI-
SERVICE

Harold Wayne Thoms, Scio, Linn
Joseph Marion Underwood, Pasadena, California

CHEMICAL ENGINEERING

THE FOLLOWING STUDENT IS ABSENT IN INDUSTRIAL OR MILITARY
SERVICE

Curtis Lee Corum, The Dalles, Wasco

COMMERCE

Ambalal Jivabbai Contractor, Baroda, India
Theodore Cramer, Grants Pass, Josephine
Herbert Jewell, Portland, Multnomah
Louise Lewis, Portland, Multnomah
Lincoln Howard Paine, Jr., Caldwell, Idaho
Bertha Alice Whillock, Medford, Jackson

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILI-
TARY SERVICE.

Lyle Blair Kiddle, Island City, Union
Martin O'Gara Kurtz, Corvallis, Benton
Clarence Scott Nesbitt, Payette, Idaho
Avatapalli Narayana Row, Madras City, South India
Leslie Stark, Holdrege, Nebraska

PHARMACY

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILI-
TARY SERVICE

Fred Martin Curry, Albany, Linn
Francois Archibald Gilfillan, Delmar, Coos
Elmo Clayton Jory, Salem, Marion
Arthur James Woodcock, Portland, Multnomah

OTHER DEGREES AND DIPLOMAS

GRADUATE IN PHARMACY

THE FOLLOWING STUDENTS ARE ABSENT IN INDUSTRIAL OR MILI-
TARY SERVICE

John Barcroft, Newberg, Yamhill
Myrtle Esther Branstetter, Echo, Umatilla
Richard Eldon Carroll, Harrisburg, Linn
Herschel Matthew Cummins, Melba, Idaho
Fred Martin Curry, Albany, Linn
Merrill Martin Donnell, The Dalles, Wasco
Olin Eugene Douglas, Corvallis, Benton
Francois Archibald Gilfillan, Delmar, Coos
Chris Edward Johnson, North Powder, Union
Elmo Clayton Jory, Salem, Marion
Howard Loring Lamar, Tillamook, Tillamook
Fred Snowberger, Payette, Idaho
Arthur James Woodcock, Portland, Multnomah

DIPLOMA, SCHOOL OF MUSIC

ABSENT BY PERMISSION

Lucile Anna Hamlin, Corvallis, Benton

BACHELOR OF SCIENCE DEGREES, 1917

(Granted at end of Summer Session)

AGRICULTURE

Georgie Rieben, Ferndale, California

HOME ECONOMICS

Etta Adams, Corvallis, Benton
Ruth Marie Amesbury, Portland, Multnomah
Margaret Laura Davisson, Tallicum, Washington State
Mildred Hall, Corvallis, Benton
Katherine Kooken, Baker, Baker
Hazel Cartan Ralston, Burns, Harney
Iona Margaret Irving, Chicago, Illinois

INDUSTRIAL ARTS

Raymond Louis Schoeffel, Los Angeles, California

COMMERCE

Ivy Cecil Peterson, Kittitas, Washington State

MASTER OF SCIENCE DEGREES, 1917

(Granted at end of Summer Session)

HOME ECONOMICS

Linnie Currin, Talent, Jackson
Jane Agnes Johnston, Union, Union

VOCATIONAL CERTIFICATES

For the successful completion of the vocational courses in Agriculture, Commerce, Dairying, Forestry, Home Making and Mechanic Arts, varying in length from one to three years, students are granted certificates which are delivered to them as the requirements are satisfied.

AGRICULTURE

Davis John Allen, Corvallis, Benton
Gordon Barnard, Fossil, Wheeler
Alvah Cowan, Tatoosh Island, Washington State
John William Crow, Pendleton, Umatilla
Jay Rhubert Fogal, Kanorado, Kansas
Robin Watson Kirkland, Westham Island, B. C.
Walter Gibson McGinty, Davis Creek, California
Clark Ernest Moreland, Corvallis, Benton
William Francis Richards, Twin Falls, Idaho
John McDonald Say, Sherwood, Washington State

HOME ECONOMICS

Margaret Alderman, Dayton, Yamhill
Anna Elaine Anderson, Ilwaco, Washington State
Erma Millicent Brook, Portland, Multnomah
Eunice Pern Dean, Ferndale, California
Margaret Derle Denny, Beaverton, Washington

JUNE, 1917, GRADUATES

MASTER OF SCIENCE DEGREES

AGRICULTURE

Tracy Abell, Corvallis, Benton
Frank John Dietsch, Day's Creek, Douglas
Henry Gilbert Salem, Marion
Andrew Cameron McCormick, Talent, Jackson
John Yates McDonald, Charlestown, West Virginia
Harry August Schoth, Oregon City, Clackamas
Obil Shattuck, Corvallis, Benton
Clayton Strain, Pendleton, Umatilla

DEGREE OF ELECTRICAL ENGINEER

ELECTRICAL ENGINEERING

Willis Dhu Aine Peaslee, Portland, Multnomah

BACHELOR OF SCIENCE DEGREES

AGRICULTURE

Louis Carlton Acree, Berkeley, California
James Quincy Adams, Ashland, Jackson
Robert Akers, Jacksonville, Illinois
Frederick John Allen, Portland, Multnomah
Winfield Andrews, San Luis Obispo, California
Ralph Guile Atwood, Corvallis, Benton
William Samuel Averill, Corvallis, Benton
Edward Goodchild Axtell, Corvallis, Benton
Willis Arthur Bailey, Ashland, Jackson
Elmer Walter Bartruff, Salem, Marion
Vernon Basler, Grants Pass, Josephine
Ralph Olaf Bayley, Pittsworth, Australia
Edwin John Charles Bayliss, La Fayette, Yamhill
Julius Both, Rainier, Columbia
Francis Bolden Brown, Crystal, Klamath
Claude Clark Calkins, Dallas, Polk
Norval Craigie Carnie, Chicago, Illinois
Theodore Dwight Case, Klamath Falls, Klamath
William Victor Clarke, Corvallis, Benton
Wilbur Lawrence Close, Lawrenceville, Pennsylvania
Benjamin Bernard Cohen, Portland, Multnomah
John Raymond Croswhite, Long Beach, California
William Cunning, Corvallis, Benton
Jesse Earl Dickerson, Parma, Idaho
Paul Edward Doty, Pasadena, California
George Edwin Dunn, Ashland, Jackson
James Homer Edwards, Monroe, Benton
Arthur Ferguson, Helix, Umatilla
Thomas Joseph Flippin, Rainier, Columbia
John Morton Franklin, Seattle, Washington State
David Friedman, St. Charles, Illinois
George Merle Gragg, Monroe, Benton
Carl Clifford Green, Hood River, Hood River
Dorr Dudley Green, Parkdale, Hood River
Marion Allen Harrison, Brownsville, Linn
Joe Cephus Hawkins, Sayre, Oklahoma
Frank Arthur Hayes, Pasadena, California
William Wright Henderson, Aiea, Hawaii
Alton Dalrymple Hurley, Seattle, Washington State
Maurice Jernstedt, Carlton, Yamhill
Carl Stewart Johnson, Portland, Multnomah
Clarence Benjamin Johnson, Hermiston, Umatilla
William Walters Johnston, Corvallis, Benton
Leon Kilby Jones, Seattle, Washington State
Glenn Curtis Kelly, Portland, Multnomah
Randolph Elliott Leland, Los Angeles, California
Harry Vernon Levage, Florence, Lane
Alexander Lewis Lindsay, Hilo, Hawaii
Ralph William Lowry, Corvallis, Benton
James Douglas McKay, Portland, Multnomah
Alice Moore, Corvallis, Benton
Walter John Morgan, Portland, Multnomah
Frederick Allen Motz, Rock Island, Illinois
Andrew Edward Murneek, Los Angeles, California
Frank Thomas Murphy, Alhambra, California
Erbine Newman, Corvallis, Benton
Walter Burt Norton, Corvallis, Benton
Dunbar William Pinckney, Aberdeen, Washington State
John Elijah Pitman, Moneta, California
Ted John Porter, Halsey, Linn
Elmer Oren Post, Blachly, Lane
Hugh Milton Reynolds, Pasadena, California
Paul Tafel Schooley, Santa Ana, California
Oliver Henry Schrepel, Corvallis, Benton
Clarence Vincent Scott, Chicago, Illinois
Thakur Mahadeo Singh, Dadupore, India
Frank Gillette Sutherland, Honolulu, Hawaii
Clifford Gilbert Tarner, Morro, California
Fremont Winston Walton, Salem, Marion
Frank Wascher, Portland, Multnomah
Irvin Watson, Coquille, Coos
Richard John Werner, Los Angeles, California
Clair Wilkes, Hillsboro, Washington
John Bushrod Wilson, Corvallis, Benton

FORESTRY

Ralph Silsby Blackden, Corvallis, Benton
Fred Parks Cronemiller, Lakeview, Lake
Arthur Robert Lundeen, Mt. Solo, Washington State
John Edgar McCollum, Salinas, California
Mark Foss Wright, Tumalo, Crook
Lloyd Dexter Yates, Milton, Umatilla

LOGGING ENGINEERING

Clarence Joseph Budelier, Rock Island, Illinois
James Arthur Crawford, Burlington, Iowa
Charles Arthur Fertig, Hood River, Hood River
Paul Freydig, Sutherlin, Douglas
Carl Charles Jacoby, Toledo, Washington State
Olaf Robert Jonasen, Corvallis, Benton
William James O'Neil, Cloquet, Minnesota
Harry Clifford Patton, Macleay, Marion
Edward Mierer Paulsen, Portland, Multnomah
James Thomas Stephens, Seattle, Washington State
William James Wakeman, Portland, Multnomah
Lee Roy Woods, Jr., Cottage Grove, Lane

HOME ECONOMICS

Virge Ingrid Anderson, Aurora, Marion
Martha Henrietta Bechen, Hillsboro, Washington
Gracia Delle Birch, Corvallis, Benton
Etta Philippi Boies, Corvallis, Benton
Bertha Mildred Booth, Madras, Jefferson
Cecil Myra Brogden, Hillsboro, Washington
Hallie Lenore Carter, Eugene, Lane
Ola LeMoine Clark, Salem, Marion
Edna Conner, Sheridan, Yamhill
Ruth Lillyn Corbett, Corvallis, Benton
Mary Eleanor Currin, Heppner, Morrow
Lydia Doolittle, Corvallis, Benton
Grace Elizabeth Fitts, Corvallis, Benton
Nettie May Fridley, Klondike, Sherman
Anna Maud Funk, Etna Mills, California
Carolyn Elizabeth Glaser, Lebanon, Linn
Zoe Hazel Golden, La Grande, Union
Etta Belle Grimes, Charleston, Illinois
Faith Hanthorn, Portland, Multnomah
Iva May Howey, Corvallis, Benton
Esther Cynthia Humphrey, Portland, Multnomah
Lillian Mildred Imrie, Melrose, Douglas
Marjorie Janes, Portland, Multnomah
Anna Marie Johnson, Albany, Linn
Lilian Johnson, Corvallis, Benton
Ruth Elizabeth Ketchum, Independence, Polk
Grace Kinnison, Charleston, Missouri
Maude Eliza Lamson, Cottage Grove, Lane
Helen MacDonald, Corvallis, Benton
Mildred Marian Manuel, Oakland, California
Margaret Rhoda Meek, Oakland, California
Helen Bernetta Mercer, Salem, Marion
Ethel May Metzler, North Bend, Coos
Helen Lavena Miller, Corvallis, Benton
Mary Blanche Morris Tennant, Iowa
Clara May Murphy, Portland, Multnomah
Lola Catherine Norton, Vacaville, California
Margaret Patterson, Ashland, Jackson
Lydia Powell, Monmouth, Polk
Sara Watt Prentiss, Bay City, Tillamook
Jessamy Roberts, Portland, Multnomah
Gladys Belle Rodgers, Gardena, California
Hazel Emma Sprague, Corvallis, Benton
Dorathea Emily Steusloff, Salem, Marion
Martha Bertha Struck, Lyle, Washington State
Genevieve Tillery, Corvallis, Benton
Fannie Eldora Virgil, Klamath Falls, Klamath
Ina Mae Wattenburger, Echo, Umatilla
Cleo Oneeta White, McMinnville, Yamhill
Olive Isabelle Wilson, Yoncalla, Douglas
Lois Dorothy Wright, Portland, Multnomah
Minnie Ethel Wright, La Grande, Union
Vida Young, Stayton, Marion

CIVIL ENGINEERING

William Anderson, Portland, Multnomah
John William Bones, Carlton, Yamhill
Milton Harris, Portland, Multnomah
Albert Gordon Skelton, Corvallis, Benton

ELECTRICAL ENGINEERING

Henry Blagg, Hood River, Hood River
John Amos Hooper, Corvallis, Benton
LeRoy Lester Houck, Dallas, Polk
Walter Victor Monger, Parkplace, Clackamas
Donald Chapman Stoppenbach, Portland, Multnomah
Albrecht Streiff, Hillsdale, Multnomah
William Williams, Portland, Multnomah

INDUSTRIAL ARTS

Charles Barnard Gatchell, Wakefield, Pennsylvania
Charles King, Ashland, Jackson
Harl Craig McCormick, Corvallis, Benton
Fred Powers, Oakland, Douglas
Lewis Claude Sanders, Corvallis, Benton

IRRIGATION ENGINEERING

Benjamin Franklin Rush, Elgin, Union

MECHANICAL ENGINEERING

Wilbur Ball, Portland, Multnomah
Earle Boone, Toledo, Washington State
John Carlyle Boone, Corvallis, Benton
Leland David Creighton, Portland, Multnomah
Herman Graf, Portland, Multnomah
Leo Klein Hyams, Portland, Multnomah
Ralph Mills Kenton, Albany, Linn
Porter Wilson Martin, Corvallis, Benton
Dwight Gilbert Platt, Idaho Falls, Idaho
Harry Baxter Porter, Corvallis, Benton
Robert Franklin Throne, Ashland, Jackson
Forrest Thrift Wicks, Albany, Linn

MINING ENGINEERING

Will Boyer, Portland, Multnomah
Cornelius William Meyers, Portland, Multnomah
Cyril Lawrence Meyers, Portland, Multnomah
Edwin Harvey Miller, Salem, Marion
James Lockhart Turnbull, Mooreville, Malheur

CHEMICAL ENGINEERING

Deloss Everett Bullis, Payette, Idaho
Herbert William Kruger, Sherwood, Washington
David Clyde Morris, Edmond, Oklahoma
Ray Prindle, Payette, Idaho

COMMERCE

Winfried Bernard Arens, New York City, New York
Pearl Faye Barzee, Corvallis, Benton
Clarence Wilson Bixby, Paulina, Crook
Lester Lee Branthoover, Payette, Idaho
Tressa Churchman, Corvallis, Benton
Margaret Genevieve Frazier, Salem, Marion
Mary DeEtta Ingham, Portland, Multnomah
Eslie Floreine Jewel, Corvallis, Benton
David Morris John, Corvallis, Benton
Darrel Delos Johnson, Corvallis, Benton
Louis Merle Johnson, Sunnyside, Washington State
Floyed Sanford Metzger, Gresham, Multnomah
Ruth Alma Norman, Milton, Umatilla
Clara Olga Post, Blachly, Lane
Robert Ray Reichart, Corvallis, Benton
Lorene Richards, Corvallis, Benton
Philip Roddis Sessions, Portland, Multnomah
Charn Singh Sodhi, Baluchistan, India
Merle Tillery, Corvallis, Benton
Zetta Underwood, Lebanon, Linn
George Warren Vilas, Medford, Jackson
Ralph Wilcox, Portland, Multnomah

BACHELOR OF SCIENCE DEGREES, 1916

(Granted at end of Summer Session)

AGRICULTURE

Hosmer Cullen Gambee, Phoenix, Arizona
Louis Phaon Gambee, Corvallis, Benton
Marcus Francis Hathaway, Corvallis, Benton

HOME ECONOMICS

Norma Gladys Bick, Philomath, Benton
Elva Merle Bowen, Silverton, Marion
Alice Butler, Mapleton, Iowa
Evelyn Conklin, Grants Pass, Josephine
Keren Lee Davis, Portland, Multnomah
Jessie Harritt, Salem, Marion
Jessie Ruth Hill, Eugene, Lane
Gertrude Hollingsworth, Newberg, Yamhill
Iona Margaret Irving, Albany, Linn
Lottie Milam, Macon, Missouri
Emily Marie Miller, Corvallis, Benton
Emma Winifred Patterson, Corvallis, Benton
Leora Philippi, Early, Gilliam
Alice Petra Pimm, Philomath, Benton
Anna Neave Rutledge, Spokane, Washington State
Rose Mae Sheridan, Shedd, Linn
Esther Ruby Smith, Amity, Yamhill
Mildred Helen Soden, Portland, Multnomah
Lillian Thordarson, Corvallis, Benton

ELECTRICAL ENGINEERING

Alston Conway Archbold, Corvallis, Benton
George Randolph Thomas, Forest Grove, Washington

INDUSTRIAL ARTS

William David Allingham, Corvallis, Benton
Paul Francis Amort, Corvallis, Benton
Brewer Astor Billie, Astoria, Clatsop
Lloyd Herbert Blakely, Corvallis, Benton
James Alfred Straughan, Pendleton, Umatilla

COMMERCE

Enid Glenda Leeper, Corvallis, Benton
Charles Jacob Williamson, Corvallis, Benton
Milton Edwin Woodcock, Corvallis, Benton

OTHER DEGREES AND DIPLOMAS

GRADUATE IN PHARMACY

Mary Jane Dunn, Sumpter, Baker
Floyd Benton Flanery, Corvallis, Benton
Joseph Orlean Genoud, Camas, Washington State
Clyde Dale Horner, Corvallis, Benton
Clyde Hubbard, Weiser, Idaho
Charles Luther Palmer, Baker, Baker
Clarence Edwin Pryer, Jr., Fortuna, California
Harold Ray Shake, Payette, Idaho

DIPLOMA, SCHOOL OF MUSIC

Jessie Ruth Darling, Thorne, North Dakota
Ruby Ann Lorence, Monmouth, Polk

VOCATIONAL CERTIFICATES

For the successful completion of the vocational courses in Agriculture, Commerce, Dairying, Forestry, Home Making, and Mechanic Arts, varying in length from one to three years, students are granted certificates which are delivered to them as the requirements are satisfied.

AGRICULTURE

Joseph Willard Brown, Shedd, Linn
William Chris Daniels, Hoquiam, Washington State
Donald Monroe Gray, Philomath, Benton
Edward Grell, Albany, Linn
John Jeppesen, Bacona, Washington
Masno Namba, Portland, Multnomah
Charles Payzant, Chehalis, Washington State

DAIRY HUSBANDRY

Ingwald Ferdinand Dahl, Vancouver, Washington State
Ernest Larson, Turner, Marion
Ralph Blanchard Rayburn, Whittier, California

HOME ECONOMICS

Elena Anawalt, Jordan Valley, Malheur
Frances Roberta Brown, Haines, Baker
Olive Viola Cramer, Corvallis, Benton
Lois Winnifred Darling, Thorne, North Dakota
Dorothy Evans, Roseburg, Douglas
Elsie Echo Frizzell, Rickreall, Polk
Bertha Gertrude Hopkins, Tulare, California
Iva Grace Moore, Corvallis, Benton
Edith Marie Romig, McCoy, Polk
Hazel Anna Stebbins, Lordsburg, California
Laura Elaine Stimpson, Corvallis, Benton
Lois Emily Straight, Lordsburg, California
Corrine Marian Whitmore, Jermyn, Pennsylvania

MECHANIC ARTS

DeLin Eames, Cordova, Alaska

COMMERCE

Clifford Heegler Moody, Fairbanks, Alaska

Respectfully submitted,

H. M. TENNANT,
Registrar.

REPORT OF THE TREASURER.

To the Honorable President and Board of Regents of the Oregon Agricultural College,

Gentlemen: Herewith my report covering all Federal, State, and County Appropriations for Maintenance, Buildings, Equipment, Improvements, Repairs, Library, Experiment, Educational Extension, and other scientific and educational purposes.

Because of the limited time betwen December 31 and the session of the legislature, it is impracticable to bring all reports up to the close of the calendar year; hence I have shown all Maintenance and Special appropriations up to June 30, 1918, Experiment Stations and Educational Extension up to September 30, 1918, and County Extension appropriations up to December 10, 1918.

Respectfully submitted,

C. L. HAWLEY,

Treasurer.

DIVISION I—RESIDENT INSTRUCTION.

STATE AND FEDERAL FUNDS.

July 1, 1916, to June 30, 1917.

RECEIPTS

Balance July 1, 1916, (Millage Tax)	$ 35,742.34	
Balance July 1, 1916, (Land Grant Interest)	2,307.27	
Balance July 1, 1916 (College Miscell.)	33,628.16	
Fees, Entrance, Diploma, etc.	19,657.14	
Millage Tax (2nd half 1916; 1st half 1917)	362,651.74	
Land Grant Interest Fund	12,893.05	
Morrill-Nelson Fund (Federal)	50,000.00	
Total Receipts and Balances		$516,879.70

DISBURSEMENTS

Salaries	$265,036.24	
Labor	7,850.06	
Office Supplies	3,307.46	
Class Spplies	450.17	
Traveling Expenses	4 236.76	
Heating	20,870.84	
Janitorial	12,338.44	
Light and Power	8,326.54	
Water	1,692.09	
Campus	5,876.79	
Telephone and Telegraph	1,357.02	
Advertising	1,349.39	
Publications and Printing	15,550.74	
Miscellaneous Supplies	9,660.56	
Freight and Express	2,599.68	
Feeding Stuffs	5.065.70	
Library	2,705.45	
Equipment	10,021.53	
Livestock	1,835.05	
Contingent, Rentals, etc.	1.698.56	
Repairs	9.980.67	
Improvement	10,603.39	
Forestry Building (Construction)	24.729.36	
Hog Barn (Construction)	5.045.29	
Total Disbursements		$432,187.78
Balance June 30, 1917		$ 84,691.92

STATE AND FEDERAL FUNDS.

July 1, 1917, to June 30, 1918.

RECEIPTS

Balance July 1, 1917 (Millage Tax)	$ 49,776.46	
Balance July 1, 1917 (Land Grant Int.)	1,671.63	
Balance July 1, 1917 (College Miscell.)	33,243.83	
Fees, Entrance, Diploma, etc.	10 141.58	
Millage Tax (2d half 1917; 1st half 1918)	361,473.91	
Land Grant Interest Fund	10,973.39	
Morrill-Nelson Fund (Federal)	50.000.00	
Total Receipts and Balances		$517,280.80

DISBURSEMENTS

Salaries	$278,442.63	
Labor	14,464.72	
Office Supplies	3,862.02	
Class Supplies	1,091.55	
Traveling Expenses	7,249.68	
Heating	24,355.35	
Janitorial	14,944.59	
Light and Power	7,508.27	
Water	2,098.17	
Campus	7,707.28	
Telephone and Telegraph	2,606.79	
Advertising	3,543.27	
Publications and Printing	19,017.73	
Miscellaneous Supplies	7,354.07	
Freight and Express	1,482.12	
Library	3,960.34	
Equipment	18,632.15	
Livestock	1,303.50	
Contingent and Rentals	1,526.22	
Repairs	6,163.53	
Improvements	33,345.64	
Hort. By-Products Bldg.	14,332.66	
Library Bldg	21,219.87	
Veterinary Hospital Bldg.	9.511.36	
Total Disbursements		$505,723.51
Balance June 30, 1918		$ 11,557.29

DEPARTMENTAL FEES.

July 1, 1916, to June 30, 1917.

RECEIPTS

Balance July 1, 1916	$14,035.27	
Fees for Fiscal Year	26,058.97	
Total Receipts and Balances		$40,094.24

DISBURSEMENTS

Transferred to C. M.	$ 8,170.22	
Labor	2,585.33	
Postage and Stationery	417.86	
Freight and Express	1,061.31	
Heat, Light and Power, etc.	650.92	
Class Supplies	12,523.84	
Supplies	1,094.61	
Library	40.88	
Tools and Machinery	1,809.17	
Furniture and Fixtures	1,170.69	
Scientific Apparatus	333.89	
Traveling Expenses	350.66	
Contingent Expenses	32.10	
Total Disbursements		$30,241.48
Balance June 30, 1917		$ 9,852.76

DEPARTMENTAL FEES.

July 1, 1917, to June 30, 1918.

RECEIPTS

Balance July 1, 1917	$ 9,852.76	
Fees for Fiscal Year	23,504.62	
Total Receipts and Balances		$33,357.38

DISBURSEMENTS

Labor	$ 2,834.73	
Publications	56.28	
Stationery and Small Printing	1,129.10	
Postage, Telephone and Telegraph	727.22	
Heat, Light and Power, etc.	714.30	
Chemical Supplies	14,320.55	
Supplies	3,365.42	
Feed	4.50	
Library	194.91	
Tools and Machinery	928.97	
Furniture and Fixtures	1,006.96	
Scientific Apparatus	202.99	
Live Stock	2.00	
Traveling Expenses	95.40	
Contingent Expenses	5.90	
Total Disbursements		$25,589.23
Balance July 1, 1918		$ 7,768.15

MISCELLANEOUS FUND.

July 1, 1916, to June 30, 1917.

RECEIPTS

For Fiscal Year	$35,900.44

DISBURSEMENTS

Salary	$ 3,982.03	
Labor	1,419.15	
Publications	10.37	
Postage and Stationery	325.96	
Freight and Express	338.77	
Heat, Light, Water, Power	28.22	
Class and Laboratory Supplies	60.19	
Seeds, Plants and Sundry Supplies	2,172.03	
Fertilizer	11.00	
Feeding Stuffs	7,020.85	
Tools, Machinery and Appliances	205.51	
Furniture and Fixtures	14.45	
Scientific Apparatus	115.02	
Live Stock	823.33	
Traveling Expenses	39.00	
Contingent Expenses	252.55	
Buildings and Lands	721.39	
Total Expenditures—Misc. Fund Vo's No. 1-207		$17,539.82
Balance July 1, 1917		$18,360.62

MISCELLANEOUS FUND.

July 1, 1917, to June 30, 1918.

RECEIPTS

Balance July 1, 1917	$18,360.62	
Receipts for Fiscal Year	45,923.49	
Total Receipts and Balances		$64,284.11

DISBURSEMENTS

Salaries	$ 9,378.48	
Labor	9,590.29	
Publications	12.50	
Stationery and Small Printing	783.22	
Postage, Telephone and Telegraph	169.14	

Heat, Light and Power	5.50	
Chemical Supplies	130.82	
Supplies	10,584.84	
Fertilizer	14.00	
Feed	15,427.51	
Library	11.25	
Tools and Machinery	1,236.63	
Furniture and Fixtures	1,676.70	
Scientific Apparatus	44.74	
Live Stock	1,326.05	
Traveling Expenses	223.23	
Rentals and Contingent Expenses	2,826.72	
Building and Lands	193.70	
Total Disbursements		$53,634.32
Balance July 1, 1918		$10,649.79

SPECIAL STATE APPROPRIATION—LIBRARY BUILDING.

Chapter 314—Laws 1917.

RECEIPTS

Appropriation	$65,000.00

DISBURSEMENTS

On Contract	65,000.00
Balance	

DIVISION II—AGRICULTURAL EXPERIMENT STATION.

HOME STATION.

July 1, 1916, to June 30, 1917.

RECEIPTS

Federal Appropriation—		
Hatch Fund	$15,000.00	
Adams Fund	15,000.00	
Total		$30,000.00

DISBURSEMENTS

	Hatch	Adams
Salaries	$ 7,507.49	$12,145.90
Labor	2,139.00	982.21
Publications	915.97	.....
Postage and Stationery	283.75	9.83
Freight and Express	86.34	75.22
Heat, Light, Water and Power	21.19	96.77
Chemicals and Laboratory Supplies	170.60	733.14
Seeds, Plants and Sundry Supplies	321.17	287.86
Fertilizers	17.65	.....
Feeding Stuffs	1,435.22	54.93
Library	61.00	1.50
Tools, Machinery and Appliances	265.52	181.95
Furniture and Fixtures	103.62	23.08
Scientific Apparatus and Specimens	47.45	362.96
Live Stock	183.00	.....
Traveling Expenses	1,365.47	44.65
Contingent Expenses	20.00	.....
Building and Lands	55.56	.....
Total Disbursements	$15,000.00	$15,000.00
Balance June 30, 1917	.....	.....

HOME STATION.

July 1, 1917, to June 30, 1918.

RECEIPTS

Federal Appropriations—		
Hatch Fund	$15,000.00	
Adams Fund	15,000.00	
Total		$30,000.00

DISBURSEMENTS	Hatch	Adams
Salaries	$11,182.97	$10,875.09
Labor	840.32	1,078.66
Publications	458.89	.....
Postage and Stationery	84.31	33.98
Freight and Express	40.82	117.36
Heat, Light, Water and Power	7.17	67.68
Chemicals and Laboratory Supplies	28.70	1,451.36
Seeds, Plants and Sundry Supplies	249.74	759.55
Fertilizers	3.12	.....
Feeding Stuffs	1,150.34	63.35
Library	.93	4.63
Tools, Machinery and Appliances	182.91	103.74
Furniture and Fixtures	13.28	30.00
Scientific Apparatus and Specimens	27.15	400.25
Live Stock	88.50	.....
Traveling Expenses	616.30	14.35
Contingent Expenses	24.55	.....
Building and Lands	.....	.....
Total Disbursements	$15,000.00	$15,000.00
Balance June 30, 1918	.....	.....

HOME STATION

July 1, 1916, to June 30, 1918.

RECEIPTS	
Crop and Fruit Pest—	
Balance July 1, 1916	$369.74
Scientific Investigation—	
Balance July 1, 1916	117.89
Total	$487.63

DISBURSEMENTS	Crop and Fruit Pest.	Sci. Inv.	
Seeds and Supplies	$ 17.25	.....	
Postage, etc.	.....	$14.40	
Laboratory Supplies	.....	11.39	
Total	$ 17.25	$25.79	$ 43.04
Balance June 30, 1918			$444.59

BRANCH STATIONS.

July 1, 1916, to June 30, 1917.

RECEIPTS	Eastern Oregon	Umatilla	Moro	Harney	Southern Oregon
Balance July 1, 1916	$ 4,316.57	$1,718.00	$1,628.88	$2,666.80	$2,562.02
Appropriation	7,500.00	3,000.00	2,500.00	4,000.00	5,000.00
Balance 1916 Appropriation	.....	.....	.....	.....	.....
Total	$11,816.57	$4,718.00	$4,128.88	$6,666.80	$7,562.02
DISBURSEMENTS					
Salaries	$ 3,291.31	$2,159.96	$ 380.00	$1,514.92	$4,087.43
Labor	2,789.33	.....	1,106.49	1,278.54	114.85
Postage and Stationery	44.99	1.60	1.50	68.68	65.00
Publications	19.87	.....	.....	.....	.....
Freight and Express	21.51	1.62	12.70	10.83	66.17
Heat, Light and Power	23.20	.....	24.60	72.42	85.92
Chemical Supplies	.....	.....	.....	.....	55.40
Sundry Supplies	146.31	1.00	81.92	383.01	206.96
Water Tax	20.00	.....	11.70	.....	.....
Feed Stuffs	150.58	710.63	43.55	267.41	82.25
Library	.....	.....	.....	.....	3.53
Tools and Machinery	112.73	321.25	103.70	193.63	56.50
Traveling	106.05	15.70	85.69	247.81	255.13
Buildings and Repairs	527.64	123.85	.....	781.38	35.29
Live Stock	35.00	.....	21.05	31.22	.....
Contingent	7.00	.....	.....	8.00	10.50
Fertilizer	.....	.....	.....	2.50	98.61
Furniture and Fixtures	.....	.....	.....	18.14	.....
Scientific Apparatus	.....	.....	.....	.....	8.49
Total	$ 7,295.52	$3,335.01	$1,872.90	$4,878.49	$5,232.03
Balance June 30, 1917	$ 4,521.05	$1,382.39	$2,255.98	$1,788.31	$2,329.99

BRANCH STATIONS.

July 1, 1917, to June 30, 1918.

RECEIPTS	Eastern Oregon	Umatilla	Moro	Harney	Southern Oregon
Balance July 1, 1917	$ 4,521.05	$1,382.39	$2,255.98	$1,788.31	$2,329.99
Appropriation	7,500.00	3,000.00	2,500.00	4,000.00	5,000.00
Total	$12,021.05	$4,382.39	$4,755.98	$5,788.31	$7,329.99
DISBURSEMENTS					
Salaries	$ 861.67	$1,122.73	$ 484.75	$1,719.29	$3,713.61
Labor	5,462.69	900.30	1,290.16	714.41	9.90
Postage and Stationery	78.81	39.30	11.00	.....	56.33
Freight and Exp., Tel.	191.83	26.54	20.14	36.77	5.29
Heat, Light and Power	304.48	11.88	29.80	49.66	97.07
Scientific Apparatus	.....	.....	.....	.....	94.65
Chemical Supplies	.....	.....	.....	.....	.....
Seeds and Supplies	824.98	169.92	166.15	104.07	296.87
Feed Stuffs	261.86	35.91	.....	.....	204.78
Library	.....	3.35	5.00	.....	3.24
Tools and Machinery	708.28	81.84	10.60	133.00	33.30
Live Stock	35.00	500.00	.....	.....	.....
Travel	97.50	195.27	59.85	146.85	262.61
Contingent	2.40	4.80	.....	.....	6.00
Buildings and Repairs	430.35	.....	451.00	372.54	41.84
Furniture and Fixtures	21.20	.....	.....	.....	5.40
Fertilizer	.....	13.90	.....	.....	16.80
Publications	.....	14.50	245.19	55.61	.....
Totals	$ 9,281.05	$3,120.24	$2,773.64	$3,332.20	$4,895.32
Balance June 30, 1918	$ 2,740.00	$1,262.15	$1,982.34	$2,456.11	$2,434.67

BRANCH STATIONS.

July 1, 1916, to June 30, 1917.

	J. J. Astor	Hood River
Balance June 30, 1916	$ 521.68	$ 462.08
Appropriation—State	3,000.00	3,000.00
Appropriation—County	.....	.....
Appropriation—Sales	864.46	57.50
Total	$4,386.14	$5,519.58
DISBURSEMENTS		
Salary	$1,628.88	$3,500.00
Labor	890.98	89.00
Postage	1.30	83.27
Freight and Express	160.43	7.53
Heat, Light and Power	207.90	16.49
Seeds and Sundry Supplies	289.90	202.06
Fertilizer	22.00	4.10
Library	....	5.31
Feeding Supplies	1,183.83	....
Tools and Machinery	58.90	482.12
Travel	72.89	615.46
Contingent	9.50	31.50
Building and Lands	5.25	79.68
Publications	....	453.44
Total	$4,531.76	$5,569.96
Balance July 1, 1917	**$ 145.62**	**$ 50.38**

Black face figures denote overdraft or deficit.

BRANCH STATIONS.

July 1, 1917, to June 30, 1918.

	J. J. Astor	Hood River
Balance July 1, 1917	**$ 145.62**	**$ 50.38**
Appropriation—State	3,000.00	3,000.00
Appropriation—County	....	2,000.00
Appropriation—Sales	2,732.94	....
Total	$5,587.32	$4,949.62
DISBURSEMENTS		
Salary	$ 618.33	$3,571.25
Labor	2,056.69	1.75
Chemical Supplies	....	65.26
Postage	17.00	103.52
Freight and Express	76.62	29.88
Heat, Light and Power	1.70	....
Seeds, etc.	225.84	50.17
Fertilizer	....	4.90
Feeding	1,443.53	....
Tools and Machinery	128.70	22.15
Live Stock	62.05	....
Scientific Apparatus	5.00	6.28
Travel	27.75	687.86
Contingent	2.45	189.67
Building and Land Improvements	188.15	....
Total	$4,853.81	$4,732.69
Balance July 1, 1918	$ 733.51	$ 216.93

BRANCH STATIONS.

Miscellaneous Receipts.

July 1, 1916, to June 30, 1917.

MISCELLANEOUS	Eastern Oregon	Harney	Moro	Southern Oregon	Umatilla
Balance July 1, 1916	$16,613.61	$45.55	$ 580.43	$ .08	$ 20.44
Sales, etc.	8,176.76	.....	1,846.03	6.50	878.50
Total Receipts	$24,790.37	$45.55	$2,426.46	$6.58	$898.94
EXPENDITURES					
Salaries	$ 623.32	.....	$ 70.63	...	.....
Labor	1,217.56	.....	5.85	...	$ 11.50
Publications	.....	.....	.....	...	.....
Postage and Stationery	39.88	.....	28.66	...	7.60
Freight and Express	131.76	.....	27.83	...	1.48
Heat, Light and Power	43.12	.....	84.61	...	.....
Water Tax	.....	.....	15.20	...	.....
Chemical Supplies	.....	.....	.....	...	.....
Seeds and Supplies	187.30	.....	246.73	...	1.70
Feeding Stuffs	222.59	.....	.....	...	.....
Library	.....	.....	.....	...	.....
Tools, Machinery	888.22	.....	447.95	...	32.25
Furniture and Fixtures	.....	.....	61.00	...	.....
Scientific Apparatus	.....	.....	.....	...	.....
Live Stock	8,184.66	.....	20.00	...	.....
Traveling	87.40	44.71	73.60	...	27.55
Contingent Expense	1.20	.....	.90	...	1.20
Buildings and Repairs	130.00	.....	146.35	...	.....
Total Disbursements	$11,757.01	$44.71	$1,229.31	...	$ 83.28
Balance June 30, 1917	$13,033.36	$ .84	$1,197.15	$6.58	$815.66

Black face figures denote overdraft or deficit.

BRANCH STATIONS.

Miscellaneous Receipts.

July 1, 1917, to June 30, 1918.

MISCELLANEOUS RECEIPTS	Eastern Oregon	Harney	Moro	Southern Oregon	Umatilla
Balance July 1, 1917	$13,033.36	$ .84	$1,197.15	$ 6.58	$815.66
Sales, etc.	31,785.77	2,744.13	984.00	87.48	122.30
Total Receipts	$44,819.13	$2,744.97	$2,181.15	$94.06	$937.96
DISBURSEMENTS					
Salaries	$ 610.82	.....	.....	....	.....
Labor	1,983.54	$ 498.17	$ 4.75	....	$604.20
Publications	.....	.....	.....	....	.....
Postage and Stationery	57.85	84.44	.....	....	7.89
Freight and Express	170.18	18.69	.....	....	14.01
Heat, Light and Power	157.56	69.14	68.78	....	.....
Water Tax	.....	.....	.....	....	.....
Chemical Supplies	.....	.....	.....	....	2.50
Seeds and Supplies	320.91	385.13	65.44	....	3.20
Feeding Stuffs	672.75	39.85	.....	....	.....
Library	.....	.....	.....	....	.....
Tools, Imp. and Machinery	609.82	66.07	476.35	....	18.80
Furniture and Fixtures	324.99	.....	34.35	....	.....
Scientific Apparatus	28.80	.....	.....	....	.....
Live Stock	8,161.12	10.00	.....	....	.....
Traveling	60.55	195.65	.....	....	33.23
Contingent Expense	35.45	17.20	.....	....	3.85
Buildings and Repairs	508.64	160.62	13.64	....	18.30
Total Disbursements	$13,712.98	$1,545.95	$ 663.31	....	$706.18
Balance June 30, 1918	$31,106.15	$1,199.02	$1,517.84	$94.06	$231.78

AGRICULTURAL INVESTIGATIONS.

Chapter 364—Laws 1917.

May 20, 1917, to June 30, 1917.

RECEIPTS		
1917 Appropriation		$5,000.00
DISBURSEMENTS		
Salaries	$ 125.00	
Labor	37.95	
Publications	70.86	
Total		$ 233.81
Balance June 30, 1917		$4,766.19
DISBURSEMENTS		
Salary	$3,058.34	
Labor	186.00	
Publications	545.53	
Postage, Telephone and Telegraph	.48	
Freight and Express	79.03	
Supplies	77.75	
Tools and Machinery	8.30	
Scientific Apparatus	22.36	
Travel	135.00	
Total Disbursements		$3,878.98
Balance June 30, 1918		$ 887.21

AGRICULTURAL INVESTIGATIONS.

Chapter 364—Laws 1917.

July 1, 1917, to June 30, 1918.

RECEIPTS		
1918 Appropriation		$5,000.00
DISBURSEMENTS		
Salary	$578.86	
Labor	12.22	
Publications	9.44	
Postage	2.00	
Telephone and Telegraph	13.96	
Library	1.20	
Travel	62.20	
Total Disbursements		$ 679.88
Balance June 30, 1918		$4,320.12

AGRICULTURAL INVESTIGATIONS—COOPERATIVE.

Chapter 364—Laws 1917.

May 20, 1917, to June 30, 1918.

RECEIPTS		
1917 Appropriation		$10,000.00
DISBURSEMENTS		
Salary	$5,100.00	
Labor	1,829.36	
Publications	158.94	
Postage and Stationery	42.73	
Freight and Express	77.90	
Heat, Light, Water and Power	12.50	
Chemical Supplies	37.36	
Supplies	157.95	
Fertilizer	23.14	
Feed	2.85	
Library	24.33	
Tools and Machinery	4.00	
Travel	1,343.95	
Contingent	.40	
Total Disbursements		$ 8 815.41
Balance June 30, 1917		$ 1,184.59

AGRICULTURAL INVESTIGATIONS—COOPERATIVE.

Chapter 364—Laws 1917.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917—1917 Appropriation		$ 1,184.59
1918 Appropriation		10,000.00
Total Receipts		$11,184.59
DISBURSEMENTS		
Salary	$422.58	
Labor	306.88	
Publications	138.09	
Postage and Stationery	16.98	
Freight and Express	37.73	
Heat	....	
Chemical Supplies	201.74	
Supplies	823.90	
Library	17.85	
Tools and Machinery	3.90	
Furniture and Fixtures	2.90	
Traveling	162.40	
Total Disbursements		$ 2,143.95
Balance June 30, 1918		$ 9,040.64

FERTILIZER INSPECTION.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916		$105.55
Fees for Fertilizer Inspection Service		457.62
Total		$563.17
DISBURSEMENTS		
Salaries and Labor	$233.10	
Supplies	59.87	
Travel and Expense Account	75.00	
Printing, etc.	4.20	
Freight, Express and Drayage	17.76	
Total Disbursements		$389.93
Balance June 30, 1917		$173.24

FERTILIZER INSPECTION.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917		$173.24
Fees for Fertilizer Inspection Service		454.22
Total		$627.46
DISBURSEMENTS		
Salaries and Labor	$229.68	
Supplies	31.90	
Traveling Expenses	190.69	
Printing	14.11	
Freight, Express, Telephone and Telegraph	20.33	
Total Disbursements		$486.71
Balance June 30, 1918		$140.75

DIVISION III—EXTENSION SERVICE.

STATE GENERAL EDUCATIONAL EXTENSION FUND.

July 1, 1916, to June 30, 1917.

RECEIPTS		
State Appropriation, 1916—Balance		$16,589.84
DISBURSEMENTS		
Salary	$8,519.75	
Labor	482.80	
Publications	1,685.87	
Postage, Freight, Express, Telephone and Tel.	248.04	
Sundry Supplies	183.11	
Stationery and Small Printing	227.99	
Heat, Light and Power, etc.	10.80	
Tools and Machinery	39.88	
Furniture and Fixtures	851.92	
Scientific Apparatus	3.06	
Travel	1,767.38	
Total		$14,020.60
Balance June 30, 1917		$ 2,569.24

July 1, 1917, to June 30, 1918.

RECEIPTS		
State Appropriation, 1916—Balance		$ 2,569.24
DISBURSEMENTS		
Printing, etc.	$2,028.88	
Postage, etc.	275.60	
Stationery and Small Printing	5.91	
Supplies	3.00	
Total		$ 2,313.39
Balance June 30, 1918		$ 255.85

STATE GENERAL EDUCATIONAL EXTENSION FUND.

January 1, 1917, to June 30, 1917.

RECEIPTS		
State Appropriation, 1917		$25,000.00
DISBURSEMENTS		
Salary	$17,146.56	
Labor	1,739.69	
Printing and Publication	1,113.99	
Stationery and Small Printing	386.44	
Postage, Tel. and Tel. Freight and Express	1,011.13	
Supplies	621.95	
Library	7.50	
Tools and Machinery	123.30	
Furniture and Fixtures	84.80	
Scientific Apparatus	12.70	
Travel	2,467.44	
Contingent	7.30	
Total		$24,722.80
Balance June 30, 1917		$ 277.20

July 1, 1917, to June 30, 1918.

RECEIPTS		
State Appropriation, 1917—Balance		$ 277.20
DISBURSEMENTS		
Travel	$ 201.50	
Tools and Machinery	7.61	
Total		$ 209.11
Balance June 30, 1918		$ 68.09

STATE GENERAL EDUCATIONAL EXTENSION FUND.

January 1, 1918, to June 30, 1918.

RECEIPTS		
State Appropriation, 1918		$25,000.00
DISBURSEMENTS		
Salary	$5,619.29	
Labor	171.61	
Printing and Publication	19.91	
Stationery and Small Printing	175.50	
Postage, Tel. and Tel., Freight and Express	810.80	
Supplies	33.09	
Tools and Machinery	7.60	
Furniture and Fixtures	72.50	
Travel	1,584.40	
Total		$ 8,494.70
Balance June 30, 1918		$16,505.30

FEDERAL SMITH-LEVER FUND.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Federal Appropriation		$18,151.66
DISBURSEMENTS		
Salaries	$9,819.99	
Labor	647.60	
Printing and Dis. of Publication	981.19	
Stationery and Small Printing	162.76	
Postage, Tel. and Tel., Freight and Express	226.01	
Supplies	607.23	
Traveling	5,706.88	
Total Disbursements		$18,151.66

FEDERAL SMITH-LEVER FUND.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Federal Appropriation		$21,856.96
DISBURSEMENTS		
Salaries	$12,631.26	
Labor	700.13	
Printing and Dist. of Publications	920.40	
Stationery and Small Printing	731.34	
Postage, Tel. and Tel., Freight and Express	1,465.64	
Heating, Light, Water and Power	3.25	
Supplies	373.14	
Library	3.90	
Tools, Machinery and Appliances	82.47	
Furniture and Fixtures	385.56	
Scientific Apparatus and Specimens	10.62	
Traveling	4,391.80	
Contingent	157.45	
Total Disbursements		$21,856.96

EXTENSION MISCELLANEOUS FUND.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916	$ 260.89	
Miscellaneous Sales, etc.	1,208.38	
Total		$1,469.27
DISBURSEMENTS		
Salaries and Labor	$ 493.56	
Supplies	37.11	
Travel and Expense Account	376.41	
Miscellaneous—Repairs, Tel. and Tel., etc.	248.93	
Printing, etc.	66.65	
Freight and Express and Drayage	2.00	
Total Disbursements		$1,224.66
Balance June 30, 1917		$ 244.61

EXTENSION MISCELLANEOUS FUND.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917	$ 244.61	
Miscellaneous sales, etc.	1,840.46	
Total		$2,085.07
DISBURSEMENTS		
Salaries and Labor	$1,389.74	
Supplies	338.81	
Traveling Expense	232.39	
Contingent Expense	140.00	
Printing, etc.	21.20	
Freight and Expense, Tel. and Tel.	.....	
Total Disbursements		$2,122.14
Balance June 30, 1918		**$ 37.07**

Black face figures denote overdraft or deficit.

COOPERATIVE FARM DEMONSTRATION FUND.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916	$ 4,446.52	
State Appropriation 1916-17	15,000.00	
Total		$19,446.52
DISBURSEMENTS		
Salaries	$ 6,372.07	
Labor	502.66	
Postage, Tel. and Tel. and Freight and Express	376.54	
Stationery and Small Printing	215.42	
Printing and Publications	215.35	
Seeds and Supplies	83.59	
Tools and Machinery	99.77	
Furniture and Fixtures	332.84	
Heating, Light and Power, etc.	4.10	
Travel	5,617.12	
Contingent	3.00	
Total Disbursements		$13,822.46
Balance July 30, 1917		$ 5,624.06

COOPERATIVE FARM DEMONSTRATION FUND.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917	$ 5,624.06	
State Appropriation 1917-1918	15,000.00	
Total		$20,624.06
DISBURSEMENTS		
Salaries	$ 5,746.62	
Labor	532.88	
Printing and Publications	2,814.48	
Stationery and Small Printing	593.09	
Postage, Tel. and Tel., Freight and Express	1,424.57	
Supplies	223.17	
Tools and Machinery	86.78	
Furniture and Fixtures	101.01	
Scientific Apparatus	39.60	
Travel	7,448.00	
Contingent	1.10	
Total		$19,011.30
Balance June 30, 1918		$ 1,612.76

BAKER COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

	State	County
RECEIPTS		
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,600.00	800.00
Total	$1,600.00	$ 800.00
DISBURSEMENTS		
Salaries	$ 321.00	$ 224.00
Labor	47.25	
Frt. and Exp., Ptg., Stg., Tel. and Tel.	72.60	
Stationery and Small Printing	84.65	
Supplies	9.30	
Tools and Machinery	530.40	
Furniture and Fixtures	120.85	
Traveling Expenses	383.35	
Contingent Expense	17.10	3.00
Co. Agt. Rev. Fund	.....	250.00
Total	$1,586.50	$ 477.00
Balance June 30, 1918	$ 13.50	$ 323.00

BENTON COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,500.00	1,500.00
Total	$1,500.00	$1,500.00
DISBURSEMENTS		
Salaries	$ 73.25	$ 73.25
Labor	39.00	39.00
Publications	62.25	62.25
Postage, Frt. and Exp., Tel. and Tel.	26.69	26.69
Stationery and Small Printing	101.54	101.54
Supplies	10.70	10.70
Tools and Machinery	467.72	467.72
Furniture and Fixtures	193.73	193.73
Scientific Appropriation	32.00	32.00
Traveling Expense	128.50	128.50
Contingent Expense	5.00	5.00
Total	$1,140.38	$1,140.38
Balance June 30, 1918	$ 359.62	$ 359.62

CLACKAMAS COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,500.00	$ 750.00
Total	$1,500.00	$ 750.00
DISBURSEMENTS		
Salaries	$ 110.46	$ 236.67
Labor	16.80	
Publications	58.00	
Freight and Express, Telegraph and Telephone	12.32	.16
Stationery and Small Printing	78.15	20.08
Supplies	.95	
Tools and Machinery	350.35	
Furniture and Fixtures	163.90	
Scientific Apparatus	115.04	
Traveling Expense	151.40	
Contingent Expense	.....	3.00
Co. Agt. Rev. Fund	.....	200.00
Total	$1,057.37	$ 459.91
Balance June 30, 1918	$ 442.63	$ 290.09

CLATSOP COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,500.00	750.00
	$1,500.00	$ 750.00
DISBURSEMENTS		
Salaries	$ 358.64	$ 89.33
Publications	18.00	
Freight and Express, Telegraph and Telephone	20.01	
Stationery and Small Printing	41.35	
Library	.75	
Tools and Machinery	536.80	
Furniture and Fixtures	105.00	
Traveling Expense	94.54	
Contingent Expense	.....	3.00
Co. Agt. Rev. Fund	.....	300.00
Total	$1,175.09	$ 392.33
Balance June 30, 1918	$ 324.91	$ 357.67

COLUMBIA COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$	$ .....
Appropriations 16-17	1,500.00	$ 750.00
Total	$1,500.00	$ 750.00
DISBURSEMENTS		
Salaries	$ 203.57	$ 498.00
Labor	38.75	
Publications	7.70	
Freight and Express, Telegraph and Telephone...	54.68	
Stationery and Small Printing	45.00	3.00
Supplies	4.85	
Tools and Machinery	458.10	5.94
Furniture and Fixtures	135.17	1.50
Traveling Expense	68.15	
Contingent Expense	3.00	
Total	$1,018.97	$ 508.44
Balance June 30, 1917	$ 481.03	$ 241.56

COLUMBIA COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 481.03	$ 241.56
Appropriations 17-18	1,500.00	1,500.00
Total	$1,981.03	$1,741.56
DISBURSEMENTS		
Salaries	$ 542.42	$ 639.48
Labor	.....	88.79
Publications	55.10	
Freight and Express, Telegraph and Telephone...	87.66	.52
Stationery and Small Printing	92.89	51.70
Supplies	.80	2.75
Tools and Machinery	132.45	14.92
Furniture and Fixtures	88.50	57.50
Traveling Expense	630.67	32.01
Contingent Expense	7.35	3.00
Co. Agt. Rev. Fund	.....	400.00
Total	$1,637.84	$1,290.67
Balance June 30, 1918	$ 343.19	$ 450.89

COOS COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 685.41	$ 490.16
Appropriation 16-17	2,000.00	1,250.00
Total	$2,685.41	$1,740.16
DISBURSEMENTS		
Salary	$ 666.64	$1,074.97
Labor	50.15	172.30
Freight and Express, Telegraph and Telephone...	97.98	
Heat, etc.	17.00	
Stationery and Small Printing	36.05	7.85
Supplies	5.80	
Tools and Machinery	415.70	5.99
Furniture and Fixtures	70.00	32.40
Traveling	283.40	
Contingent	126.50	
Total	$1,769.22	$1,293.51
Balance June 30, 1917	$ 916.19	$ 446.65

COOS COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 916.19	$ 446.65
Appropriation 17-18	1,500.00	1,500.00
Total	$2,416.19	$1,946.65
DISBURSEMENTS		
Salary	$ 584.40	$ 686.31
Labor	225.17	605.63
Publications	83.50	
Freight and Express, Telegraph and Telephone	147.56	
Water	12.00	
Stationery and Small Printing	53.90	7.00
Supplies	18.25	
Tools and Machinery	33.65	7.45
Furniture and Fixtures	8.50	
Traveling Expense	600.25	
Contingent Expense	131.00	3.00
Co. Agt. Rev. Fund	.....	300.00
Total	$1,898.18	$1,609.39
Balance June 30, 1918	$ 518.01	$ 337.26

CROOK AND DESCHUTES COUNTY AGRICULTURISTS.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 903.93	$ 165.67
Appropriations 16-17	1,600.00	1,750.00
Total	$2,503.93	$1,915.67
DISBURSEMENTS		
Salaries	$ 500.01	$1,301.91
Labor	187.23	50.75
Freight and Express, Telegraph and Telephone	92.05	30.94
Heat and Water	5.75	
Stationery and Small Printing	74.99	31.88
Supplies	11.60	4.45
Tools and Machinery	252.50	4.50
Furniture and Fixtures	21.00	34.25
Traveling Expense	431.52	67.21
Contingent Expense	26.00	.45
Total	$1,602.65	$1,526.34
Balance June 30, 1917	$ 901.28	$ 389.33

CROOK AND DESCHUTES COUNTY AGRICULTURISTS.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 901.28	$ 389.33
Appropriations 17-18	2,050.00	2 614.00
Total	$2,951.28	$3,003.33
DISBURSEMENTS		
Salaries	$ 578.43	$ 829.31
Labor	104.35	326.65
Publications	15.55	
Freight and Express, Telegraph and Telephone	322.17	54.58
Water	44.50	
Stationery and Small Printing	183.44	45.27
Supplies	49.50	6.95
Tools and Machinery	244.16	4.30
Furniture and Fixtures	47.00	6.97
Traveling Expense	792.43	321.25
Contingent Expense	27.30	6.00
Co. Agt. Rev. Fund	.....	300.00
Total	$2,408.83	$1,901.28
Balance June 30, 1917	$ 542.45	$1,102.05

DOUGLAS COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,600.00	800.00
Total	$1,600.00	$ 800.00
DISBURSEMENTS		
Salaries	$ 263.00	$ 328.00
Labor	65.00	
Publications	24.00	
Freight and Express, Telegraph and Telephone	39.70	
Stationery and Small Printing	97.70	
Supplies	4.80	
Library	2.00	
Tools and Machinery	276.60	
Furniture and Fixtures	28.75	
Scientific Apparatus and Specimens	15.00	
Traveling Expense	366.16	
Contingent Expense	52.25	3.00
Co. Agt. Rev. Fund	.....	200.00
Total	$1,234.96	$ 531.00
Balance June 30, 1918	$ 365.04	$ 269.00

GILLIAM COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,500.00	750.00
Total	$1,500.00	$ 750.00
DISBURSEMENTS		
Salaries	$ 41.25	$ 107.25
Labor	18.55	
Publications	33.14	
Freight and Express, Telegraph and Telephone	11.08	3.11
Water	15.25	
Stationery and Small Printing	31.60	7.68
Supplies	3.40	
Tools and Machinery	10.35	
Furniture and Fixtures	41.25	80.75
Traveling Expense	175.80	
Contingent Expense	110.00	3.00
Co. Agt. Rev. Fund	.....	400.00
Total	$ 491.67	$ 601.79
Balance June 30, 1918	$1,008.33	$ 148.21

HARNEY COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 2.10	$ .....
Appropriation 16-17	195.75	139.00
Total	$ 197.85	$ 139.00

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 197.85	$ 139.00
Appropriation 17-18		217.00
Total	$ 197.85	$ 356.00
DISBURSEMENTS		
Labor	$ 195.00	$ .....
Traveling Expense		87.30
Total	$ 195.00	$ 87.30
Balance June 30, 1918	$ 2.85	$ 268.70

JACKSON COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$1,173.10	$ 251.27
Appropriations 16-17	2,000.00	2,500.00
Total	$3,173.10	$2,751.27
DISBURSEMENTS		
Salaries	$1,913.12	$1,633.32
Labor	18.98	10.73
Freight and Express, Telegraph and Telephone	90.53	5.03
Heat, etc.	11.35	3.15
Stationery and Small Printing	16.36	15.40
Supplies	53.91	28.41
Tools and Machinery	240.51	11.00
Scientific Apparatus	2.00	
Furniture and Fixtures	..	34.40
Traveling Expense	439.02	62.57
Contingent Expense	248.30	
Total	$3,034.08	$1,804.01
Balance June 30, 1917	$ 139.02	$ 947.26

JACKSON COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 139.02	$ 947.26
Appropriations 17-18	2,000.00	3,000.00*
Total	$2,139.02	$3,947.26
DISBURSEMENTS		
Salaries	$ 896.97	$2,265.52
Labor	13.90	11.72
Publications	61.66	
Freight and Express, Telegraph and Telephone	128.58	41.21
Water	13.45	4.80
Stationery and Small Printing	151.85	23.15
Supplies	57.44	23.46
Tools and Machinery	7.10	13.61
Furniture and Fixtures	12.80	1.75
Traveling Expense	251.28	334.84
Contingent Expense	202.85	63.75
Co. Agt. Rev. Fund	.....	400.00
Total	$1,797.88	$3 183.81
Balance June 30, 1918	$ 341.14	$ 763.45

JOSEPHINE COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 385.64	$ 507.77
Appropriations 16-17	1,350.00	1,075.00
Total	$1,735.64	$1,582.77
DISBURSEMENTS		
Salaries	$ 450.50	$1,210.50
Labor	33.30	7.05
Freight and Express, Telegraph and Telephone	49.36	41.69
Heat and Water	2.25	2.00
Stationery and Small Printing	21.00	34.05
Supplies	13.67	22.96
Tools and Machinery	.....	42.29
Furniture and Fixtures	.....	4.90
Traveling Expense	304.73	149.82
Contingent Expense	61.20	40.00
Building Repairs	.....	10.00
Total	$ 936.01	$1,565.26
Balance June 30, 1917	$ 799.63	$ 17.51

*$500 due.

JOSEPHINE COUNTY AGRICULTURIST

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 799.63	$ 17.51
Appropriations 17-18	1,250.00	1,800.00
Total	$2,049.63	$1,817.51
DISBURSEMENTS		
Salaries	$ 491.00	$ 769.37
Labor	228.50	7.00
Publications	41.50	
Freight and Express, Telegraph and Telephone	60.09	37.41
Water	.75	
Stationery and Small Printing	136.60	7.25
Supplies	12.45	24.44
Tools and Machinery	364.35	12.32
Furniture and Fixtures	.80	
Traveling Expense	289.39	243.07
Contingent Expense	49.30	33.10
Co. Agt. Rev. Fund	.....	250.00
Total	$1,674.73	$1,383.96
Balance June 30, 1918	$ 374.90	$ 433.55

KLAMATH COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$1,427.23	$ 585.07
Appropriations 16-17	1,500.00	1,259.55
Total	$2,927.23	$1,844.62
DISBURSEMENTS		
Salaries	$ 590.01	$1,634.58
Labor	8.50	8.25
Freight and Express, Telegraph and Telephone	137.42	
Heat and Water	5.40	
Stationery and Small Printing	10.00	16.40
Supplies	43.61	4.40
Tools and Machinery	71.25	
Furniture and Fixtures	46.00	
Traveling Expense	818.14	
Contingent Expense	175.25	
Total	$1,905.58	$1,663.63
Balance June 30, 1917	$1,021.65	$ 180.99

KLAMATH COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$1,021.65	$ 180.99
Appropriations 17-18	1,500.00	1,500.00
Total	$2,521.65	$1,680.99
DISBURSEMENTS		
Salary	$ 534.66	$1,396.35
Labor	14.15	
Freight and Express, Telegraph and Telephone	98.45	
Stationery and Small Printing	19.70	23.24
Supplies	28.00	
Tools and Machinery	1.50	
Furniture and Fixtures	22.50	
Traveling Expense	1,546.67	9.40
Contingent Expense	166.50	3.00
Total	$2,432.13	$1,431.99
Balance June 30, 1918	$ 89.52	$ 249.00

LAKE COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 538.62	$ 167.12
Appropriation 16-17	.....	1,450.00
Total	$ 538.62	$1,617.12
DISBURSEMENTS		
Salaries	$ 125.00	$ 703.80
Freight and Express, Telegraph and Telephone	1.45	
Stationery and Small Printing	.....	8.70
Supplies	24.30	30.65
Tools and Machinery	43.60	3.75
Traveling Expense	341.49	517.40
Total	$ 535.84	$1,264.30
Balance June 30, 1917	$ 2.78	$ 352.82

LAKE COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Total	$ 2.78	$ 352.82
Appropriations 17-18		
	$ 2.78	$ 352.82
DISBURSEMENTS		
Tools and Machinery	$	$ 288.76
Traveling Expense	2.10	
Total	$ 2.10	$ 288.76
Balance June 30, 1918	$ .68	$ 64.06

LANE COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 735.77	$ 513.96
Appropriations 16-17	1,500.00	1,500.00
Total	$2,235.77	$2,013.96
DISBURSEMENTS		
Salaries	$ 768.17	$1,657.99
Labor	3.65	2.75
Freight and Express, Telegraph and Telephone	121.98	45.46
Heat and Water, etc.	17.07	1.00
Stationery and Small Printing	86.24	37.60
Supplies	19.34	12.75
Tools and Machinery	375.55	.60
Furniture and Fixtures	10.50	14.50
Traveling Expense	674.41	152.11
Contingent Expense	157.00	15.00
Total	$2,233.91	$1,939.76
Balance June 30, 1917	$ 1.86	$ 74.20

LANE COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 1.86	$ 74.20
Appropriations 17-18	2,500.00	2,250.00
Total	$2,501.86	$2,324.20

DISBURSEMENTS		
Salaries	$ 574.66	$1,100.39
Labor	.80	5.85
Publications	42.34	
Freight and Express, Telegraph and Telephone...	60.79	50.65
Heat and Water	6.57	
Stationery and Small Printing	99.14	62.30
Supplies	9.60	14.20
Library	.25	
Tools and Machinery	18.45	54.68
Furniture and Fixtures	40.85	12.75
Traveling	371.91	269.86
Contingent Expense	197.40	101.50
Co. Agt. Rev. Fund	.....	300.00
Total	$1,422.77	$1,972.18
Balance June 30, 1918	$1,079.09	$ 352.02

LINCOLN COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriation 17-18	1,500.00	$ 750.00
Total	$1,500.00	$ 750.00

DISBURSEMENTS		
Salary	$ 117.88	$ 77.00
Labor	18.96	
Publications	46.66	
Freight and Express, Telegraph and Telephone...	14.32	1.69
Heat and Water	1.75	
Stationery and Small Printing	23.35	7.68
Supplies	1.00	
Tools and Machinery	1.10	
Furniture and Fixtures	19.65	69.90
Traveling Expense	105.19	
Contingent Expense	19.00	3.00
Co. Agt. Rev. Fund	.....	350.00
Total	$ 368.86	$ 509.27
Balance June 30, 1918	$1,131.14	$ 240.73

LINN COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriations 17-18	1,300.00	1,300.00
Total	$1,300.00	$1,300.00

DISBURSEMENTS		
Salaries	$ 3.85	$ 216.65
Freight and Express, Telegraph and Telephone...	.76	
Stationery and Small Printing	21.95	
Library	1.00	
Furniture and Fixtures	7.40	
Traveling Expense	44.21	
Contingent Expense	4.50	3.00
Co. Agt. Rev. Fund	.....	400.00
Total	$ 83.67	$ 619.65
Balance	$1,216.33	$ 680.35

MALHEUR COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 827.48	$ 307.46
Appropriation, 16-17	1,500.00	1,500.00
Total	$2,327.48	$1,807.46

DISBURSEMENTS		
Salaries	$ 266.66	$1,412.55
Labor	44.65	3.80
Freight and Express, Telephone and Telegraph	10.07	
Stationery and Small Printing	13.25	7.85
Supplies	3.00	
Tools and Machinery	29.25	
Furniture and Fixtures	22.50	
Traveling Expense	591.82	
Contingent Expense	4.50	
Total	$ 985.70	$1,424.20
Balance June 30, 1917	$1,341.78	$ 383.26

MALHEUR COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ 383.26
Appropriation, 17-18	1,341.78	750.00
Total	$1,341.78	$1,133.26
DISBURSEMENTS		
Salaries	$ 132.00	$ 540.99
Labor	50.50	133.33
Freight and Express, Telephone and Telegraph	23.64	
Stationery and Small Printing	46.15	6.00
Tools and Machinery	111.30	
Traveling Expense	682.00	
Contingent Expense	.75	
Total	$1,046.34	$ 680.32
Balance June 30, 1918	$ 295.44	$ 452.94

MARION COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$3.20	
Appropriation, 16-17	...	
Total	$3.20	

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$3.20	
Appropriation, 17-18	...	
Total	$3.20	

MORROW COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriation, 17-18	1,500.00	750.00
Total	$1,500.00	$ 750.00
DISBURSEMENTS		
Salaries	$ 276.83	$ 237.07
Labor	.....	127.53
Publications	55.19	
Freight and Express, Telephone and Telegraph	28.14	
Heat and Water	6.35	
Stationery and Small Printing	21.75	
Supplies	6.00	
Tools and Machinery	453.83	
Furniture and Fixtures	199.40	
Scientific Apparatus	.50	
Traveling Expense	291.67	
Contingent Expense	50.00	3.00
Co. Agt. Rev. Fund	.....	250.00
Total	$1,389.96	$ 617.60
Balance June 30, 1918	$ 110.04	$ 132.40

MULTNOMAH COUNTY AGRICULTURIST.
July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 504.11	$ 347.65
Appropriations, 16-17	1,600.00	1,600.00
Total	$2,104.11	$1,947.65
DISBURSEMENTS		
Salaries	$ 699.62	$1,350.00
Labor	66.00	
Post, Freight and Express	151.09	
Heat, etc.	.85	
Stationery and Small Printing	68.40	16.30
Supplies	12.65	
Scientific Apparatus		26.50
Tools and Machinery	52.25	5.94
Furniture and Fixtures	10.53	15.30
Traveling Expense	322.57	
Contingent Expense	91.45	
Total	$1,475.41	$1,414.04
Balance June 30, 1917	$ 628.70	$ 533.61

MULTNOMAH COUNTY AGRICULTURIST.
July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 628.70	$ 533.61
Appropriations, 17-18	1,800.00	1,700.00
Total	$2,428.70	$2,233.61
DISBURSEMENTS		
Salaries	$ 418.00	$1,644.81
Labor	26.90	
Publications	123.01	
Freight and Exp., Ptg. and Sta., Tel. and Tel.	216.77	
Stationery and Small Printing	105.45	13.00
Supplies	12.38	
Tools and Machinery	.25	4.61
Library	2.90	
Furniture and Fixtures	8.20	
Traveling Expense	556.74	
Contingent Expense	116.05	3.00
Co. Agt. Rev. Fund	.....	400.00
Total	$1,586.65	$2,065.42
Balance June 30, 1918	$ 842.05	$ 168.19

SHERMAN COUNTY AGRICULTURIST.
July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriation 17-18	1,500.00	1,000.00
Total	$1,500.00	$1,000.00
DISBURSEMENTS		
Salaries	$ 224.28	$ 132.00
Publications	33.75	
Freight and Express, Telegraph and Telephone	25.06	
Heat and Water	4.75	
Stationery and Small Printing	46.56	
Supplies	8.57	
Tools and Machinery	532.97	
Furniture and Fixtures	88.41	9.50
Traveling Expense	92.16	
Contingent Expense	26.50	3.00
Co. Agt. Rev. Fund	.....	400.00
Total	$1,083.01	$ 544.50
Balance June 30, 1918	$ 416.99	$ 455.50

TILLAMOOK COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$2,579.05	$ 10.71
Appropriations, 16-17	1,500.00	1,875.00
Total	$4,079.05	$1,885.71
DISBURSEMENTS		
Salaries	$ 521.67	$1,684.65
Freight and Express, Telegraph and Telephone	42.86	
Supplies	22.63	
Tools and Machinery	382.80	
Stationery and Small Printing	.....	29.30
Furniture and Fixtures	24.00	
Traveling Expense	279.74	
Contingent Expense	.60	
Total	$1,274.30	$1,713.95
Balance June 30, 1917	$2,804.75	$ 171.76

TILLAMOOK COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$2,804.75	$ 171.76
Appropriations, 17-18	1,500.00	1,500.00
Total	$4,304.75	$1,671.76
DISBURSEMENTS		
Salaries	$ 910.93	$1,152.06
Labor	12.80	
Publications	6.60	
Freight and Express, Telegraph and Telephone	141.33	.25
Stationery and Small Printing	56.25	4.50
Supplies	42.95	
Tools and Machinery	8.75	6.03
Furniture and Fixtures	1.00	
Traveling Expense	747.11	
Contingent Expense	3.60	3.00
Co. Agt. Rev. Fund	.....	400.00
Total	$1,931.32	$1,565.84
Balance June 30, 1918	$2,373.43	$ 105.92

UMATILLA COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriation, 17-18	1,800.00	900.00
Total	$1,800.00	$ 900.00
DISBURSEMENTS		
Salaries	$ 139.54	$ 445.43
Labor	122.68	
Publications	103.56	
Freight and Express, Telegraph and Telephone	100.53	
Stationery and Small Printing	52.45	
Supplies	2.50	
Library	12.00	
Tools and Machinery	470.53	
Furniture and Fixtures	46.80	
Traveling Expense	233.01	
Contingent Expense	11.50	3.00
Co. Agt. Rev. Fund	.....	300.00
Total	$1,295.10	$ 748.43
Balance June 30, 1918	$ 504.90	$ 151.57

UNION COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$1,279.16	$ 368.89
Appropriation, 16-17	1,700.00	1,700.00
Total	$2,979.16	$2,068.89
DISBURSEMENTS		
Salaries	$ 483.31	$1,037.48
Labor	26.50	197.50
Publications	42.00	
Freight and Express, Telegraph and Telephone	119.47	.55
Stationery and Small Printing	28.35	10.35
Supplies	10.85	.75
Tools and Machinery	214.75	
Furniture and Fixtures	.....	31.07
Travel	385.36	165.60
Contingent Expense	3.00	
Total	$1,313.59	$1,443.30
Balance June 30, 1917	$1,665.57	$ 625.59

UNION COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$1,665.57	$ 625.59
Appropriations, 17-18	1,400.00	1,550.00
Total	$3,065.57	$2,175.59
DISBURSEMENTS		
Salaries	$ 512.33	$ 475.00
Labor	66.00	1,446.74
Publications	63.76	
Postage, Frt. and Exp., Tel. and Tel.	170.92	
Stationery and Small Printing	102.00	8.00
Supplies	4.75	.30
Tools and Machinery	12.00	7.20
Scientific Apparatus	35.00	
Traveling Expense	839.37	81.65
Contingent Expense	3.00	3.00
Total	$1,809.13	$2,021.89
Balance June 30, 1918	$1,256.44	$ 153.70

WALLOWA COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriation, 17-18	1,600.00	800.00
Total	$1,600.00	$ 800.00
DISBURSEMENTS		
Salaries	$ 335.60	$ 358.00
Labor	6.20	
Publications	45.50	
Freight and Express, Telegraph and Telephone	36.22	
Stationery and Small Printing	36.45	
Supplies	.60	
Tools and Machinery	437.50	
Furniture and Fixtures	96.00	9.50
Traveling Expense	188.10	
Contingent Expense	.30	
Co. Agt. Rev. Fund	.....	250.00
Total	$1,182.47	$ 617.50
Balance June 30, 1918	$ 417.53	$ 182.50

WASCO COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 823.43	$ 578.78
Appropriation, 16-17	1,600.00	1,700.00
Total	$2,423.43	$2,278.78
DISBURSEMENTS		
Salaries	$ 375.49	$1,682.49
Freight and Express, Telegraph and Telephone	128.92	
Heat and Water, etc.	1.25	
Stationery and Small Printing	155.16	17.10
Supplies	79.13	
Tools and Machinery	256.56	8.75
Furniture and Fixtures	136.60	
Travel	864.14	65.26
Contingent Expense	6.75	
Total	$2,004.00	$1,773.60
Balance June 30, 1917	$ 419.43	$ 505.18

WASCO COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 419.43	$ 505.18
Appropriation, 17-18	1,800.00	1,700.00
Total	$2,219.43	$2,205.18
DISBURSEMENTS		
Salary	$ 445.68	$ 982.34
Labor	6.90	655.32
Publications	72.28	
Freight and Express, Telegraph and Telephone	100.19	78.51
Heat and Water, etc.	5.20	
Stationery and Small Printing	219.95	48.75
Supplies	10.93	6.60
Tools and Machinery	6.60	25.23
Furniture and Fixtures	16.25	
Scientific Apparatus	6.50	
Traveling Expense	727.19	348.63
Contingent Expense	3.25	3.00
Total	$1,620.92	$2,148.38
Balance June 30, 1918	$ 598.51	$ 56.80

WASHINGTON COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$	$ .....
Appropriation, 17-18	1,600.00	800.00
Total	$1,600.00	$ 800.00
DISBURSEMENTS		
Salary	$ 250.05	$ 310.25
Freight and Express, Telegraph and Telephone	17.40	
Stationery and Small Printing	38.45	
Supplies	3.50	
Library	5.00	
Tools and Machinery	482.66	
Furniture and Fixtures	221.30	9.50
Traveling Expense	126.42	
Contingent Expense	10.00	3.00
Co. Agt. Rev. Fund	.....	250.00
Total	$1,154.78	$ 572.75
Balance June 30, 1918	$ 445.22	$ 227.25

WHEELER COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 468.25	$ 431.18
Appropriation, 16-17	600.00	976.50
Total	$1,068.25	$1,407.68
DISBURSEMENTS		
Salary	$ 480.00	$ 694.53
Labor	.....	3.90
Post., Tel. and Tel. and Exp.	11.02	2.40
Stationery and Small Printing	7.10	11.20
Supplies	10.95	4.55
Tools and Machinery	23.05	25.86
Traveling Expense	483.41	272.10
Contingent	12.90	
Total	$1,028.43	$1,014.54
Balance June 30, 1917	$ 39.82	$ 393.14

WHEELER COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 39.82	$ 393.14
Appropriation, 17-18	289.15	847.64
Total	$ 328.97	$1,240.78
DISBURSEMENTS		
Salary	$ 17.48	$ 704.00
Freight and Express, Telegraph and Telephone	33.10	3.62
Stationery and Small Printing	.....	4.25
Supplies	5.94	
Tools and Machinery	5.90	
Furniture and Fixtures	22.50	
Traveling Expense	236.05	500.55
Contingent Expense	8.00	24.00
Total	$ 328.97	$1,236.42
Balance June 30, 1918		$ 4.36

YAMHILL COUNTY AGRICULTURIST.

July 1, 1916, to June 30, 1917.

RECEIPTS	State	County
Balance July 1, 1916	$ 735.18	$ 288.67
Appropriation, 16-17	850.00	1,600.00
Total	$1,585.18	$1,888.67
DISBURSEMENTS		
Salary	$ 377.64	$1,478.81
Labor	.....	11.00
Freight and Express, Telegraph and Telephone	125.66	70.70
Stationery and Small Printing	77.80	29.65
Supplies	32.80	39.41
Tools and Machinery	452.59	36.11
Furniture and Fixtures	1.55	2.30
Traveling Expense	320.79	192.13
Contingent	2.00	2.00
Total	$1,390.83	$1,862.11
Balance June 30, 1917	$ 194.35	$ 26.56

YAMHILL COUNTY AGRICULTURIST.

July 1, 1917, to June 30, 1918.

RECEIPTS	State	County
Balance July 1, 1917	$ 194.35	$ 26.56
Appropriation, 17-18	800.00	800.00
Total	$ 994.35	$ 826.56

DISBURSEMENTS		
Salary	$ 434.40	$ 546.00
Publications	.....	3.50
Freight and Express, Telegraph and Telephone...	46.89	66.07
Stationery and Small Printing	108.80	86.41
Supplies	14.87	3.05
Tools and Machinery		8.07
Furniture and Fixtures	25.50	
Traveling Expense	322.99	106.54
Contingent Expense	2.00	1.00
Total	$ 955.45	$ 820.64
Balance June 30, 1918	$ 38.90	$ 5 92

DIVISION IV—MISCELLANEOUS.

PURE SEED FUND.

July 1, 1916, to June 30, 1918.

RECEIPTS	
Balance July 1, 1916	$29.94
DISBURSEMENTS	
Stationery	$ 6.30
Seeds, Plants, etc.	14.43
Labor	.66
Repairs	8.55
Total	$29.94
Balance June 30, 1918	.....

EXTERMINATION OF RABBITS.

July 1, 1916, to June 30, 1918.

RECEIPTS		
Malheur County		
State Fund Balance July 1, 1916	$68.00	
County Fund Balance July 1, 1916	.10	
Total		$68.10
DISBURSEMENTS		
Poison		$42.45
Balance June 30, 1918		$25.65

STANDARD BABCOCK GLASSWARE TESTING.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916	$ 9.79	
Testing Glassware	309.89	
Total		$319.68
DISBURSEMENTS		
Salaries and Labor	$211.39	
Supplies	83.93	
Miscellaneous (Equipment Repairs)	25.39	
Freight and Express and Drayage	9.84	
Total		$330.55
Overdraft June 30, 1917		**$ 10.87**

STANDARD BABCOCK GLASSWARE TESTING.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Ovedraft July 1, 1917	**$ 10.87**	
Testing Glassware	310.77	
Total		$299.90
DISBURSEMENTS		
Salaries and Labor	$ 83.20	
Supplies	26.00	
Traveling and Expense		
Contingent	50.00	
Freight and Express and Telegraph and Telephone	10.24	
Total Disbursements		$169.44
Balance June 30, 1918		$130.46

DORMITORIES.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916	$ 1,762.81	
Table Board-Room Department, etc.	44,271.04	
Total		$46,033.85
DISBURSEMENTS		
Refunds	$ 491.02	
Food	23,932.81	
Supplies	1,237.70	
Salaries and Labor	12,722.43	
Heating	2,694.00	
Light and Power	875.38	
Water	306.73	
Freight and Express	247.12	
Laundry	717.16	
Telegraph and Telephone	65.41	
Office Supplies—Stationery and Printing	57.87	
Improvements and Repairs	372.83	
Equipment	947.73	
Total		$44,668.19
Balance June 30, 1917		$ 1,365.66

DORMITORIES.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917	$ 1,365.66	
Table Board-Room Department, etc.	49,179.80	
Total		$50,545.46
DISBURSEMENTS		
Refunds	$ 777.90	
Food	23,541.76	
Supplies	1,541.57	
Salaries and Labor	12,589.10	
Heating		
Light and Power	478.89	
Water	342.94	
Freight and Express	118.08	
Laundry	579.62	
Telegraph and Telephone	66.40	
Office Supplies	76.77	
Improvements and Repairs	1,178.94	
Equipment	973.09	
Traveling Expense	5.15	
Total		$42,270.21
Balance June 30, 1918		$ 8,275.25

Black face figures denote overdraft or deficit.

CREAMERY.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Overdraft July 1, 1916	**$ 1,241.63**	
Sale of Butter, Cream, etc.	30,369.11	
Total		$29,127.48
DISBURSEMENTS		
Salaries and Labor	$ 2,133.04	
Supplies	1,691.77	
Butterfat	26,000.58	
Miscellaneous (Equipment and Repairs)	389.17	
Printing	393.25	
Freight and Express and Drayage	349.92	
Total		$30,957.73
Overdraft June 30, 1917		**$ 1,830.25***

*Creamery products on hand apply on overdraft.

CREAMERY.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Overdraft July 1, 1917	**$ 1,830.25**	
Sale of Butter, Cream, etc.	35,398.35	
Total		$33,568.10
DISBURSEMENTS		
Salaries and Labor	$ 2,190.28	
Supplies	1,003.70	
Equipment	117.00	
Drayage	292.36	
Contingent	61.53	
Freight and Express, Telegraph and Telephone	287.17	
Butterfat	35,520.40	
Total		$39,472.44
Overdraft June 30, 1918		**$ 5,904.34***

*Creamery products on hand 7/1/18 and supplies sold previous to that date for which collection had not been made as of July 1, aggregated $4,998.84. This applies on the above deficit.

STUDENT LOAN FUND.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916	$ 188.46	
Donations During Fiscal Year 1916-1917	1,223.12	
Interest Received	200.25	
Principal Payments, Contracts	3,811.70	
Total		$5,423.53
DISBURSEMENTS		
Loans During Fiscal Year		$4,437.00
Balance June 30, 1917		$ 986.53

STUDENT LOAN FUND.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917	$ 986.53	
Donations During Fiscal Year	534.75	
Interest Received	315.25	
Principal Payments, Contracts	4,841.96	
Total		$6,678.49
DISBURSEMENTS		
Loans During Fiscal Year		$5,263.00
Balance June 30, 1918		$1,415.49

MILITARY SPECIAL.

July 1, 1916, to June 30, 1917.

RECEIPTS		
Balance July 1, 1916	$ 271.78	
Sale of Uniforms and Accoutrements	7,987.18	
Total		$8,258.96
DISBURSEMENTS		
Uniforms and Accoutrements	$7,264.58	
Freight and Express	106.66	
Telephone and Telegraph	1.50	
Office and General Supplies	8.80	
Miscellaneous Expense	69.42	
Total Disbursements		$7,450.96
Balance June 30, 1917		$ 808.00

MILITARY SPECIAL.

July 1, 1917, to June 30, 1918.

RECEIPTS		
Balance July 1, 1917	$ 808.00	
Sale of Uniforms and Accoutrements	12,398.14	
Total		$13,206.14
DISBURSEMENTS		
Uniforms and Accoutrements	$13,093.60	
Freight and Express	389.25	
Telephone and Telegraph	7.32	
Office and General Supplies	80.00	
Labor	10.25	
Refund on Uniforms	222.80	
Miscellaneous Expense	178.33	
Total Disbursements		$13,981.55
Overdraft June 30, 1918		$ 775.41*

*Military supplies and uniforms on hand for disposal to students fully cover this deficit.

ESTIMATES OF REQUIREMENTS

Resident Instruction Funds.

Estimates of financial requirements for the years 1919 and 1920 for (1) additional assistance, (2) general or miscellaneous maintenance, (3) repairs, (4) improvements, and (5) equipment.

I—Additional Assistance.

Following is a list of additional assistance required for each of the years 1919 and 1920 in addition to the present force for resident instruction. (This list is revised to January, 1919.)

	1919	1920	Biennium
Instructor in Dairy Husbandry	$ 1,800	$ 2,000	$ 3,800
Instructor Farm Mechanics—Tractor operation and repair	1,800	1,800	3,600
Special assistance for short courses in tractor operation and repair	1,000	1,000	2,000
Instructor in Farm Crops	1,400	1,600	3,000
Instructor in Entomology	1,400	1,600	3,000
Instructor in Veterinary Medicine (increasing fellowship to full-time instructor)	1,000	1,300	2,300
Instructor in Animal Husbandry (part salary paid by State Stallion Registration Board)	1,000	1,200	2,200
*Instructor Civil Engineering	1,800	1,800	3,600
Instructor Mechanical Engineering	1,800	1,800	3,600
*Instructor in Auto Mechanics	1,800	1,800	3,600
Instructor Electrical Engineering, salary estimated $1800 per collegiate year (9 months) deduct for present allowance for substitute help $600	1,200	1,200	2,400
Instructor in Applied Art (increased from part time to full-time)	800	1,000	1,800
Instructor in Chemistry	1,500	1,500	3,000
Instructor in English	1,400	1,500	2,900
Instructor in Mathematics	1,600	1,600	3,200
Instructor in Physics	1,500	1,500	3,000
Professor Logging Engineering (returning from leave during period of war)	3,000	3,000	6,000
Instructor Household Arts	1,200	1,500	2,700
Instructor Household Science	1,200	1,500	2,700
Cataloguer	1,500	1,500	3,000
Instructor Accounting and Business Administration	1,200	1,400	2,600
Instructor in Office Training	1,500	1,500	3,000
	$32,400	$34,600	$67,000

*These positions already filled through funds provided by State Emergency Board.

II—General or Miscellaneous Maintenance.

Summary of requirements for general or miscellaneous maintenance. Requirements for class, laboratory, and shop supplies are excluded, as these items are completely covered by student laboratory and shop fees.

	1919	1920	Biennium
Janitorial	$ 19,000	$ 19,000	$ 38,000
Heating	40,700*	40,700*	81,400
Campus and Greenhouse	8,750	8,750	17,500
Light and Power	9,200	9,200	18,400
Traveling Expenses	6,220	6,220	12,440
Office and General Supplies	6,500	6,500	13,000
Publications	9,200	9,200	18,400
Advertising	4,000	4,000	8,000
Water Tax	2,200	2,200	4,400
Summer School	2,700	2,700	5,400
Winter Short Course	1,000	1,000	2,000
Telephone and Telegraph	1,800	1,800	3,600
Nightwatchmen	2,500	2,500	5,000
Faculty Committees, Commencement and Convocation expenses, premium on bonds, insurance on Government military equipment, rental Shepard Hall, etc.	1,955	1,955	3,910
	$115,725	$115,725	$231,450

III—Repairs.

Below is a summary of the repairs to the buildings listed. The estimates cover the necessary repairs, including interior and exterior painting, refinishing floors, repairing plastering, replacing window shades, refitting doors and windows, repairing down-spouts, roofs, roof gutters, etc.:

	1919	1920	Biennium
Administration Building	$ 320	$ 370	$ 690
Agriculture, Horticultural and Agronomy buildings	1,150	2,350	3,500
Armory	130	815	945
Dairy Barn	175	850	1,025
Dairy Building	825	600	1,425
Farm Mechanics Building	248	40	288
Foundry and Cabinet Shops	300	30	330
Home Economics Building	825	375	1,200
Men's Gymnasium	450	425	875
Shops	675	150	825
Mechanical Hall	650	445	1,095
Mines Building	350	670	1,020
Old Heating Plant	133	50	183
Stock Barn	90	50	140
Stock Judging Pavilion	50	50	100
Science Hall	1,000	988	1,988

*Budget allowance for heating for the year 1918-19 was $30,000, on the assumption that coal would be furnished the College at a contract price of $3.90 per ton. It has been necessary to change the contract, using fuel oil instead of coal. The price of wood has also advanced. In the report to the State Tax Commission on August 13, it was indicated that the probable cost for the year would be $40,000 to $43,000. The actual cost as now estimated will be $39,925. This includes oil at $2.24 per barrel, and wood at from $4 to $4.60 per cord.

Difference between cost present year and 1919 is due to increase in cost of wood, much of the wood for the present year having been bought for 40 cents to 60 cents less per cord than the present rate.

Campus Residence	385	25	410
Poultry and Incubator House	275	495	770
Women's Gymnasium	251	975	1,226
Health Service Building	50	50	100
Forestry Building	300	500	800
Octagon Barn and Sheds	20	15	35
Hog Barn	25	35	60
Library Building	200	200	400
Veterinary Clinic	270	100	370
Products Building	100	100	200
	$ 9,247	$10,753	$20,000

IV—Improvements.

The following is a summary of the most urgently needed improvements for the biennial period 1919-1920:

1. *Building Improvements—*

Dairy Buildings	$ 175	
Home Economics Building	1,020	
Men's Gymnasium	165	
Forestry Building	75	
Science Hall, including installation additional chemical laboratory on third floor, with necessary plumbing, stationary desks	2,485	$3,920

2. *Fire Protection—*

21 extinguishers and installation of same	$ 310	
Fire alarm and fire escapes, Cauthorn Hall	50	
Building hose cart shed	50	
New fire hose on fire hose cart	260	
Painting fire escapes	125	
Changes fire protection apparatus Science Hall	40	
Sprinkler for Organic Chemistry Laboratory	25	
50 feet hose for old heating plant	23	
Replacement of fire line on Twenty-third street	120	
Placement of fire escapes on Agricultural Hall	400	
Fire alarms	277	$1,680

3. *Campus—*

Cost of labor and material to construct approach walk and drive to north entrance Library Building, including necessary drainage	$ 850	
Grading, seeding, planting, on grounds immediately surrounding Library Building	875	
Additional grading, seeding, and planting in immediate vicinity Farm Mechanics, By-Products, and Barn Buildings	200	
50 European linden trees on Monroe Street	75	
Making necessary installations to provide water for irrigation of lawns around the following buildings: Farm Mechanics, By-Products, Dairy Barn, Veterinary Building, Stock Judging, Home Economics, Library, Science Hall	305	
Cement walk from north Dairy Building to entrance 22nd Street	153	

Resurfacing roads, graveling, and hauling	400	
Gravel, drainage, etc., service wood yard south of heating plant	100	
	$2,958	
Arbitrarily reduced by the President of the College to $1,000 per year or for the biennium		$2,000
Grand total		$7,600
Average per year of biennium		$3,800

V—Equipment.

Following is a summary by departments of equipment estimated as required for the two years, 1919 and 1920:

Agriculture, School of—		
Animal Husbandry (livestock)	$2,000	
Dairy Husbandry	2,500	
Farm Crops	2,000	
Farm Management	500	
Farm Mechanics	2,000	
Horticulture	500	
Poultry Husbandry	500	
Soils, Irrigation and drainage	2,000	
Veterinary Medicine	1,000	$13,000
Engineering, School of—		
Civil Engineering	1,500	
Electrical Engineering	1,500	
Experimental Engineering, including steam, hydraulic and gas engine laboratories	4,000	
Industrial Arts, including woodwork, machine, blacksmith, and foundry shops	3,000	10,000
Mines, School of—		
Including Ceramics, Geology and Mining Departments		2,500
Commerce, School of—		
Including Department of Business Administration, Office Training, Government and Business Law, and Economics and Sociology		500
Forestry, School of—		
Including Logging Engineering		1,000
Home Economics, School of—		
Including Departments of Household Art, Household Science, Home Administration and Institutional Management		2,000
Pharmacy, School of		500
Vocational Education, School of		200
Chemical Engineering		1,500

Collaborating Departments—

Art and Rural Architecture	100	
Bacteriology	500	
Botany and Plant Pathology	500	
Chemistry, including one new laboratory	3,000	
English	100	
Entomology	200	
History	50	
Library	200	
Mathematics	100	
Military	500	
Modern Languages	100	
Physical Education for Men	500	
Physical Education for Women	500	
Physics	1,000	
Zoology and Physiology	3000	$7,650

Miscellaneous—

Office furniture, such as desks, filing cabinets, etc.	500	
2,000 folding chairs for use general gatherings	3,000	
Window shades for south and west sides of new Library Building	850	4,350
Grand total		$43,200
Average per year of biennium		$21,600

Arbitrary Reductions—

Above estimates arbitrarily reduced by the President of the College to $10,000 per year, or for biennium	20,000

INDEX