

CATALOGUE
OF THE
Oregon Agricultural College

FOR
1914-15

With List of Students for 1913-14



CORVALLIS, OREGON

JULY, 1914

SALEM, OREGON :
STATE PRINTING DEPARTMENT
1914

CALENDAR, 1914

JULY							AUGUST							SEPTEMBER									
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S			
			1	2	3	4							1			1	2	3	4	5			
5	6	7	8	9	10	11	2	3	4	5	6	7	8	6	7	8	9	10	11	12			
12	13	14	15	16	17	18	9	10	11	12	13	14	15	13	14	15	16	17	18	19			
19	20	21	22	23	24	25	16	17	18	19	20	21	22	20	21	22	23	24	25	26			
26	27	28	29	30	31	23	24	25	26	27	28	29	27	28	29	30							
							30	31															

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	1	2	3	4	5	6	7			1	2	3	4	5
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
25	26	27	28	29	30	31	29	30	27	28	29	30	31							

CALENDAR, 1915

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2	1	2	3	4	5	6			1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27
24	25	26	27	28	29	30	28	28	29	30	31									
31																				

APRIL							MAY							JUNE									
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S			
				1	2	3						1			1	2	3	4	5				
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12			
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19			
18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26			
25	26	27	28	29	30	23	24	25	26	27	28	29	27	28	29	30							
							30	31															

COLLEGE CALENDAR 1914-15

1914

September 18, 19, 21, Friday, Saturday, Monday—Registration and examination for admission.

September 22, Tuesday—Recitations begin.

October 9, Friday—Quarterly meeting Board of Regents.

November 2, Monday—Forestry short course begins.

November 25, 26, 27, 28, Wednesday (noon), Thursday, Friday, Saturday—Thanksgiving recess.

November 30 to December 5 (noon)—Farmers' Week.

December 19, Saturday (noon)—Christmas recess begins.

1915

January 4, Monday—Regular exercises resumed.

Winter short course begins.

January 6, Wednesday—Quarterly meeting Board of Regents.

January 30, Saturday—Winter short course ends.

February 1, 2, 3, 4, Monday, Tuesday, Wednesday, Thursday—
First semester examinations.

February 4, Thursday—First semester ends.

February 9, Tuesday—Second semester begins.

April 7, Wednesday—Quarterly meeting Board of Regents.

April 16, Friday—Forestry short course ends.

May 7, Friday—Military inspection.*

May 22, Saturday—Interscholastic Field and Track Meet.

May 30, Friday—Decoration Day, legal holiday.

May 31, June 1, 2, 3, 4, Monday, Tuesday, Wednesday, Thursday, Friday—
Second semester examinations.

June 6, Sunday—Baccalaureate exercises.

June 7, Monday—Alumni and Graduating Class exercises.

June 7, Monday—Quarterly meeting Board of Regents.

June 8, Tuesday—Commencement exercises.

June 14, Monday—Summer School begins.

*Subject to change.

BOARD OF REGENTS
OF THE
OREGON AGRICULTURAL COLLEGE
AND
EXPERIMENT STATION

OFFICERS

HON. J. K. WEATHERFORD, President	Albany
HON. E. E. WILSON, Secretary	Corvallis
HON. B. F. IRVINE, Treasurer	Portland

EX-OFFICIO MEMBERS

HON. OSWALD WEST, Governor of the State	Salem
HON. BEN W. OLCOTT, Secretary of State	Salem
HON. J. A. CHURCHILL, Supt. of Public Instruction.....	Salem
HON. CHARLES E. SPENCE, Master of State Grange, Oregon City	

APPOINTED BY THE GOVERNOR

	Term Expires
MRS. CLARA H. WALDO	Portland, 1915
HON. E. E. WILSON	Corvallis, 1915
HON. B. F. IRVINE	Portland, 1915
HON. J. T. APPERSON	Parkplace, 1918
HON. J. K. WEATHERFORD	Albany, 1918
HON. C. L. HAWLEY	McCoy, 1918
HON. WALTER M. PIERCE	La Grande, 1921
HON. H. VON DER HELLEN	Wellen, 1921
HON. GEO. M. CORNWALL	Portland, 1921

STANDING COMMITTEES
OF THE
BOARD OF REGENTS

EXECUTIVE COMMITTEE

J. K. Weatherford, Chairman; J. T. Apperson, E. E. Wilson,
C. E. Spence, W. M. Pierce.

FINANCE COMMITTEE

J. T. Apperson, Chairman; W. M. Pierce, C. L. Hawley.

COLLEGE COMMITTEE

B. F. Irvine, Chairman; W. M. Pierce, C. L. Hawley.

STATION COMMITTEE

W. M. Pierce, Chairman; H. Von der Hellen, C. E. Spence.

FORESTRY

Geo. M. Cornwall, Chairman; Oswald West, Ben W. Olcott

EXTENSION COMMITTEE

J. A. Churchill, Chairman; C. L. Hawley, C. E. Spence,
H. Von der Hellen, Oswald West.

OFFICERS OF ADMINISTRATION AND INSTRUCTION

(Arranged in groups in the order of seniority of appointment)

ADMINISTRATIVE COUNCIL

WILLIAM JASPER KERR, D. Sc.,
President.

ARTHUR BURTON CORDLEY, M. S.,
Dean of the School of Agriculture.
Director of the Agricultural Experiment Station.

GRANT ADELBERT COVELL, M. E.,
Dean of the School of Engineering and Mechanic Arts
Professor of Mechanical Engineering.

JOHN ANDREW BEXELL, A. M.,
Dean of the School of Commerce
Professor of Business Administration.

EDWIN DEVORE RESSLER, A. M.,
Director of the Summer School.
Professor of Industrial Pedagogy.

ANNA ZOU CRAYNE, A. B., M. D.,*
Dean of Women.

HENRIETTA WILLARD CALVIN, S. B.
Dean of the School of Home Economics.
Professor of Domestic Science.

RALPH DORN HETZEL, A. B., LL. B.,
Director of Extension Service.

HENRY MARTIN PARKS, B. S., E. M.,
Dean of the School of Mines.

*Resigns September 1, 1914.

GEORGE WILCOX PEAVY, M. S. F.
Dean of the School of Forestry.

COLLEGE COUNCIL

(The members of the Administrative Council are also members of the College Council.)

FREDERICK BERCHTOLD, A. M.,
Professor of the English Language and Literature.

JOHN B. HORNER, A. M., Litt. D.,
Professor of History.

GORDON VERNON SKELTON, C. E.,
Professor of Civil and Highway Engineering.

JOHN FULTON, M. S.,
Professor of General and Analytical Chemistry.

THOMAS HENRY CRAWFORD, A. M.,*
Professor of Commercial Law.

CLAUDE ISAAC LEWIS, M. S. A.,
Vice-Director of the Agricultural Experiment Station.
Professor of Horticulture.

CHARLES LESLIE JOHNSON, B. S.,
Professor of Mathematics.

JAMES DRYDEN,
Professor of Poultry Husbandry.

HENRY DESBOROUGH SCUDDER, B. S.,
Professor of Agronomy.

WILLIAM FREDERIC GASKINS, B. S.,
Professor of Music.

WILLIAM ARTHUR JENSEN,
Recorder of the Faculties
Secretary to the President.

*On leave of absence.

OREGON AGRICULTURAL COLLEGE

FARLEY DOTY McLOUTH, B. S.,
Professor of Art.

WILLIBALD WENIGER, Ph. D.,
Professor of Physics.

HERBERT SPENCER JACKSON, A. B.,
Professor of Botany and Plant Pathology.

LOUIS BACH, M. A.,
Professor of Modern Languages.

IDA ANGELINE KIDDER, A. B., B. L. S.,
Librarian.

ERMINE LAWRENCE POTTER, B. S.,
Professor of Animal Husbandry.

THEODORE DAY BECKWITH, M. S.,
Professor of Bacteriology.

WILLIAM ARTHUR HILLEBRAND, A. B.,
Superintendent of Light and Power.
Professor of Electrical Engineering.

HELEN BRYCE BROOKS,
Professor of Domestic Art.

EDWARD JAMES STEWART, M. D.,
Director of Athletics.
Professor of Physical Education for Men.

MIRIAM THAYER, A. B.,
Professor of Physical Education for Women.

PETER JOHN HENNESSEY, 1st Lieut. 15th U. S. Cavalry.
Commandant of Cadets.
Professor of Military Science and Tactics.

HECTOR MACPHERSON, Ph. D.,
Professor of Economics.

HARLEY FROST WILSON, M. S.,
Professor of Entomology.

ULYSSES GRANT DUBACH, Ph. D.,
Professor of Political Science.

ROY RALPH GRAVES, M. S.,
Professor of Dairy Husbandry.

IRA ABRAHAM WILLIAMS, M. S., A. M.,
Professor of Ceramics.

HENRY CLAY BRANDON, A. M.,
Director of Shops.
Professor of Industrial Arts.

GEORGE T. COLLINS,
Manager Business Office

RICHARD HAROLD DEARBORN, M. E.,
Professor of Electrical Engineering.

FRED LLEWELLYN GRIFFIN, M. S.,
Professor of Agricultural Education.

GEORGE FRANCIS SYKES, M. S.,
Professor of Zoology and Physiology.

BENNETT THOMAS SIMMS, D. V. M.,
Professor of Veterinary Medicine.

THOMAS ANDERSON HENDRICKS TEETER, B. S.,
Professor of Irrigation Engineering.

SAMUEL HERMAN GRAF, M. S.,
Professor of Experimental Engineering.

VICTOR RAY GARDNER, M. S.,
Associate Professor of Pomology.

MARK CLYDE PHILLIPS, B. M. E.,
Superintendent of Heating.
Associate Professor of Mechanical Engineering

OREGON AGRICULTURAL COLLEGE

ARTHUR LEE PECK, B. S.,
Superintendent of Campus and Greenhouses.
Associate Professor of Landscape Gardening and Floriculture.

EDWIN THOMAS REED, B. S., A. B.,
College Editor.

GEORGE ROBERT HYSLOP, B. Sc.,
Associate Professor of Crop Production.

HERMAN VANCE TARTAR, B. S.,
Associate Professor of Agricultural Chemistry.

GURDON MONTAGUE BUTLER, E. M.,
Associate Professor of Mining Engineering.

RENTON KIRKWOOD BRODIE, M. S.,
Associate Professor of General Chemistry.

IDA BURNETT CALLAHAN, B. S.,
Assistant Professor of English Language and Literature.

NICHOLAS TARTAR, B. S.,
Assistant Professor of Mathematics.

ARTHUR GEORGE BOUQUET, B. S.,
Assistant Professor of Vegetable Gardening.

HAROLD MANLEY TENNANT,
Registrar.

AVA BERTHA MILAM, Ph. B., A. M.,
Assistant Professor of Domestic Science.

EDGAR RAYMOND SHEPARD, A. M.,
Assistant Professor of Electrical Engineering.

WILBUR LOUIS POWERS, M. S.,
Assistant Professor of Irrigation and Drainage.

MERRIS MICKEY McCOOL, Ph. D.,*
Assistant Professor of Soils.

EDWARD BENJAMIN BEATY, B. S.,
Assistant Professor of Mathematics.

HAROLD STEPHENSON NEWINS, Ph. B., M. F.,
Assistant Professor of Forestry.

MILO REASON DAUGHTERS, A. M.,
Assistant Professor of Organic Chemistry.

ALFRED GUNN LUNN, B. S.,
Assistant Professor of Poultry Husbandry.

CLYDE INSLEY BLANCHARD, A. B.,
Assistant Professor of Stenography.

ELMER JAY BROWN, Ph. D.,
Assistant Professor of Economics.

OTTO GERALD SIMPSON, B. S.,
Assistant Professor of Dairy Manufacturing.

REX EARL EDGEComb, B. S.,
Assistant Professor of Civil Engineering.

FAY HARRY ROSENCRANTS, B. S.
Assistant Professor of Mechanical Engineering.

ANNIE LOIS ROBINSON, B. S.,
Assistant Professor of Domestic Art.

SIGURD HARLAN PETERSON, B. A.,
Assistant Professor of English.

CARL HAROLD KENNEDY, B. S.,
Assistant Professor of Animal Husbandry.

*Resigns August 1, 1914.

FACULTY

(The members of the Administrative and College Councils are also members of the Faculty.)

HARRY LYNDEN BEARD, B. S.,
Director of Cadet Band.
Instructor in Mathematics.

LOREN BURTON BALDWIN, A. M.,
Instructor in English.

WILLIAM McCAULLY PORTER,
Instructor in Forging.

CARL LAFAYETTE KNOPF, M. E.,
Instructor in Experimental Engineering.

GENEVIEVE BAUM-GASKINS,
Instructor in Pipe Organ and Piano.

GERTRUDE EWING McELFRESH, A. B.,
Instructor in English.

ALICE LEORA EDWARDS, B. S.,
Instructor in Zoology and Physiology.

JAMES GEORGE ARBUTHNOT, B. S.,
Instructor in Physical Education for Men.

MAY BABBITT-RESSLER,
Instructor in Piano.

GEORGE ROY SAMSON, B. S., A. B.,
Instructor in Animal Husbandry.

EDITH CARTER KUNEY, A. B.,
Instructor in Modern Languages.

WILLIAM EVANS LAWRENCE, B. S.,
Instructor in Botany.

LAWRENCE FISHER WOOSTER, B. S.,
Instructor in Electrical Engineering.

SAMUEL MICHAEL PATRICK DOLAN, C. E.,
Instructor in Civil Engineering.

ARTHUR MATHIAS SWARTLEY, B. S., M. E.,
Instructor in Mining Engineering.

LUCY MAY LEWIS, A. B., B. L. S.,
Library Cataloguer.

AMBROSE ELLIOTT RIDENOUR, B. S.,
Instructor in Foundry Practice.

EDGAR PERKINS WALLS, M. S.,
Instructor in Botany.

EDGAR ROSS STOCKWELL, B. S.,
Instructor in Dairy Husbandry.

CHARLES GEORGE WILTSHIRE,
Instructor in Plumbing and Steam Fitting.

CHARLES ELMER OWENS, M. A.,
Instructor in Botany.

ERWIN BERTRAN LEMON, B. S.,
Instructor in Commerce.

FLOYD ROWLAND, B. S.,*
Instructor in Chemistry.

JOSEPH BENJAMIN YODER, B. S.,
Instructor in Mechanical Drawing.

ALICE MARKS DOLMAN, M. S.,
Instructor in Domestic Science.

WILLIAM ALFRED BEVAN, B. S.,
Instructor in Physics.

*On leave of absence.

OREGON AGRICULTURAL COLLEGE

QUEEN INEZ JOHNSON,
Instructor in Music.

HILDA MILLER, B. S.,
Instructor in Chemistry.

SARAH LOUISE LEWIS,
Instructor in Domestic Science.

GILBERT BRUCE BLAIR, A. M.,
Instructor in Physics.

CAROLYN MARJORIE PLOCK,
Instructor in Physical Education for Women.

EMIL MARK DIEDRICH BRACKER, B. S.,
Instructor in Farm Mechanics.

GEORGE EDWARD GOODSPEED, Jr., B. S.,
Instructor in Mining Engineering.

HARVEY GODFREY McCOMB,
Instructor in Patternmaking.

KATHERINE MONELL HITCHCOCK.
Instructor in Domestic Art.

DARWIN GREENE THAYER, B. S.,
Instructor in Mechanical Engineering.

SIDNEY WILLIS FRENCH, E. Met.,
Instructor in Mining Engineering.

RUTH McNARY SMITH, B. S.,
Instructor in Domestic Science.

JOHN HARRISON BELKNAP, B. S.,*
Instructor in Physics.

BARBARA MOORE, B. S.,*
Instructor in Domestic Art.

GRACE CHRISTINE ROSAAEN,
Instructor in English.

*On leave of absence.

LILLIAN MABEL GEORGE,
Cataloguer in Library.

IRVINE HILL BLAKE, A. M.,
Instructor in Zoology and Physiology.

CATHERINE STUART VANCE, A. M.,
Secretary of College Y. W. C. A.
Instructor in English.

ORAN MILTON NELSON, B. S.,
Instructor in Animal Husbandry.

WINFRED MCKENZIE ATWOOD, Ph. D.,
Instructor in Botany and Plant Pathology.

LYLE VALLINGTON HENDRICKS, Ph. D.,
Instructor in Pharmacy.

GEORGE DIACK HORTON, M. S.,
Instructor in Bacteriology.

MILTON JOHN SEELEY, Ph. C.,
Instructor in Chemistry.

RAYMOND ADAMS DUTCHER, M. S., A. M.,
Instructor in Agricultural Chemistry.

ALLISON MORRIS WOODMAN, B. S.,
Orchard Foreman.
Instructor in Horticulture.

EDNA MAY FLARIDA,
Instructor in Art.

JEANNE LEROUX, A. B.,
Instructor in Modern Languages.

WARREN PORTER TUFTS, M. S.,
Instructor in Horticulture.

LAWRENCE EUGENE ROBINSON, B. S.,
Instructor in Architecture.

OREGON AGRICULTURAL COLLEGE

ASA CHANDLER, Ph. D.,
Instructor in Zoology and Physiology.

CHARLES JUNIOUS CONOVER, M. S.,
Instructor in Forestry.

CHESTER MAXEY, A. M.,
Instructor in Economics and Political Science.

NEIL BURTON BALDWIN,
Instructor in Stenography.

JOHN EDWARD COOTER, B. S.,
Instructor in Agronomy.

HELEN PEER,
Instructor in Domestic Art

CHARLOTTE LEWIS,
Instructor in Physical Education for Women.

ETHEL CLEAVES,
Instructor in Physical Education for Women.

RUSSELL MARION HOWARD, B. S.,
Instructor in Accounting and Economics.

CHRISTIE MOORE, B. S.,
Instructor in Domestic Science.

CORINNE BLOUNT, B. M.,
Instructor in Piano.

E. HELLIER-COLLENS,
Instructor in Stringed Instruments.

RAY BOALS, B. S.,
Instructor in Experimental Engineering.

RACHAEL WEBB HAIGHT,*
Assistant in Library.

*Resigns September 1, 1914.

BERTHA HERSE, B. S.,*
Assistant in Library.

GODFREY VERNON COPSON, M. S.,*
Assistant in Bacteriology.

CYRUS FRANKLIN DUGGER,
Assistant in Military Science.

DOROTHY KEATLEY, B. S.,
Assistant in Domestic Art.

GEORGE HAROLD GODFREY, B. S.,
Assistant in Botany and Plant Pathology

BERT TREW JORDAN, B. S.,
Assistant in Chemistry.

LILA GRACE DOBELL, B. S.,
Assistant in Library.

GEORGE H. ROACH, A. B.,
Assistant in Library.

OLIVIA POHLAND-SCHILLING, B. S.,
Assistant in Domestic Art.

ROY EDGAR MARSHALL, B. S.,
Teaching Fellow in Horticulture.

JESSE HARRISON CORSAUT, B. S.,
Teaching Fellow in Botany.

CHRISTOPHER MARION SCHERER, A. B.,
Teaching Fellow in Botany.

HAROLD WILSON HYLAND, B. S.,
Teaching Fellow in Zoology.

CLARA NIXON, B. S.,
Research Fellow in Poultry Husbandry and Chemistry.

*On leave of absence.

OREGON AGRICULTURAL COLLEGE

EXTENSION SERVICE STAFF

WILLIAM JASPER KERR, D. Sc.,
President.

RALPH DORN HETZEL, A. B., LL. B.,
Director.

HIRAM TAYLOR FRENCH, M. S.,
State Leader of County Agricultural Agents.

FRED LLEWELLYN GRIFFIN, M. S.,
State Leader of Industrial Clubs.

GORDON VERNON SKELTON, C. E.,
Professor of Highway Engineering.

HECTOR MACPHERSON, Ph. D.,
Professor of Economics.

LULIE WILES ROBBINS, B. S.,
Assistant Professor of Home Economics.

WALTER SHELDON BROWN, A. B., M. S.,
Assistant Professor of Horticulture.

EDWARD BLODGETT FITTS,
Assistant Professor of Animal and Dairy Husbandry.

JOHN ELMER LARSON, B. S.,
Assistant Professor of Agronomy.

WILLIS ARCHER BARR, B. S.,
Field Dairyman.

RALPH ELMER REYNOLDS, M. S.,
Assistant Professor of Animal Husbandry.

PAUL MEREDITH COLLINS, A. B.,
Secretary.

CHARLES CHAUNCEY LAMB, B. S.,
Instructor in Poultry Husbandry.

SUMNER JOHN DAMON, B. S.,
Assistant Field Dairyman.

CHARLES JARVIS McINTOSH, B. S.,
Editor of Press Bulletins.

LEROY BREITHAUPT, B. S.,
Agricultural Agent for Harney County.

MAX ADAMS McCALL, B. S.,
Agricultural Agent for Klamath County.

CLAUDE CLIFTON CATE, B. S.,
Agricultural Agent for Union County.

LUTHER J. CHAPIN, B. S.,
Agricultural Agent for Marion County.

WILLIAM RICKETTS SHINN, B. S.,
Agricultural Agent for Malheur County.

FLOYD RADER, B. S.,
Agricultural Agent for Lane County.

ROY C. JONES, B. S.,
Agricultural Agent for Tillamook County.

JAY L. SMITH, B. S.,
Agricultural Agent for Coos County.

AMOS E. LOVETT, B. S.,
Agricultural Agent for Crook County.

JESSE RAY FLEMING, B. S.,
Assistant Agricultural Agent for Harney County.

F. C. REIMER, M. S.,
Agricultural Agent for Jackson County.

M. P. HENDERSON, Ph. D.,
Assistant Agricultural Agent for Jackson County.

STAFF OF AGRICULTURAL EXPERIMENT
STATION

WILLIAM JASPER KERR, D. Sc.,
President

ARTHUR BURTON CORDLEY, M. S.,
Director.

CLAUDE ISAAC LEWIS, M. S. A.,
Vice-Director.
Horticulturist.

JAMES DRYDEN,
Poultry Husbandman.

HENRY DESBROUGH SCUDDER, B. S.,
Agronomist.

HERBERT SPENCER JACKSON, A. B.,
Botanist and Plant Pathologist.

THEODORE DAY BECKWITH, M. S.,
Bacteriologist.

ERMINE LAWRENCE POTTER, B. S.,
Animal Husbandman.

HERMAN VANCE TARTAR, B. S.,
Chemist.

HARLEY FROST WILSON, M. S.,
Entomologist.

ROY RALPH GRAVES, M. S.,
Dairy Husbandman.

VICTOR RAY GARDNER, M. S.,
Pomologist.

GEORGE ROBERT HYSLOP, B. Sc.,
Assistant Agronomist.

ARTHUR GEORGE BOUQUET, B. S.,
Olericulturist.

EDWARD JACOB KRAUS, B. S.,
Research Associate in Horticulture.

WILBUR LOUIS POWERS, M. S.,
Assistant Agronomist.

HOWARD PHILLIPS BARSS, A. B., M. S.,
Research Assistant in Chemistry.

MERRIS MICKEY McCOOL, Ph. D.,*
Assistant Agronomist.

BERT PILKINGTON, B. S.,
Research Assistant in Chemistry.

FRANK ROSS BROWN, B. S.,
Research Assistant in Horticulture.

FLOYD DOUGLAS BAILEY, M. S.,
Research Assistant in Plant Pathology.

FREDERICK CHARLES BRADFORD, M. S.,
Research Assistant in Horticulture.

LESTER LOVETT, B. S.,
Research Assistant in Entomology.

ALONZO F. VASS, M. S.,
Research Assistant in Bacteriology.

OTTO GERALD SIMPSON, B. S.,
Assistant Dairy Husbandman.

E. ROSS STOCKWELL, B. S.,
Assistant Dairy Husbandman.

REGINALD H. ROBINSON, A. B.,
Research Assistant in Chemistry.

ALDEN FORREST BARSS, M. S.,
Research Assistant in Entomology.

*Resigns, September 1, 1914.

OREGON AGRICULTURAL COLLEGE

RALPH FINNEY BEARD, B. S.,
Research Assistant in Chemistry.

GEORGE FRANKLIN MOZNETTE, B. S.,
Research Assistant in Entomology.

GEORGE ROY SAMSON, A. B., B. S.,
Assistant Animal Husbandman.

ORAN MILTON NELSON, B. S.,
Assistant Animal Husbandman.

ALLISON MORRIS WOODMAN, B. S.,
Orchard Foreman.

GEORGE HAROLD GODFREY, B. S.,
Research Assistant in Plant Pathology.

CHARLES EUGENE ROBINSON,
Foreman Stock Farm.

CHARLES STOCKTON BREWSTER, B. S.,
Foreman Poultry Plant.

UNION BRANCH EXPERIMENT STATION

ROBERT WITHYCOMBE, B. S.,
Superintendent.

UMATILLA BRANCH EXPERIMENT STATION

RALPH WILMER ALLEN, B. S.,
Superintendent.

**SHERMAN COUNTY DRY-FARM BRANCH EXPERIMENT
STATION**

DAVID E. STEPHENS, B. S.,
Superintendent.

SOUTHERN OREGON BRANCH EXPERIMENT STATION

F. C. REIMER, M. S.,
Superintendent.

M. P. HENDERSON, Ph. D.,
Pathologist.

HARNEY VALLEY BRANCH EXPERIMENT STATION

LEROY BREITHAUPT, B. S.,
Superintendent.

JOHN JACOB ASTOR BRANCH EXPERIMENT STATION

HARRY ARTHUR LINDGREN, B. S.,
Superintendent.

HOOD RIVER BRANCH EXPERIMENT STATION

JOHN ROBINSON WINSTON, M. S.,
Pathologist.

CLARENCE CECIL STARRING, B. S.,
Horticulturist.

OTHER OFFICERS

ELMER POLIC JACKSON, B. S.,
Superintendent of Buildings.

SIBYLLA HADWEN,
Housekeeper Women's Dormitories.

CHARLES LEWIS PARRISH,
Auditor.

KATHERINE HAIGHT,
Preceptress of Cauthorn Hall.

HELEN LUCILE HOLGATE, B. S.,
Station Clerk.

NORMA WADDLE, B. S.,
Assistant in Seed Testing Laboratory.

DAVID MASTERTON,
Foreman Campus and Greenhouses.

F. H. CASE,
Foreman College Print Shop.

C. E. ROBINSON,
Animal Husbandry Foreman.

J. H. EDWARDS,
ELLSWORTH ERWIN,
Head Janitors.

STANDING COMMITTEES

(The President of the College is ex-officio a member of all standing committees.)

1. *Entrance Examinations*—Professors N. Tartar, McLouth, Mr. Baldwin.
2. *Scholarship and Graduation*—Professors Berchtold, Dubach, Weniger, Hillebrand, Mr. Tennant.
3. *Graduate Students and Advanced Degrees*—Professors Skelton, Weniger, Macpherson, Graves.
4. *Credentials, Advanced Standing, and Substitutions*—Professors Ressler, Gardner, Mr. Tennant.
5. *Schedules*—Professors Johnson, Beaty.
6. *Student Affairs*—Professors Peavy, Beckwith, Calvin. Reed, Thayer, Peterson, Kraus, Brodie.
7. *Student Domiciles*—Professors Horner, Simpson, Mrs. McElfresh, Miss Vance.
8. *Health and Sanitation*—Professors Beckwith, H. V. Tartar, Miss Hadwen.

Oregon Agricultural College

GENERAL INFORMATION

FOUNDATION AND ENDOWMENT

In pursuance of an Act of Congress, approved by President Lincoln, July 2, 1862, a grant of land to the amount of thirty thousand acres, or its equivalent, was made to each State in the Union for each Senator and Representative in Congress to which the State was entitled by the apportionment of the census of 1860. The proceeds under this Act were to constitute a perpetual fund. The principal of this fund was to remain forever undiminished; but the interest arising from the fund was to be inviolably applied by each State that should avail itself of the benefits of the Act, to the support and maintenance of a "College where the leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." Ninety thousand acres of land were apportioned to Oregon, and by an Act approved October 9, 1862, the Legislative Assembly of Oregon accepted the provisions of the Congressional law.

THE LAND-GRANT FUND. The subsequent sale of this land has netted the College approximately \$200,000. This at present is invested in securities bearing six per cent interest. The Act of Congress of 1862 explicitly demands that no part of the funds so appropriated, or the interest arising therefrom, shall be used for the purchase, erection, or maintenance of any building or buildings.

THE HATCH FUND. Under an Act of Congress, approved March 2, 1887, the College receives \$15,000 a year for the maintenance of an Agricultural Experiment Station, "to aid in acquiring and diffusing among the people useful and practical information on subjects connected with agriculture."

THE MORRILL FUND. On August 30, 1890, an Act was passed by Congress, "to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts established under the provisions of the Act of 1862." This Act provided that in 1890, \$15,000 should be paid to each of the land-grant colleges, and that the amount so appropriated should be increased by the sum of \$1,000 annually for ten years, and that thereafter the amount annually appropriated should continue to be \$25,000. Under an Act of Congress, approved March 4, 1907, known as the Nelson Amendment, this fund was increased by the sum of \$5,000 for the first fiscal year ending June 30, 1908, and by an additional \$5,000 for each succeeding year until the total annual amount in 1912 reached \$50,000.

THE ADAMS FUND. An Act of Congress, approved March 20, 1906, appropriated an initial \$5,000 for that year, and \$2,000 additional for each year thereafter until the annual amount should reach \$15,000. This fund is "to be applied only to paying the necessary expenses of conducting original researches or experiments bearing directly on the agricultural industry" of the State, and therefore supplements the Hatch Fund in the maintenance of the Experiment Station.

The College, therefore, receives annually from the National Government the following income: (a) interest on the land-grant sales fund, \$12,000; (b) the Hatch fund, \$15,000; (c) the Morrill fund, \$50,000; (d) the Adams fund, \$15,000.

In addition to this income derived from the National Government, the College is dependent upon the State Legislature for such appropriations as are required for the maintenance and development of the institution, in accordance with the provisions of the Acts of Congress, and in response to the industrial and educational demands of the State.

HISTORY

As there were no State colleges in Oregon in 1868, the Legislature of that year, which provided for the location of the land received under the Act of 1862, gave the interest on the funds derived from the sale of the land to the Corvallis College, a private institution in Benton County, which was then under the control of

the Methodist Episcopal Church, South. For a number of years, none of the land granted was sold, and the Legislature made small annual appropriations for the support of the school.

In 1885, the church voluntarily relinquished its claim on the funds of the College and the State assumed entire control of the institution. The Legislature of that year provided for the "permanent location of the State Agricultural College at Corvallis, in Benton County," on condition that the citizens of said county should within four years, erect on the "farm containing thirty-five acres in the immediate vicinity of said city, known as the Agricultural College Farm, brick buildings for the accommodation of said State Agricultural College at a cost of not less than \$20,000." During the summer of 1887, the corner stone of the building erected by the citizens of Benton County was laid by the Governor of Oregon amid imposing ceremonies.

This structure, now known as the Administration building, was the nucleus around which other buildings soon began to cluster as necessity and growing interest demanded. For a year or two there was ample room; but, as the institution grew, more land was needed and provided, and the institution now owns, instead of the thirty-five acres originally comprising campus and grounds, three hundred and sixty acres; and instead of one structure, thirty-five. There has also been a marked increase in the attendance, from ninety-seven to two thousand five hundred students. Twenty years ago, most of the students came from Benton and neighboring counties. Today, every county in Oregon, thirty-five other states, and eight foreign countries are represented. The increase in the number of students called for an increase in the number of the faculty. This body, from the number of five in 1884, has grown until it now closely approaches two hundred. Other features usually found in connection with progressive educational institutions have grown in equal ratio. The courses have been strengthened, the standard has been advanced, and other improvements have been made from time to time, which have added to the thoroughness and efficiency of the work.

GOVERNMENT

The general government of the College is vested primarily in the Board of Regents, and, under their control, in four other

administrative bodies—the Administrative Council, the College Council, the Faculty, and the Experiment Station Staff. These bodies, in the exercise of their respective duties, determine the questions of policy and regulate all matters relating to the interests of the institution.

THE BOARD OF REGENTS consists of thirteen members, of whom the Governor, the Secretary of State, the Superintendent of Public Instruction, and the Master of the State Grange, are ex-officio members. The nine other members are appointed by the Governor with the approval of the State Senate, and hold office for a term of nine years. Under a law of the State Legislature, passed in 1885, the Board of Regents constitutes a body corporate, under the name of "The Board of Regents of the State Agricultural College, * * * with power to sue and be sued, and to make contracts," and to enact such regulations as may be necessary for the maintenance and development of the College.

THE ADMINISTRATIVE COUNCIL consists of the President of the College, the Director of the Experiment Station, the Deans of the different Schools, the Director of the Summer School, the Dean of Women, and the Director of Extension. The function of this Council is to consider and determine the larger questions of policy and administration.

THE COLLEGE COUNCIL is composed of the President of the College and all officers of administration and instruction with the rank of professor, associate professor, or assistant professor. This body considers all general questions relating to the educational work and policy of the College; arranges and correlates the courses of study, and determines the requirements for admission and graduation. The different committees of the College Council, representing the several schools of instruction, have charge of the enrollment and progress of students in the respective schools, and investigate the records of all candidates for graduation.

THE COLLEGE FACULTY comprises members of the College Council and all other instructors and members of the Experiment Station Staff. It considers routine questions of method and discipline, a function for which it is particularly well adapted, being in close contact with all that pertains to student interests and student life.

THE EXPERIMENT STATION STAFF includes the President of the College, the Director of the Experiment Station, the heads of the

various departments of the School of Agriculture, and all assistants, engaged in research and experimental work. The members of this staff are engaged in the investigation of problems encountered in the development of the agricultural interests of the State. They also distribute information regarding their investigations by means of correspondence, circulars, and station bulletins.

THE STUDENTS. The College does not undertake to prescribe in detail either its requirements or prohibitions. Students are met on a plane of mutual regard and helpfulness. Since the advantages of the institution are provided at public expense, the students are under special obligation to perform faithfully all their duties, not only to the College, but also to the community and to the State. Whenever the department of any student is such that his influence is inimical to the interests of the institution, he will be relieved from further attendance.

PURPOSE AND SCOPE

The purpose of the College is to provide, in accordance with the Acts of Congress under which it is maintained, a liberal, thorough, and practical education—an education that will afford the training required for efficient service in different branches of industry. The distinctive technical work covers the three great fields of production, manufacture, and commerce. Special attention is given to the application of science. All the practical work in the laboratories, in the shops, in the orchards, and on the farm, is based on scientific principles. While the industrial or technical work is emphasized, the importance of a thorough general training, of mind development, and of culture, is recognized in all of the work throughout the institution. The object is to meet the demand for a broad and general education, supplemented by special technical training.

The work, therefore, covers a broad field, including technical courses along the different lines of agriculture, home economics, engineering, commerce, forestry, pharmacy, industrial pedagogy, and industrial arts; with the necessary training in the basic subjects of mathematics and the natural and physical sciences; and also the general training in language, literature, history, civics, and physical education, which constitutes an essential part of a liberal education.

In all the work of the institution, the object is to train the mind, the eye, and the hand to act in unison; to unfold and co-ordinate the faculties of mind and body; to develop a symmetrical manhood and womanhood, and a just appreciation of clean, upright citizenship.

LOCATION

The seat of the Oregon Agricultural College is Corvallis, a city of over five thousand inhabitants, situated at the head of navigation on the Willamette River. As the name implies, it is in the heart of the far-famed Willamette Valley. It is readily accessible by steam and electric railway from all parts of the State; it has free mail delivery; there are many churches and no saloons, and the moral tone is equal to that of any city within the boundaries of the State. It is a city of homes, and its people are justly proud of the great institution in the midst of them, and jealously guard its good name.

Situated on high, well-drained land, open to the invigorating sea-breeze, Corvallis is one of the most healthful cities in the State. It has never been visited by any dangerous epidemic disease, and the possibilities of such visitation in the future appear remote, for the city has a complete modern sewerage system and first-class gravity water system, supplied from springs high up the slope of Mary's Peak, the tallest mountain in the Coast Range, some fifteen miles away to the west. The city and its environs are conducive to wholesome student and home life. It has an ample supply of pure mountain water for all domestic and sanitary purposes. The atmosphere is purified and the climate ameliorated by almost constant ocean breezes—warm in winter and cool in summer. The surrounding landscape elicits praise from all who behold its delightful charms as viewed in the extensive area of fertile fields, gardens, and orchards. The wooded glens of the near-by foothills, and the lively mountain brooks, or the more pretentious streams frequented by canoe, yacht, and launch parties, are fruitful sources of recreation; while the magnificent distant views to the east, where the fir-clad Cascade Mountains, with their wealth of trees and the perennially snow-capped sentinels—Hood, Jefferson, and

the Three Sisters—present a constant panorama of picturesque mountain scenery. With such an environment, the city is truly an ideal location for a college and a home.

GROUNDS AND BUILDINGS

THE COLLEGE GROUNDS comprise three hundred forty-nine acres. That part of the grounds, ninety-one acres in extent, lying immediately about the several buildings, east of Cauthorn Avenue, and usually designated as the lawns and campus, is tastefully planted with both native and exotic ornamental trees, shrubs and herbs. The one hundred and forty-three acres used for the farm, garden, and orchard operations is so platted and planted as to meet the demands of the various lines of work and still conform to a general scheme of landscape embellishment. This portion occupies a slightly elevated and gently undulating site wholly within the western limits of the city of Corvallis. In addition to the above plot, one hundred and fifteen acres, comprising the College stock farm, lies just south of the city limits. Broad drives and walks traverse the campus in all directions, thus rendering every objective point easily accessible. The numerous magnificent specimen trees, groups of shrubbery, and massed borders are a source of enjoyment as well as of instruction to all those who frequent the grounds. The scheme of planting has been such as to give an air of peaceful activity, orderly effort, earnest purpose, and quiet refinement. Daily association with such scenes for a period of years, during the time when men and women are forming the habits of thought and action that will be theirs through life, is certain to have a deep-seated and subtle influence for good in moulding the character of future citizens.

The following brief descriptions will convey a general idea as to the principal buildings and the purposes for which they are used:

THE ADMINISTRATION BUILDING is a three-story brick structure, 90x120 feet, containing nine recitation rooms, the library, the offices of the President, the Registrar, and the Business Manager. Centrally located and on a slight eminence, it commands an unsurpassed view of the campus, the city of Corvallis, the course of the Willamette River, and the picturesque Cascades.

SCIENCE HALL, situated southeast of the Administration building, and constructed of gray granite and sandstone, covers a ground space of 85x125 feet, has three stories and basement, and contains fifty-five rooms. It is one of the most serviceable buildings on the ground, and within it, at present, are the School of Forestry, and the departments of Pharmacy and Chemistry, with their various laboratories, recitation rooms, and lecture halls, together with the offices and laboratories of the Experiment Station chemists.

AGRICULTURAL HALL, standing southwest of the Administration Building, is the largest structure on the campus. It is an imposing edifice of brick and sandstone, consisting of the central or Administrative building, the north or Agronomy wing, and the south or Horticultural wing.

The central or Administrative building is 66x140 feet, four stories and basement, and contains a total of forty-two conveniently arranged and well-lighted class rooms, laboratories, and offices. Upon the first floor are the offices of the Director of the Experiment Station and Dean of the School of Agriculture, the Professor of Poultry Husbandry, the Director of Extension Work, the Station mailing rooms, and the Agricultural library. The second floor is occupied by the department of Industrial Pedagogy, and the department of Animal Husbandry; the third floor, by the departments of Zoology and Entomology; and the fourth floor, by the departments of Bacteriology and Art, together with the general museums.

The north or Agronomy wing is 72x130 feet, three stories high. It faces north and east, commanding splendid views of the valley and the College grounds. It is thoroughly modern in all its equipment, and while intended solely for the work in Agronomy, at present accommodates, temporarily, two departments. The first and second floors occupied by the department of Agronomy, contain seventeen rooms, variously devoted to laboratory and class purposes in Agrostology, Soil Physics, and kindred subjects. The third floor, with eight rooms, is used by the School of Commerce.

The south or Horticultural wing is 72x130 feet, three stories high. In the basement are located laboratories for plant propagation, spraying, vegetable preparation, and fruit packing. The basement also contains the general storage rooms for the department, and rooms which are especially adapted for the storage of fruits. The first floor contains the offices of the department of

Horticulture, the research laboratory, systematic pomology laboratory, and three large lecture rooms. The second floor contains the offices of the department of Botany and Plant Pathology, three recitation rooms, and three student laboratories. The third floor contains the horticultural museum and horticultural herbarium, photograph room, large student lecture room, draughting rooms, lecture rooms, and office of the Landscape Gardening section. These rooms are all especially well lighted and contain every convenience for conducting the work with efficiency.

GREENHOUSES. A new range of greenhouses, modern in every respect, has recently been constructed with a view to aiding the student in his studies in commercial greenhouse work. The range is made up of five even-span houses, three ninety feet long by twenty feet wide, and two thirty-three feet long by twenty feet wide, making the total area under glass 6,720 square feet. A modern hot-water heating apparatus has been installed, with valves and pipes so arranged that different temperatures can be maintained in every separate thirty feet of house in the three long houses. Each of the large houses has been divided into sections thirty feet long, so that the entire space in each may be given up to a single crop. Of the two smaller houses, one is given up to research work, and one to the propagation of plants in general. The central building is large and conveniently arranged for all work that is to be met with in greenhouse establishments. Such crops as carnations, chrysanthemums, violets, palms, ferns, general pot plants, and forced vegetables, like tomatoes, lettuce, and cucumbers, are grown in these houses.

DAIRY BUILDING. About sixty feet to the northward of the Agricultural building is located the Dairy building. The general scheme of both outside and inside finish is similar to that of the Agricultural building. The structure is 54x141 feet, three stories high. On the first floor are located the offices of the Dairy department and commodious laboratories for butter-making, cheese-making, and market milk instruction, including a well-equipped boiler and engine room and student lockers. On the second floor are the testing laboratory, advanced laboratory, farm dairy and shop rooms, veterinary laboratories, etc. The third floor is temporarily

occupied by the department of mathematics, with the exception of a general lecture room, extending across the south end of this floor, and having a seating capacity of two hundred.

HOME ECONOMICS. The first wing of the new **Home Economics** building is occupied by the departments of Domestic Science and Domestic Art. This building is located directly west from the Dairy building. It consists of three stories above a high basement, and is finely built of brick and stone. The most modern type of heating and ventilating systems are installed, and all provisions are made for the comfort and convenience of the young women carrying the work in Home Economics. The Dean's office is on the first floor near the south entrance of the building. Excellent offices for the Professor of Domestic Art and the assistants in both Domestic Science and Domestic Art, are on the second and third floors.

The food laboratories are on the first and second floors, while the Domestic Art department has all of the third floor of the building and part of the second floor. An abundance of locker and dressing rooms are arranged for the convenience of the students, and hot and cold water is supplied in all parts of the building. The housing and equipment of the School of Home Economics, in short, are thoroughly modern and adequate.

THE MINES BUILDING, which is 65x81 feet, is located about 100 yards northwest of the Administration building, and is one of the newest buildings on the campus. This building forms the northern boundary of the quadrangle which is planned in the new building scheme on the College campus. It is a fine four-story structure, constructed of brick, trimmed with stone, and similar in type to Agricultural Hall. The first floor of the building contains the main offices, assaying, metallurgical and ore dressing laboratories. The basement contains the crushing and sampling rooms, the ceramic laboratory, and the stock rooms. On the second floor will be found the Bureau of Mines laboratory and lecture and class rooms. On the third floor is the geological museum, the mineralogical and petrological laboratories, and draughting room. All the laboratories are provided with water, gas, electric lights, and steam heat.

MECHANICAL HALL, about one hundred and fifty yards north-east of the Administration building, is 90x120 feet, two stories

high, and constructed of Oregon gray granite and sandstone. It is a fine, substantial building, well arranged and admirably adapted to the purpose for which it is used. Besides recitation and lecture rooms for the classes in Mechanical, Electrical, and Civil Engineering, it contains the Physical and Engineering Laboratories.

MECHANICAL ARTS BUILDING is a modern, well-lighted structure of brick, with cement foundations, 52x52 feet, two stories high, flanked by a one-story wing on the east, 40x220 feet, and a similar wing on the south, 40x200 feet. The central portion contains the office of the Dean, a display room for student work, a tool room for the machine shop, and a finishing room for the wood shop. On the second floor is a general draughting room, 30x50 feet, with a commodious blue-print room and a dark room adjoining. The south wing contains the main woodworking shop, 40x97 feet, a stock room, 30x40 feet, a carpenter shop, 20x40 feet, and the College printing plant, 40x50 feet. The east wing contains the machine shop, 40x80 feet, the blacksmith shop, 40x100 feet, store room for coal and iron, lockers, and toilet rooms.

THE FOUNDRY, which is located immediately south of the blacksmith shop, is built of brick. It contains one 35-inch Collian cupola for melting iron, one brass furnace, one portable core oven, one stationary core oven for larger work, one twelve-hundred-pound crane ladle, one eight-hundred-pound mining ladle, and several smaller ladles. One crucible brass furnace, one two-ton jib crane, one post crane, one No. 2 Delano pulley molding machine, one tumbling barrel for cleaning castings, and a liberal supply of smaller tools, flasks, etc.

THE WOMEN'S GYMNASIUM is situated about two hundred yards south of the Administration building, and is erected against a gently sloping bank on Jefferson street. The structure, 70x120 feet, is built of stone and wood, and comprises a high, airy basement, or first floor, facing east, with the main floor above it, having a bank entrance on the west end. The first floor of the building is devoted to locker rooms, dressing rooms, bathrooms, and offices, together with a rest room and a special room for corrective gymnastics. The second floor consists chiefly of one large gymnasium room, which is also frequently used as a lecture hall, assembly room, and social center for moderate-sized gatherings. This room, which comprises 8,000 feet of floor space, is surmounted

by a balcony running track, suspended from the trusses. It affords facilities, in a court of 79x54 feet dimensions, for basketball, indoor baseball, and various winter and indoor games. The building affords ample accommodations for the physical training of all the women of the institution.

THE MEN'S GYMNASIUM is situated immediately west of Waldo Hall on Jefferson street, adjoining the main athletic field. The structure is to consist of four units, the central part being 90x150 feet, with each wing 52x96 feet in dimensions. The fourth unit will provide a swimming pool 50x100 feet, of modern design and finish. Only two units are to be completed during 1914, the main hall and the east wing. The main hall may be used as a lecture and assembly room, or a place for entertainments when large audiences are to be accommodated. The showers and the baths are of modern design, providing hot and cold water throughout the year. The floor of the main hall with its 13,500 square feet of surface, is surmounted by a balcony running track, and provides space for three basketball courts, indoor baseball diamond, and space for various winter and indoor games. The east wing will provide boxing and wrestling rooms, and an auxiliary gymnasium equipped with special apparatus for use of the individual and for corrective gymnastics. When completed, the building will have accommodations for upwards of 2,000 men.

THE ARMORY is situated about three hundred yards south of the Administration building. It is one of the largest of its kind in the United States and is built of concrete and steel, 126x355 feet. The drill hall portion has an unobstructed area of 36,000 square feet. The arms room, offices, and drill hall afford facilities for the accommodation of 1,000 men.

THE POWER PLANT, a one-story brick building in the rear of Mechanical Hall, contains the requisite equipment for supplying the various buildings with heat, light, and power. The apparatus installed in this building serves the purpose also of demonstration equipment in these special lines.

THE NEW HEATING PLANT, located at the south end of the Armory, is a one-story reinforced concrete building, with a concrete tunnel and conduits leading to the various buildings on the south side of the campus. It contains three boilers, one two-hundred-ninety,

one two-hundred-fifty, and one one-hundred-fifty-five horse-power, with the necessary equipment for heating the buildings connected with it.

WALDO HALL, the women's dormitory, occupies a commanding site one hundred and fifty yards west of the Armory. It is a large building of striking appearance, with a cement foundation and basement wall, and a cream-colored, pressed-brick superstructure, three stories high. The dimensions are 96x240 feet; and it contains one hundred and twenty-five rooms for students, besides a kitchen, dining room, and parlors. It is modern in all its appointments and finished throughout in natural grain Douglas fir, stained to conform to the color scheme.

CAUTHORN HALL, the second women's dormitory, is a well-proportioned frame building, situated on a commanding spot in the western part of the campus. It is 160x50 feet, has three stories and basement, and contains sixty-two rooms, besides a large kitchen, dining room, and reception rooms. Its furnishings and appointments are adequate, modern, and in harmony with its use. Each floor is supplied with hot and cold water, baths, electric light, and steam heat.

SHEPARD HALL, the student building under the auspices of the Y. M. and Y. W. C. A., was completed at a cost of something over \$22,000. The original plans were somewhat modified, giving in many respects a better building than planned at first. This building contains in the basement a swimming pool, shower baths, lockers, banquet room, kitchen, wood room, and accessories. The first floor contains a large lobby which is used for a reading room, game room for social events, and general assembly. It also contains offices for the General Secretaries, a public office, a cabinet and check room combined, and a room for the Y. W. C. A. The second floor contains six rooms for the use of the literary societies, the Athletic Association, and the staffs of the different College papers. The third floor is devoted for the present to dormitory purposes. The building, known as Shepard Hall, is a fitting tribute to the memory of Clay Shepard, who gave his life to the cause of cleaner, higher, and truer citizenship as exemplified in student life.

FARM BUILDINGS. The College Farm is now well equipped with farm buildings, and modern facilities for conducting practical and scientific work in animal husbandry.

THE NEW BARN is commodious, modern, and attractive in design. It is a frame building, with cement foundation and brick pilasters. The main part is 50x100 feet, two stories high, with two wings extending to the south, each 46x80 feet, one story in height. There is also a milk room, an engine room, and a fuel room. The building is utilized as a general barn, and will accommodate nine horses and seventy cattle, with sufficient space for the storage of feed. On the first floor of the main portion are located the horse stalls, bins for storing the various grains and mill feeds, a seed room, and space for vehicles. The concrete basement is of sufficient dimensions to permit the storing of about one hundred tons of roots. The second floor has a storage capacity for one hundred tons of loose hay. A prominent feature of the barn is the cow stable. This is strictly modern, well lighted and ventilated, with concrete floor, thirty individual, tubular-iron adjustable stalls, and two commodious box stalls. The aisles are wide, and thus not only furnish an abundance of air space for the animals, but also afford visitors an excellent opportunity to view the stock. The milk and engine rooms are conveniently situated, but sufficiently isolated for proper sanitation. This building is lighted by electricity, well supplied with water, thoroughly sewerred, and furnished with an elaborate system of bell traps.

The old barns were moved and remodeled so as to harmonize with the new structure. They contain rooms for housing machinery, and a commodious piggery.

THE NEW CATTLE BARN. The department of Animal Husbandry is fortunate in having been able to erect in the past year a splendid new beef-cattle and sheep barn. This barn is located just west of the old barns and has a floor space of 52x120 feet for sheltering stock. The hay loft has a storage capacity for 300 tons of hay and straw. Adjoining the barn are several concrete floored exercise lots. Especial conveniences are provided for the feeding, watering, weighing, and handling of live stock. The west half of the barn is at present devoted to beef cattle and the east half to sheep, although it is planned that the entire barn be eventually used for beef cattle.

THE STOCK JUDGING PAVILION. The Animal Husbandry work of the College has been aided by the erection of a new judging pavilion. This pavilion provides very comfortable and commodious

quarters for all of the live stock work. The main room is 40x90 feet, well lighted and provided with heat. A movable partition is provided whereby this large room may be divided into two smaller ones, each large enough for all ordinary purposes. The live stock work in the past has been very much handicapped by crowded quarters without heat or good light, but these difficulties are now past and the department is in a position to do much better work than before.

FARM MECHANICS BUILDING. A modern building has recently been completed for the Farm Mechanics work. It is an attractive, well-lighted brick building, having a large operating floor, a class room, locker room, shop, and tool room on the first floor. This operating floor is of cement and is roomy enough for demonstration and for the operation of the heavier farm machines. Within this place is reserved space for the very heavy farm tractors. A gallery surrounds this operating floor and provides space for the lighter farm implements such as tillage, haying, and harvesting machines.

The building is equipped with shafting, belting, and power for the operating and testing of the various machines, and a large well is provided for making pump tests. A very complete equipment of the most up-to-date farm machinery is loaned the institution by the leading implement dealers of the Northwest; so that the student has constantly before him and is working with and studying the very best classes of farm machinery of all types.

Representative machines are found in the laboratory as follows: plows, harrows, pulverizers, cultivators, plant setting machines, corn planters, potato planters, grain and grass seeders, mowers, rakes, binders, sprayers, manure spreaders, potato diggers, wagons, etc. Among the power machines are stationary gasoline engines, various types of pumps and pressure water systems, feed grinders, gasoline tractors, steam tractors, gang plows, and complete threshing machines. All of this expensive equipment is available to students in Farm Mechanics in the regular and short course work.

THE POULTRY HOUSES. On a ten-acre tract of land, lying south and west of Cauthorn Hall, there have been erected several buildings especially planned for the needs of the department of Poultry Husbandry. The main poultry building is a three-story structure and is used principally for class, laboratory, and demonstration pur-

poses. It contains a demonstrating room with desks and other necessary equipment; a shop, with the necessary tools, benches, and equipment for practice work in building poultry plant equipment; storage rooms, office, and wash rooms are also provided. In the basement, rooms are provided for fattening and killing fowls, an incubator room for student use, and a feed room with the necessary machinery for grinding and mixing poultry feeds. Besides the main poultry building there is an incubator house, with a capacity of twenty-four incubators and complementary apparatus; and a feed-storage building and a brooding house. There are also colony houses for laying and breeding stock and growing chicks. The colony houses are movable and constructed upon a plan that could be adopted by any farmer. The colony brooding coops are also portable, and are used for investigations in both natural and artificial brooding.

EQUIPMENT

It is impossible, in the brief space that is devoted to this topic, to give more than a bird's-eye view of the equipment of the institution. The following data have been so arranged, however, as to give the prospective student a very good general idea of the comprehensive equipment that the institution possesses for carrying forward its designated work.

AGRONOMY. The Agronomy wing of the Agricultural building, the Farm Mechanics building, and the Agronomy Greenhouse, provide large, well-lighted offices, class rooms, laboratories, storerooms, and other facilities for the work in Agronomy.

A large Soil laboratory is equipped with the necessary apparatus for the complete study of the physical properties of soils and problems of soil management. Ample desk room supplied with running water, gas, compressed air, and electricity, is available for sections of fifty students each. Electric centrifuges and shakers, electric bridge for alkali testing, electric air baths, analytic and torsion balances, microscopes, blast lamps, aspirators, percolators, capillary tubes, mulch cylinders, soil sieves, scales, solution balance, compression filters, soil sampling tubes, etc., form part of the equipment for the work in Soil Physics. Soil surveying and mapping

outfits, soil survey charts of the United States, and a collection of samples of the chief soil types of Oregon and the United States, are available.

A new Soil Preparation room equipped with benches, soil grinding and sifting machinery, large soil bins, and ample space for the drying, preparation, and storage of large quantities of the different soil types used in the laboratories, is available.

For the work in Field Crops, a large new laboratory on the second floor of the Agronomy building has been equipped with special compartment desks for advanced work sufficient to accommodate sections of thirty students each, and additional benches sufficient to allow for laboratory classes of one hundred or more during the Winter Short Course period. This laboratory is furnished with an excellent equipment for all the courses in Crops, consisting in part of grain sampling and mixing machines, compound and binocular microscopes, dissecting microscopes, field lenses, germinating chambers and various types of plain and farm germinators, grain testers, grain grading apparatus, moisture testing apparatus, grain receptacles and storage cases of many kinds, and complete sets of seed, crop plant, and weed specimens. Each student is provided with samples of both the seed and the plants of different varieties of all the important field crops, and weeds of Oregon and the United States.

The Seed Testing Laboratory, maintained jointly by the United States Department of Agriculture and the College, is in operation throughout the year. It is fully equipped for this work and is available for instruction of students specializing in Seed Testing.

A new Agronomy Exhibit Room and Museum has been provided and is being equipped for the coming year with exhibit cases and racks for the collections of grains, crop plants, weeds, soil samples, and other exhibits of interest and use in the different courses in Agronomy.

The work in Farm Mechanics is provided for in a separate building fitted with shafting and power and fully equipped with all classes and types of tillage implements; seeding, harvesting, pumping, and power machinery; farm engines and tractors of all kinds; self-registering dynamometer and other testing apparatus; shop; well; tools; forms for concrete construction; etc.

A laboratory for the work in draughting required in the various courses in Agronomy, such as Farm Drainage, Irrigation Farming, Farm Management, etc., is equipped with drawing tables, cabinets, blue-printing frames, etc.

For the work in Irrigation and Drainage, surveying instruments, tile and ditching tools, weirs, flume, hook gauges, water stage register, electric pumping plant, etc., are available. Weather recording instruments of different kinds supply equipment for the course in Climatology.

The Agronomy class rooms have demonstration desks, lantern facilities, illustrative charts of various kinds, and a well-stocked reference library.

For field work, the experimental plots and fields on the Experiment Station farms and cooperative experiments at Corvallis and in other parts of the state offer an exceptional opportunity for study and comparisons in such work as plant breeding as applied to the different kinds of field crops; soil fertility rotations; use of commercial fertilizers; use of irrigation waters; effects of tile drainage on different types of soils; growing of different soiling crop sequences; production of high grade seed on a commercial scale; harvesting, manufacturing, and storage of crops; management of the fields and crops as to tillage operations, seeding, etc. With both the Experiment Station and the College farm operations under his eyes, the student may observe the experimental trial of a method of crop or soil management in the experimental plots and then the practical application of the successful method in the commercial production carried on in the fields of the College farms. The yearly results obtained in the Agronomic investigations at the branch Experiment Station farms at Moro, Burns, and other parts of the state, furnish the latest data and object lessons with reference to the dry farming and irrigation farming methods in other parts of the state.

ANIMAL HUSBANDRY. The equipment of the department of Animal Husbandry consists essentially of live stock, barns, and the College stock farms. During the past year the live stock available for illustration and demonstration purposes has been very much improved in numbers and in quality. The College flocks and herds now include typical specimens of Shorthorn and Hereford

cattle, Cotswold and Shropshire sheep, Berkshire, Yorkshire, Poland China, and Duroc Jersey swine, Percheron, Belgian, Clydesdale, Shire and Standard bred horses, together with the live stock used in experimental work. In addition to the live stock regularly kept on the College farm, much good stock is loaned from time to time by the leading breeders of the State. During the winter car-load lots illustrating the market classes are brought in for demonstration purposes. The department also possesses the necessary maps, charts, lantern slides, stud books, library, and other equipment for conducting laboratory, lecture, and recitation work in the several phases of Animal Husbandry. There is now in the department a complete animal husbandry library.

DAIRY HUSBANDRY. The Dairy building, with its three floors and its newly remodeled manufacturing facilities, affords convenient and modern resources for the work of this department. In the manufacturing work, it is the intention to give the student theory and practice in the manufacture of dairy products. Commodious quarters are provided for this department in the Dairy building. The equipment is such as to permit handling milk and cream on a commercial scale, thus giving the student practice under actual factory conditions. On the first floor, are the offices and manufacturing rooms, the latter including a boiler room equipped with a 15 H. P. internal furnace boiler and a 10 H. P. Jewel automatic steam engine; a farm butter making room, in which are found hand churns, butter workers, and the various types of separators found on the market; a churn room, which is equipped with modern ripeners, combined churns, various forms of butter molding appliances, refrigerating machine, cooling room, and ice cream freezer; a market milk room, with milk cooler, bottle filling machine, and bottle washer; a cheese room, which is equipped with cheese vats, automatic pressure cheese press, and other equipment used in the cheese factory; a cheese curing room; and a reading room.

On the second floor, are located recitation rooms, and advanced and general laboratories. The latter will accommodate two hundred students in sections of forty each, and are equipped with a full line of appliances for testing milk and milk products. In the advanced laboratory, will be found moisture tests, salt tests, curd tests, and various other forms of apparatus suited to the needs of the ad-

vanced student. A circulating hot water system connects the wash sinks in all of the laboratories. Both steam and electricity are used for power purposes.

The College dairy herd consists of thirty-five head of high-producing dairy cattle of the Jersey, Holstein-Friesian, Guernsey, and Ayrshire breeds. These cattle are housed in a modern dairy barn.

HORTICULTURE. The Horticultural wing of the Agricultural building contains many spacious rooms, and thoroughly modern equipment for teaching the various subjects. In the basement will be found a large spray laboratory furnished with gas and water and all the equipment, chemicals, and apparatus which are necessary to teach students the proper mixing and testing of the different sprays; accommodations are offered also for the testing of nozzles and spraying apparatus. The department has a large number of hand and power spraying outfits that are placed at the disposal of students.

A large, well-lighted plant propagation laboratory offers unexcelled opportunities for the study of plant propagation. Specially equipped cabinets, tables, and incubator have been constructed; so that the students can handle to advantage such topics as seedage, layerage, making of cuttings, and budding and grafting.

A laboratory has been especially fitted for the use of students in gardening. It contains large cement-set tubs, where students are taught the proper methods of preparing vegetables for market. This room also contains a demonstration earth bed for use during the winter, to show how the various tools for planting seed and for cultivation are used. The demonstration bed also allows the instructor to demonstrate the proper method of interplanting and transplanting of plants.

In the basement is also located a very large fruit packing laboratory equipped with fruit presses, packing and grading tables. The large storage rooms are also located in the basement and include a suite of rooms which are chilled by mechanical refrigeration.

On the first floor a systematic pomology laboratory is especially equipped for the study of nuts, fruits, etc. A special research laboratory, found on this floor, is used for the research assistants in the department, and is also at the disposal of advanced students. This room is completely equipped with ovens, microscopes, and similar apparatus necessary for extensive research work.

On the top floor is the horticultural museum, which is found to be of great value, as in this room are stored all sorts of equipment used in Horticulture, such as pruning shears, budding and grafting utensils, prune drying apparatus, fruit graders, etc. The department also has on this floor a herbarium which is especially supplied with the plants used in Horticulture. On this floor is also found a large draughting room, extending along the entire south end of the building, supplied with tables, cabinets, etc., for the use of students studying Floriculture, Landscape Gardening, and Greenhouse Construction, Orchard Planting, and Packing House Construction. In addition to these rooms, the department has four large lecture rooms. A balopticon with a good collection of lantern slides, and a large library, add materially to the equipment.

The department is also especially provided with tools and apparatus necessary for conducting field exercises in Truck Gardening, Floriculture, Landscape Gardening, and Pomology.

POULTRY HUSBANDRY. The equipment of this department consists of a number of poultry houses of different types; about 1,000 fowls of several breeds and varieties; twenty incubators of several different makes; brooders of different types; hatching, brooding, and colony coops; bone and clover cutters; feed grinders and mixers; cramming machine and fattening batteries; trap-nests; and various other appliances necessary for practical poultry keeping. There are also sets of charts, lantern slides, motion pictures, and photographs, illustrating breeds of fowls, poultry farms, and houses.

BACTERIOLOGY. This department occupies new and commodious quarters on the fourth floor of the Agricultural building. It has much more room at its disposal than heretofore, occupying at present three large laboratories, besides an incubator room, a smaller room for a library, and a large storeroom. The laboratories for general and advanced Bacteriology are completely equipped for work in this science. Apartment, lead-topped desks, individual wall lockers, cylindrical and square copper sterilizers, supplied with steam from the main heating plant, small and large hot-air sterilizers, a small and a large steam pressure horizontal sterilizer, the latter measuring 14x22 inches inside chamber, and arranged for "dry steam" sterilization, are conveniently arranged in the general

laboratory for the larger sections. Small incubators are used by the advanced students, while a large incubator room, steam heated, is within easy access to both general and advanced laboratories. For special work demanding an extraordinary degree of exactness, there is a large electrically controlled and heated incubator. Lead-topped tables with convenient drawers furnish ample working space. Hot and cold water is supplied to all laboratories and is fed by the main water system and by a 40-gallon hot water tank. Sinks are uniformly lead. Each desk and locker is equipped with a complete outfit of microscopes and accessories for high power centrifuge. There is a complete collection of common and precision glassware; and all the other necessary minor equipment for work in bacteriology is at the disposal of elementary and advanced students. There is a completely equipped dark room fully fitted up for work in photomicrography. In connection with this room there is an arc lamp for illumination purposes for this work.

BOTANY AND PLANT PATHOLOGY. This department occupies the entire second floor of the Horticultural wing of the Agricultural building. Besides three general student laboratories, a special laboratory for plant physiological work and an herbarium room, which is also used as an instructor's preparation room, are provided. This latter room is equipped with desks for special and graduate students. A large, well-lighted laboratory is provided for the experimental work in plant pathology. A small room for the department library and records is used also as an office for the instructors. A special physiological dark room for experimental work in plant physiology is provided. The student laboratories are equipped with large student tables, each of which will accommodate four students. Compound and dissecting microscopes are provided for each student. The physiological laboratory is equipped with the essential apparatus for modern laboratory courses. The research laboratory in Plant Pathology has the most modern equipment available.

The phanerogamic herbarium of several thousand mounted and many thousand unmounted plants is particularly rich in Oregon forms, while containing quite extensive collections of the New Mexico, California, Michigan, and Washington floras. The herbarium is being rapidly enlarged by purchase and exchange; particular attention is being given to the accumulation of economic ma-

terial including the forest and shade trees of North America, agricultural plants of the world, pharmaceutical plants, and weeds and grasses of economic importance. Large and miscellaneous collections of the various groups of cryptogamic plants are being assembled. Particular attention is being given to the collection of parasitic fungi, for use in the work in Plant Pathology. A private collection of about five thousand specimens of fungi particularly rich in parasitic forms has been temporarily loaned by H. S. Jackson for the use of students and instructors.

A large amount of class study material is preserved in alcohol for the use of students. A well-selected collection of microscopic slides, photographs, lantern slides, and charts is provided and is being rapidly enlarged.

ZOOLOGY. The laboratories of this department occupy the following rooms on the third floor of Agricultural Hall: offices, physiological laboratory, laboratory for embryology and histology, general laboratory for zoology, lecture room, vault and photographic dark room. The general laboratory is equipped with desks with individual drawers to accommodate 280 students; each desk is provided with compound microscopes, dissecting microscopes, and various minor pieces of apparatus. The physiological laboratory is similarly equipped for 225 students and in addition is provided with an articulated skeleton, a dissectible human skull, a complete Azoux model of the human body, greatly enlarged Azoux models of the brain, eye, ear, and other organs, a set of the celebrated Leukart zoological charts, and a good supply of specimens and dissections for illustrating the work in physiology. The laboratories are provided with high grade compound and dissecting microscopes, a Minot rotating microtome, a Minot automatic precision microtome, water bath, 5x7 view camera, laboratory balances, eye-piece, and stage micrometers, and an abundant supply of minor instruments.

The museum contains, in addition to a beautiful collection of native birds, a small collection of mounted mammals, the Ladd collection of bird skins, a large collection of eggs of native birds, a small collection of fishes and reptiles, a considerable number of marine invertebrates, including a small but beautiful collection of Philippine shells, and numerous specimens of a miscellaneous nature.

ENTOMOLOGY. This department now occupies three rooms on the third floor of Agricultural Hall—one office, one laboratory, and one class room. The entomological class room is equipped for twenty-four advanced students. It also contains the entomological collections and extension materials. The research laboratory is fully equipped with up-to-date apparatus for carrying on all kinds of research problems. The entomological library is exceedingly rich in old volumes and complete sets of entomological periodicals. Through the kindness of the librarian of the U. S. Department of Agriculture, students in this department have access to all publications contained in the library of the Department of Agriculture and the library of Congress.

FORESTRY. The department of Forestry occupies the third floor of Science Hall. It has a complete herbarium of the forest trees of the Pacific Coast, as well as a cone and seed collection representing the important commercial trees of the United States. It has apparatus for applying preservatives to timbers by the open tank method, timber testing machinery, incubators for testing tree seeds, wood specimens, stereopticon and slides, compound and low power microscopes, hypsometers, increment borers, scale sticks, calipers, Biltmon sticks, transits, surveyors' compasses and chains, pack outfits, axes, saws, draughting tables, and other equipment necessary for efficient laboratory and field work. Valuable collections of tools used in logging have been loaned the department by several commercial companies. The City Water Company of Corvallis has placed a timbered tract of eighty acres at the disposal of the College for demonstration purposes, while the entire city watershed of more than 7,000 acres is used as a basis for practical field work.

DOMESTIC SCIENCE. This department is located in the new Home Economics building and occupies the basement, first floor, and one-half of the second floor of the completed east wing of this structure. There are five large laboratories, with excellent modern equipment for all types of food preparation. A small laboratory is equipped with various kinds of cooking apparatus and is designed for experiment work. Adjoining the experimental laboratory is a dining room large enough to accommodate twenty people. This is used for meal serving and enables the students to put into actual practice the knowledge gained elsewhere.

The laundry in the basement is supplied with all modern conveniences and labor-saving devices. Ample class rooms, locker rooms and rest rooms are provided for the use of the students in the Home Economics course.

DOMESTIC ART. The entire third floor and half of the second floor of the new Domestic Science wing of the Home Economics building is allotted to the work in Domestic Art. There are six large laboratories with locker and dressing rooms adjoining each. The rooms are supplied with the best type of equipment available. The most improved sewing machines, good electric irons, ample wardrobes for unfinished work, and large display cabinets for finished work, are conveniently arranged. Excellent exhibit cabinets for the educational collections of cotton, wool, silk, and linen have been supplied.

CIVIL AND HIGHWAY ENGINEERING. In addition to joint use with the other engineering departments of the testing laboratories described elsewhere, this department has a suite of well-lighted rooms, suitably arranged on the second floor of Mechanical Hall. This suite includes an office, recitation, and lecture rooms; an instrument room, and draughting and designing rooms, together with a well-equipped blue-print room with a cylindrical electrical blue-print machine, sun frames, and washing pans.

The draughting and designing rooms are well lighted and fully equipped with thoroughly modern and convenient drawing tables, supplied with individual lockers for instruments and other apparatus. The instrument room is conveniently arranged, having an individual glass-front case for each instrument and its accompanying equipment, which includes marking pins, tape, range-poles, notebook, etc. The instrument equipment includes the following: twelve transits, four of which are provided with solar attachment; eight levels, four plane-tables, one compass and two current meters, all high-class instruments of various standard makes and styles; a sufficient supply of level and stadia rods, range-poles, tapes, chains, plain and prismatic compasses, aneroid barometers, clinometers, planimeters, plumb-bobs, hand levels, etc., together with a well-selected assortment of specifications and blue print plans of engineering structures for illustrative purposes.

IRRIGATION ENGINEERING. The excellent equipment of the Civil, Highway, and Experimental Engineering departments, as de-

scribed elsewhere under this caption, is available for use by the students in the Irrigation Engineering department. Besides the draughting rooms and laboratories, the student has the use of transits, levels, plane-tables, current meters, and tapes for practical work, as well as pumps, water meters, rams, and small water wheels of the Experimental Engineering laboratories for experimental work. Facilities for experiments with small weirs and orifices are also provided.

In addition to the above facilities, the proximity of the Willamette and Mary's Rivers, Oak Creek, and the mill race of the Corvallis Flouring Mills affords excellent opportunity for practice in stream gauging.

ELECTRICAL ENGINEERING. The laboratory of this department occupies a large part of the west half of the first floor of Mechanical Hall, and is divided into several rooms, one for testing, one for instruments, and another for supplies. Besides the equipment therein, including generators, motors, and other apparatus, the machinery in the College Power Plant and sub-station, is available for study and testing purposes. Three-phase electrical energy is supplied by the long distance transmission line or by the local generating unit as desired.

In the laboratory is a $6\frac{1}{2} \times 15$ foot switchboard, consisting of three asbestos wood panels on which are mounted a number of voltmeters and ammeters for direct and alternating current; a power factor meter; a frequency meter, and synchroscope; a set of synchronizing lamps; circuit breakers; switches; and a large number of plug terminals, the leads of which extend to the four machine platforms; two slate panels with instruments and switches for direct current machines; and an arc light regulating panel. Immediately adjacent thereto is a controller, auto-transformer and rheostat rack, six feet high by sixteen feet in length.

The machine platforms just mentioned are four feet wide by fourteen feet long, and have upon them the following equipment: one five, one seven and one-half, one ten, and one fifteen horsepower, three-phase, induction motors; two five, two seven and one-half, two ten, and two twelve and one-half kilowatt, 125-volt direct current generators; one ten-kilowatt double current generator, and one two-kilowatt rotary converter; two two and one-half kilowatt induction motor generator sets; one two and one-half

kilowatt synchronous motor generator set; one seven and one-half kilowatt revolving field alternator, with three additional rotors, and one seven and one-half kilowatt revolving field alternator, from both of which current of one-, two-, three-, four-, and six-phases may be taken; one five-arc light regulating, one ten-kilowatt 110,000-volt high tension testing, one ten-volt 1000-ampere welding, one five kilowatt 15,000 volt wireless, three 7½ kilowatt, 2200-220,110-volt transformers with ten taps each in the secondary, giving nine different voltages from 24 to 220 volts, with 87% taps in both primary and secondary for transformation from three- to two-phases or the reverse, and a number of ordinary transformers and compensators.

The instruments available comprise standard portable volt, ampere, and watt meters which are divided into two groups, one of which is used for routine laboratory work, the other reserved for thesis and other tests in which greater accuracy is desired. In addition to this equipment, the departments of Physics and Electrical Engineering maintain an instrument standardization laboratory equipped with two one-hundred ampere storage cells and a group of dry cells to furnish potentials up to one hundred and fifty volts. The precision instruments and apparatus consist of a Leeds and Northrup potentiometer with certified standard cells and a complete line of standard shunts from one one-thousandth to ten ohms, a Weston laboratory standard voltmeter with ranges of 1, 100, and 200 volts and Siemens and Halske laboratory standard ammeters with ranges from 2.5 to 50 amperes and a similar watt-meter with five and ten ampere range.

Equipment for the study of illumination is described under the department of Physics.

MECHANICAL ENGINEERING. The laboratory equipment for this department in mechanics and power measurement, is described under Experimental Engineering. The shops are under the supervision of the department of Industrial Arts.

In addition to equipment listed under these two departments, there are two large draughting rooms, each with 40 drawing tables, drawing boards for each student, and a blue-print room, with printing frame, wash trays, etc.

EXPERIMENTAL ENGINEERING. Appropriate portions of the equipment for this work are utilized by all departments in Engineer-

ing and Forestry. The equipment comprises the following divisions: a materials testing laboratory, a cement testing laboratory, a steam laboratory, and a gas engine and hydraulic laboratory. These divisions have in common the equipment for the preliminary work, such as calculating devices, planimeters, Amsler integrator, micrometers, and other general apparatus.

The materials testing laboratory occupies the northwest corner of the first floor of Mechanical Hall and contains the following: a 150,000-pound Riehle universal testing machine fitted with extension table for beams up to 16 feet in length; a 50,000-pound Riehle automatic and autographic testing machine; a 60,000-pound-inch Olsen torsion testing machine; a 400-foot-pound drop testing machine and a static load testing machine, both of which were built in the College shops; a Case tempering furnace with pyrometer; Scleroscope and Brinell ball hardness testers; and auxiliary apparatus including a deformer, torsion indicator, compression micrometers, several extensometers, deflectometers, and other minor pieces.

A part of the materials laboratory also is devoted to the testing of materials for highway construction. This equipment includes the following: Olsen impact machine for toughness tests; Riehle machine for hardness tests; ball mill, molding machine, and impact machine for cementing value tests on rock dust; rattler for abrasion tests on macadam or paving-rock, another for paving-brick; core drills and saw for cutting stone specimens; sieves for mechanical analysis of sand and aggregates, including a set of Tyler standard screen scale sieves. Penetrometer, viscosimeter, float test, centrifuge, and other appliances for making physical tests of bituminous cements and road oils.

The cement testing laboratory, also located in Mechanical Hall, is equipped with convenient glass-topped tables for mixing, intended to accommodate two students each. Apparatus is provided sufficient to make all the standard A. S. C. E. tests, as well as for some additional experiments. There are a large number of briquette, cube, and special cylinder molds, three Vicat needles, Gillmore needles, screens, including a standardized set, damp closet, aging tanks, boiling test apparatus, briquette molding machine, a 1000-pound Fairbanks cement testing machine, permeability apparatus for testing various mixtures or water-proofing compounds, and

small apparatus including balances, specific gravity flasks, trowels, sampling irons, etc.

The steam laboratory, located in the New Heating Plant, contains the following machines: a 7x8 throttling engine used principally for experiments on valve setting, a 9x10 Ideal automatic high-speed engine driving a 30 KVA, 3-phase generator, a 15 BHP, two stage Kerr turbine, an 8x18 simple Murray Corliss engine, and a 6- $\frac{1}{4}$ and 10- $\frac{1}{2}$ x6- $\frac{1}{4}$ Sturtevant vertical compound engine. The last three of these are so arranged that they may be run either condensing or with atmospheric exhaust. The condenser and vacuum pump are so equipped that the cooling water may be measured by means of a Venturi meter and the condensed steam by a Kennicott water-weigher. The engines are all fitted with gauges, sampling pipes, indicator connections, and brakes of various types.

For tests on boilers and their auxiliaries there are available the equipments of both the new and the old heating plants. The former consists of three Flanner water-tube boilers aggregating 700 horsepower; these are oil fired and fitted with modern auxiliary equipment, including feed water and oil meters, thermometer wells, flue gas sampler, etc. In the old plant there are three fire-tube boilers of about 170 horse-power total capacity, for which cord wood, and waste from the College wood shop are used for fuel.

Of smaller power laboratory equipment there may be mentioned a General Electric steam meter, pressure gauge tester, Schaeffer and Budenberg indicator calibrating device, seven indicators including a Trill instrument for continuous diagrams, several reducing wheels, two steam calorimeters, flue gas analysis apparatus, two pyrometers, draught gauges, recording and indicating pressure gauges, etc.

For work on power transmission, a transmission dynamometer and a special belt testing machine are provided. Tests may also be made on lubricants, bearing metals, and different types of bearings, by means of a Golden bearing and oil dynamometer, or a pendulum type oil testing machine. There are also at hand the usual minor pieces, as flash point apparatus, viscosimeter, etc.

The gas engine and hydraulic laboratory is located in the old Power Plant building. The gas engine equipment consists of three four-cycle and two two-cycle gasoline and oil engines, and an 8-inch Reeco-Ericson hot-air engine. All of these are specially fitted

for testing and demonstration. In the same room are also installed a Gardner air compressor and two centrifugal blowers for work on air compression and transmission. The hydraulic section contains the following: a centrifugal pump driven by a rated variable speed motor, several steam pumps, a 4x6 Goulds triplex pump, 12-inch Doble laboratory water motor, hydraulic ram, 2-inch Venturi meter, current meter, two ordinary service meters, calibrating tanks, orifice boxes with suitable plates and orifices, weirs, hook gauge, and other small apparatus. In addition to work in the laboratory, measurements and tests of neighboring streams and installations may be made.

THE WOOD SHOP, supplied with the best machines and tools the market affords, contains twenty-four double benches of modern design, accommodating forty-eight students. Each bench is provided with patent rapid action vises for holding the work, and is furnished with two sets of hand tools, consisting of rip saws, cut-off saws and backsaws, planes, chisels, paring gouges, marking gauges, try-squares, hammers, dividers, and oilstones. The machine equipment of this shop consists of fifteen wood-turning lathes, each furnished with a set of tools; one iron saw-table with rip and cut-off saws, one band saw, one jig saw, 24-inch surface planer, 16-inch glue joiner, post boring machine, and two grindstones. There are also two glue tables with clamps of various sizes and one steam and gas glue heater of three gallons capacity. The power is furnished by two three-phase induction motors of 15-horse-power each.

THE FORGE SHOP contains forty-two down draught forges of the most improved pattern. Blast is furnished by a steel pressure blower driven by a 10-horse-power induction motor, and the smoke and gases are removed by an 80-inch exhaust fan, driven by a 20-horse-power motor. Each forge is provided with anvil, hammers, hardies, tongs, and other small tools. There are also swedge blocks and vises at convenient points in the room for general use.

THE MACHINE SHOP contains one 24x24-inch iron planer, one 15-inch shaper, one 12-inch shaper, one universal milling machine, one universal tool grinder, one wet tool grinder, one radial drill, one 20-inch drill press, one sensitive drill press, one 20-inch engine lathe, one 16-inch engine lathe, one 16-inch universal turret lathe, one 14-inch modern geared lathe, five 14-inch engine lathes, two 10-inch speed lathes, one shop saw, one automatic knife grinder,

and twelve bench vises. A 20-horse-power induction motor furnishes the power. A tool room adjacent contains the small tools, such as twist drills, taps, dies, reamers, calipers, gauges and scales. These tools are given out to the students on the check plan.

The Plumbing and Steam Fitting Shop is equipped with all of the hand tools necessary for cutting, threading, and general pipe work, as well as gasoline torches, soldering outfits, and other apparatus for making lead pipe connections and wiped joints.

MINING ENGINEERING. The new Mines building provides spacious and well-lighted offices, laboratories, and lecture rooms for work in this department.

The Assaying and Metallurgical laboratory is a cement-floored room 30 feet wide and 60 feet long on the first floor of the building extending across the entire east end. It is amply lighted by windows on one side and both ends. At the south end of the room are the most modern type of oil-, and gasoline-fire furnaces for fusion and other fire work. Conveniently arranged nearby are suitable lockers and work tables with the necessary tools, fluxes, etc. The north end of the room is adequately equipped with sinks, ventilating hoods, gas burners, electric hot plates, and other paraphernalia for carrying on the various operations involved in parting buttons, assaying solutions, making cyanide tests, etc. One corner of the laboratory is partitioned off for a balance room and provided with the most delicate balances obtainable for weighing the gold beads. Balances of both the Keller and Ainsworth makes are available. These are mounted on a specially constructed table not connected with the floor, in order to avoid vibration.

The Crushing and Sampling laboratory in the basement is 25 feet by 30 feet. It contains a power driven sampler crusher of the latest design and one of the recently modeled disk grinders, for properly pulverizing samples for assay or other purposes. The usual bucking board and muller and other hand grinding devices are also available for use of the students at any time, together with the Jones sampler and other appliances used in preparing samples. Such work will all be done here, so as to keep dust and disturbance occasioned by such work out of the assay laboratory.

The Ore Testing laboratory is a room 25 feet wide by 30 feet long on the first floor of the building. It is equipped with appliances for studying the behavior of ores when subjected to the

various concentrating operations of jigging, vanner, table, and magnetic concentration.

The Ceramic laboratory occupies a room about 30 by 60 feet in the basement of the Mines building. There are also store and supply rooms contiguous to this laboratory. The equipment for the ceramics work consists of a laboratory for ceramic chemistry and apparatus for making physical tests of clays and other ceramic materials; a complete mechanical outfit for the preparation of clays for the manufacture of brick, tile, terra cotta, etc., and equipment for compounding of bodies, glazes, enamels for stone- and ironware, and all of the higher grade of pottery and porcelain. This outfit includes a combination dry-wet-pan, pug-mill, blunger, filter press, ball mills and other grinding machines, rolls, screens, potter's wheel, and an auger machine provided with dies for side- and end-cut brick, hollow block, drain tile, and roofing tile; a hand-power screw press with dies for dry press brick and flat tile; and an electric furnace for high temperature work.

In the ceramic laboratory are two kilns, a down draught burning crude petroleum, and a Caulkins pottery kiln; a steam dryer in which drying conditions can be accurately controlled; an electric and a radiation pyrometer; Seger volumeter; balances and other apparatus.

A ceramic library which contains the best works in both English and foreign languages and a ceramic museum are also important features of the working equipment of the department.

The Geological and Mining Museum on the third floor is fitted up with twelve glass-top cases and sixty feet of wall cases, in which are exhibited large and attractive specimens of minerals, rocks, and fossils, not only from our own State, but from all over the United States. In the museum will also be found large collections of the different manufactured geological products, including samples of all the different grades of brick, tile, pottery, terra cotta, and cement manufactured products, together with the raw materials from which the same are manufactured.

The Mining Draughting room is equipped with convenient desks and tables and all necessary equipment for the use of Mining students.

The Mineralogical laboratory possesses the following collections: No. 1, the Mineral Type Collection, consisting of about 1500

characteristic and labeled specimens used by the students for the purpose of study and comparison.

No. 2, an Exhibit Collection of minerals, consisting of large and attractive specimens.

No. 3, a Working Collection of minerals, consisting of about 7000 unlabeled specimens similar to those in the Type Collection.

No. 4, a Crystal Collection, containing about 1000 natural crystal forms.

No. 5, a Crystal Model Collection, consisting of 48 large glass crystal models and about 750 smaller wooden models used by the students in the study of crystallography.

No. 6, a Blowpipe Collection, containing minerals and metals used in blowpiping.

The Petrological laboratory contains the following collections:

No. 1, the United States Geological Survey Education Series of rocks, containing 165 characteristic rock specimens from all over the United States.

No. 2, the Foote Rock Collection, containing 150 specimens of characteristic rock types.

No. 3, the Structural Mineral Series, containing about 100 specimens of all the different rocks used for structural purposes.

No. 4, the Working Collection of rocks, containing about 2000 unlabeled specimens for the use of the students in the work of petrology.

COMMERCE. The School of Commerce, which occupies the top floor of the Agronomy wing of Agricultural Hall, is completely equipped for thorough and efficient work in modern business courses. Each room is specially designed and furnished for the work to be conducted in it. The furniture of the department consists of individual desks and counters, a complete set of modern banking fixtures, a wholesale house, a retail house, a commission house, freight, real estate and insurance offices. Permanent blank books, letter files, rubber stamps, copying presses, college currency, blanks, and similar material are provided by the College. A Burroughs Adding Machine is in constant use in the department. The room for typewriting contains twenty standard machines, each provided with approved conveniences for the operator. The room for stenography is furnished with tables designed for conveniences in practical work, as well as in equipment for illustrating

various systems of filing. The department of Political Economy is developing a commercial museum for use in the various courses in social science.

PHARMACY. This department has its lecture rooms and laboratories in Science Hall, a building which amply meets the needs for space, light, and ventilation.

In the way of equipment, in addition to the usual permanent fixtures such as desks and apparatus for the individual students, the department is supplied with a number of special pieces of apparatus for general use, such as pharmaceutical stills, from the simple retort to the complicated vacuum still; drug mills, for hand and power; suppository machines, for fusion and for compression; tablet machines, mold and compression; pill machines; tincture presses; capsule filling machine; percolators and much minor apparatus.

ART AND ARCHITECTURE. (a) *Art.*—The department occupies three commodious, well-lighted studios on the fourth floor of Agricultural Hall. The rooms have north light, are well heated and ventilated, and furnished with suitable studio material, such as easels, drawing tables, portfolio racks, cast forms for models, architectural pieces, and a number of figure pieces in full and bas-relief. There is also a good collection of still life objects. (b) *Architecture.*—The department is temporarily accommodated on the third floor of the Mines building, where an office, which also serves as a draughting room for the instructor, is provided, together with a large drawing room, fitted with suitable desks, and facilities for recitation purposes. The department is well supplied with wall drawings, pictures, and portfolios illustrating different phases of the work.

The College Library has a well-selected and growing reserve in art and architecture.

CHEMISTRY. The department of Chemistry occupies nearly the whole of Science Hall, except the fourth floor, which is occupied by the department of Pharmacy, and a few rooms on the third floor that are at present used by the Forestry department. The Chemical department of the Experiment Station has four rooms on the second floor.

The largest room in the building is the main general laboratory, which will accommodate 550 students in four sections. Adja-

cent to this laboratory is the general stock room, that in itself is a division of the department. It is well stocked with all the necessary apparatus and chemicals required for all the courses given in the department. One of the greatest improvements in the Chemical department is the new gas machine; this, when working at its full capacity, can supply gas for 800 burners.

The new organic laboratory has been increased in size until it now contains room for 240 students. The equipment is of the best.

The new qualitative analysis room now has accommodations for 96 students in four sections. Its equipment of hot and cold water, gas, pressure pumps, etc., makes it as good as the best.

The quantitative analysis room can accommodate 50 students in three sections. Great pains have been taken to make this room as nearly an actual chemical work room as possible.

In the balance room there are 23 analytical balances, most of which are used by the students in agricultural chemistry, and in food chemistry.

The main lecture room which is situated on the third floor, has a seating capacity of 150. It is provided with lecture tables that are supplied with gas, electricity, and water. Adjoining the lecture room is a small preparation room, in which is kept all special apparatus used for lecture demonstration, as well as supplies for the agricultural laboratory. This room is supplied with all the necessary apparatus for the proper elucidation of the principles of this branch of chemistry.

For work in Agricultural Chemistry an entire room is set aside. This room is fitted with gas, water, and electricity; condensers for distilled water; batteries; extraction apparatus for fats; nitrometers; Kjeldahl apparatus; hot water filtering apparatus; grinders for fodders, steam and air baths, calorimeter, polariscope, Westphal and analytical balances; coarse balance for rough work, hot-plates, and minor apparatus. This is one of the strongest divisions in the department and is lacking in nothing that makes a fully equipped agricultural chemical laboratory.

PHYSICS. The physical laboratory has a good working equipment for the study of general physics, the apparatus being such as to allow a qualitative or quantitative verification of all of the im-

portant laws by the student in the laboratory and by the instructor in the lecture room. In addition to the general laboratory, the department has two special laboratories, one equipped for electrical measurements and the other for photometry. A partial list of the apparatus found in these follows: standard cells, shunts, capacities and inductances; secohmeter; Leeds and Northrup potentiometer; Siemens and Halske standard ammeters, voltmeter, and portable testing set; Paul unipivot testing set; storage cells of large current capacity for ammeter and wattmeter calibrations; 10½-inch spark coil; Gaede pump; large Tesla coil; Leeds and Northrup photometer fitted with lamp rotator, rotating sector, Lummer-Brodhun screen, and Bechstein flicker photometer.

THE WOMEN'S GYMNASIUM is equipped with lockers and dressing rooms having accommodations for every College woman. A room for corrective gymnastics and a rest room, on the ground floor, are adequately equipped for their respective purposes. In the shower-bath room, hot and cold water are available throughout the year, and free towels are furnished to the students. The floor of the gymnasium is surmounted by a balcony running-track, and a capital playing space is provided for basketball and other indoor games.

The equipment includes horizontal bars, vaulting horses and bucks, parallel bars, swinging rings, traveling rings, Swedish boom, Swedish stall bars, climbing ropes, dumb-bells, Indian clubs, and wands.

The girls' athletic field provides facilities for such games as cross ball, basketball, soccer, hockey, and tennis.

THE MEN'S GYMNASIUM is equipped with lockers and dressing rooms having accommodations for all of the men of the College. In the shower-bath room, hot and cold water are available throughout the year, and free towels are furnished to the students. The main floor of the Gymnasium is surmounted by a balcony running track, 12 feet wide and 14 laps to the mile. The main floor space provides for basketball and other indoor games. The equipment includes horizontal bars, parallel bars, vaulting horses and bucks, swinging rings, traveling rings and ladders, Swedish wands and stall bars, climbing ropes, mats, dumb-bells, Indian clubs, and chest weights. The athletic field adjoining the gymnasium on the south, has within its bounds a quarter-mile running track, football grid-

iron, and baseball diamond. Bleachers and grandstand accommodate the spectators.

THE EXPERIMENT STATION

The Station bears an important relation to the College, as the scientific investigations conducted at the Station strongly support the instruction given in the class room. Aside from the original investigations of economic significance to agriculture, the work of the Station affords daily object lessons in modern farm methods.

About 300 acres of land are devoted to the use of the Station workers. This land is utilized by the various departments represented in Station organization, including the departments of Chemistry, Agronomy, Horticulture, Animal Husbandry, Dairy Husbandry, Poultry Husbandry, Entomology, Bacteriology, and Botany and Plant Pathology. Each department is actively engaged in the scientific investigation of problems presented by the different branches of agriculture.

As an illustration of the comprehensive character of this work, the following investigations, taken at random from the list of those now being conducted by the Station workers, may be cited. The value of such work, as an object lesson to the students in the various fields of agriculture, can hardly be overestimated. There are experiments with long and short rotation systems for the improvement of soil fertility; tests to determine and develop the best varieties of corn for Oregon conditions; tests to ascertain the adaptability and value of alfalfa for soiling and pasture; tests to determine the adaptability of kale as a winter succulent feed for dairy cows and other stock; experiments in breeding wheat for increase in both quantity and quality of yield, and improvement in adaptation to soil and climatic conditions of the Willamette Valley; experiments in testing the value of irrigation in Western Oregon for general farm crops; tests for comparing the merits of Loganberries and phenomenal berries; tests in utilizing fruit and vegetable by-products, with especial attention given to the Loganberry; variety tests of strawberries; experiments in cross pollination of apples; investigation of gummosis of the cherry; a study of the effects of the lime-sulphur spray under varying conditions; investigations of apple tree anthracnose; peach spot, potato blight, and

celery leaf blight; investigations as to the relation of speed, the temperature, and the fat content of milk, to the cream produced by cream separators; cooperative investigations with the department of bacteriology relative to the best manner of using "cultures" in butter and cheese making; breeding for egg production; experiments in incubation to discover, if possible, the cause or causes of the great losses in artificial incubation; comparisons between hen-hatching and incubator-hatching; the humidity conditions of natural and artificial methods of incubation; carbonic acid gas as a factor in incubation; feeding experiments to determine the value of various forage crops and cereals for the growing and fattening of hogs; experiments in the feeding of dairy cows; experiments in grazing and fattening swine; investigations in the economical production of beef and mutton.

COLLEGE ORGANIZATIONS

One of the most important factors in rounding out the results and benefits of a college course is the society, club, or association work. As a result of the diverse interests of college life and the varied tastes of the students, the following organizations are maintained by students and faculty:

THE STUDENT BODY ASSEMBLY. This is an organization of the entire student body, working under a constitution and by-laws approved by the faculty, and having general authority over all student enterprises. In order to secure an effective administration of the business coming within its jurisdiction, there are permanent committees on athletics, publications, oratory and debate, and such special committees as the assembly may by vote determine. Officers are elected yearly, and nominations and elections are conducted in a manner similar to that of the State electorate.

STUDENT SELF-GOVERNMENT. A system of student self-government has been established at the College which places the general disciplinary powers of the institution in the hands of the students. The Student Council, an organization made up of thirteen students, seven of whom are seniors, three juniors, two sophomores and one freshman, has been created and vested with such powers as are necessary to enforce the rules and regulations adopted by the

students. Members of the Student Council are elected annually by popular vote of the student body.

THE LITERARY SOCIETIES. These six organizations—Utopian, Clinonian and Adelphe, for women; and Zetagathian, Athenaeum, and Shakopean, for men—have the common purpose of promoting literary work among the students. The weekly literary programs and occasional joint meetings tend to this end. To stimulate interest in debate and oratory, there are held during the year intersociety, intercollegiate, and interstate contests. Gold medals and cash prizes are presented to the winners in the contests, and the successful society in debate receives the "Gatch Cup." This is the silver cup that was presented in 1901 by Dr. Thomas M. Gatch, then president of the College, to the society that had received highest honors in the season's debates. Annually this cup is to go to the successful society in the debates, but it is ultimately to become the property of the society winning it three years in succession. Many and determined have been the battles for its possession, but the cup is still without a permanent home.

THE CHRISTIAN ASSOCIATIONS. The religious work of the College is well cared for by the Young Men's and Young Women's Christian Associations, these organizations being particularly strong. The construction of Shepard Hall, the new student building, has materially increased the scope and added to the effectiveness of the work. The Associations aim to provide a moral atmosphere and pleasant social advantages for the students. Religious meetings are held in the rooms of these organizations every Sunday afternoon, and Bible study classes are regularly conducted. On registration days, committees are on hand to assist students in adjusting their work satisfactorily, and in securing comfortable quarters in good homes. Those who wish to make their way through College, will find the employment agencies always ready and glad to assist them as far as possible in procuring positions.

THE ATHLETIC ASSOCIATION. This organization, maintained by the students through the student body assembly, encourages wholesome competition in the various outdoor and indoor sports and pastimes. It has charge of all details pertaining to the conduct of intercollegiate athletics in which the College may be interested. A

committee of the faculty has general supervision over the whole subject of athletics, thus insuring a sound and conservative management.

COLLEGE FOLK CLUB. This club was organized in October, 1908; membership is open to all women of the faculty and other women employees of the institution, and to the women members of the immediate families of the faculty and other employees. The object of the club is social diversion, general culture, and the promotion of the best interests of the College. The organization at this time is divided into three sections: Art and Music Section, Sociology Section, and Mothers' Section. Aside from the semi-monthly meetings of the various sections, the general club convenes on the first Saturday of each month, at which time an address is given by an outside speaker, or a musical or literary program is furnished by members of the club, to which the public is invited. In January, 1913, the organization became affiliated with the Oregon State Federation of Women's Clubs. It is the purpose so to extend the work of the club as to effect the greatest possible good to the College and to the city.

THE MASK AND DAGGER. This club was organized for the purpose of offering special training in dramatic art. An annual "try out" is held in which all students of the institution may participate, and any who possess talent in this direction may be elected to membership in the club. No student, however, will be permitted to take part in a public production who has not an average for all of his College work, at the time the play is being prepared, of 80 per cent. Platform exhibitions will be given and standard plays presented during the College year.

THE ORATORICAL ASSOCIATION. This body has immediate charge of all business pertaining to the competitive work in oratory and debate. Schedules, dates, prizes, conditions of competition, and all similar matters are in its care.

INTERCOLLEGIATE DEBATE AND ORATORY. Each year the Oregon Agricultural College has at least one intercollegiate debate, putting into the field two teams, one supporting the negative and the other the affirmative of the same question. The College also sends one representative each year into the State Oratorical Contest in which

eight colleges take part. Gold medals are awarded to the men who represent the College in these events.

LOCAL DEBATE AND ORATORY. A local peace oratorical contest is held annually, to the winner of which the Cosmopolitan Club of the College presents a \$10 prize. There are also interclass contests in Declamation, Debate, Oratory, and Extempore Speaking, prizes being awarded by the Oratorical Association to the winners of these events. These latter contests are forensic events in the annual Interclass Forensic-Athletic Championship Contest, wherein the four classes compete for individual prizes and three loving cups—the Shakopean Cup, which becomes the permanent property of the highest individual forensic point-winner of the class winning the championship; the Orange O Cup, which becomes the property of the best athlete in that class; and the Barometer Cup, which is held one year by the class winning the interclass championship.

THE SPHINX. This is the senior honor society. Membership is acquired by election based on prominence in student activities and scholastic excellence.

THE JUNIOR AND SENIOR HONOR SOCIETY. This society was organized by the junior and senior classes in the spring of 1914, its primary purpose being to recognize efficiency in scholarship among junior and senior students. Election is made to the society by its own membership. The fact that high standards of general excellence have been set by charter members makes it a decided honor to any student to be elected to membership.

THE COSMOPOLITAN CLUB. This is an organization of foreign and American students. It is a local chapter of the Association of Cosmopolitan Clubs of the World. Its purpose is to provide social and educational advantages for its members and to promote international friendship. At present, nine nations are represented in the local chapter.

THE AGRICULTURAL CLUB. This club was established for the purpose of advancing interest in the various phases of agriculture, and promoting the investigation and discussion of both general and special agricultural subjects. Suitable programs are prepared for each meeting, and whenever practicable, leading authorities on practical agriculture are engaged to address the members.

THE LEWELLING CLUB. This is the Horticultural Club conducted under the auspices of the Horticultural department. There

is no regular organization, except an executive committee, which has power to transact such business as requires action on the part of the club. It is open to all students interested in horticulture.

DELTA THETA SIGMA. There is established at the College a local chapter of this national honorary agricultural fraternity. The aim of the society is to advance the study of agricultural subjects by giving honorable recognition to students taking the lead in the work. Elections to membership are made by the members of the local chapter from the junior and senior classes.

THE FOREST CLUB. This is an association of students and instructors "formed for the purpose of promoting the forestry interests of the State." In order to carry out its purposes, it meets twice each month. The first meeting of each month is purely of a social nature, with each alternate meeting for the discussion of current forestry literature, magazine articles, news items, legislation, and general progress movements pertaining to forests, forest service, forest products, forest industries, lumbering, and the lumber trade.

THE CIVIL ENGINEERING CLUB. This is an organization within the department of Civil Engineering. The active membership is drawn from the junior and senior classes, and the privilege of associate membership is extended to the members of the two lower classes. It meets weekly for the discussion of subjects of interest to the civil engineer.

THE ELECTRICAL ENGINEERS. This is a College branch of the American Institute of Electrical Engineers. The aim of the organization is to discuss the topics contained in the monthly proceedings of the A. I. E. E., and in this way develop in the student an intimate knowledge of the activities of the national organization, thereby coming into closer touch with the practical problems in the engineering world and becoming better fitted for their life work.

THE MINERS' ASSOCIATION. This body has for its object the discussion of technical engineering subjects; the review of current mining literature; the presentation of original papers by the active members; and occasional lectures on special mining topics by men outside of the College.

MECHANICAL ENGINEERS. This is a local College society of students and faculty people interested in Mechanical Engineering. The

purpose of the association is to keep in touch with the practical problems of the engineering world.

SIGMA TAU. This is a local chapter of the national honorary engineering fraternity, chapters of which are at nearly all of the recognized technical schools of the United States. Membership in the fraternity is restricted to junior and senior students in Engineering and Forestry, election to membership being based principally upon excellence in scholarship.

THE HOME ECONOMICS CLUB. This is an organization for the purpose of bringing all the women of the School of Home Economics into closer touch with one another than is possible without a central organization. The aim of the club is to give, by a series of monthly meetings, a general survey of Home Economics questions not covered in regular class room work. The aim is carried out by means of well-directed discussions and by securing outside lecturers who by virtue of their training and experience are considered authorities on subjects relating to Home Economics.

THETA chapter of Alpha Kappa Psi, a national fraternity devoted to the profession of Commerce, was organized during the school year of 1913-14. The purpose of the fraternity is to promote investigation along scientific lines in all phases of commercial work. Membership is open only to students in the junior and senior year in the School of Commerce; and in order to become a member, the student must have shown himself a leader both in scholarship and in student activities.

THE COMMERCIAL CLUB. This is a student organization within the School of Commerce. The purpose of the club is to bring its members into close relation with current methods and events in the commercial world. This is accomplished by discussions of topics pertaining to commerce by members of the club, and by addresses at various times during the year by men prominent in the fields of law and business. Active membership is open to all members of the School of Commerce.

THE PHARMACEUTICAL ASSOCIATION. The main purpose of this organization, which consists of the pharmacy students, is to bring its members into closer relation with the current events of the pharmaceutical world. This is brought about by discussions in

the meetings of topics pertaining to pharmacy, and by addresses at various times during the year by prominent pharmacists and salesmen of the State.

THE EASTERNERS' CLUB. Membership in the Easterners' Club is open to all students and faculty people who have at any time resided in those states situated east of the Mississippi River, or in those provinces of Canada east of Manitoba. The objects of the club are to promote the interests of the College throughout the East, to encourage prospective students from the East and to offer social diversion to its members by providing occasions for the mingling of ideas on such current events as the sports, and politics, which are represented by the various states included within the membership.

THE EASTERN OREGON CLUB. This is an organization effected for the purpose of promoting the mutual interests of the College and the people of the eastern part of the State. Its members are afforded many social and intellectual advantages from the regular club meetings. Membership is open to all students from Eastern Oregon.

THE CALIFORNIA CLUB is, as the name implies, composed of students whose homes are in California. It is for the purpose of bringing "Californians" together socially that the club meets.

THE PORTLAND CLUB is composed of all of the students registering at the College from Portland, the primary object of the club being social diversion among those students who have been associated in their high school work in previous years.

COLLEGE PUBLICATIONS

Two classes of publications are issued from the College; one, official, published by the College authorities; the other, unofficial, published by the various student organizations.

The College publications include:

THE CATALOGUE. The General Catalogue is published at the close of the College year, and contains much general and specific information as to the courses of study, equipment, and instruction, and gives a list of faculty members and students for the year.

THE ALUMNI DIRECTORY. This publication gives in each edition revised information as to the name, year of graduation, degree, present occupation, and present address of each graduate of the College.

THE BULLETINS OF THE SUMMER SCHOOL. These announcements contain specific information of expenses, courses of instruction, character of the work presented, and the requirements that prospective students must meet.

THE BULLETINS OF THE WINTER SCHOOL. These announcements carry such information regarding the winter courses as may fully present the advantages of these courses to the public.

EXTENSION BULLETINS. These bulletins consist of monographs on the various phases of Agriculture, Domestic Science and Art, Engineering, Mining, and Commerce, together with the bulletins and circulars issued in connection with the Industrial Club work for boys and girls in the public schools. They are written in such style as to be easily understood, thus meeting the popular demand for scientific knowledge and giving it in such form that the people of the State may profit by its application to the problems of everyday life.

THE STATION BULLETINS. These publications comprise two series. The first, or standard series, includes reports upon experimental investigations in agronomy, horticulture, dairying, animal husbandry, poultry husbandry, insect pests, plant diseases, and special subjects of interest to the husbandman. The second, or research series, includes publications dealing with special research problems.

STUDENT PUBLICATIONS

The student publications comprise:

THE BAROMETER. In March, 1896, the literary societies of the College began the publication of a monthly periodical, the "O. A. C. Barometer." The enterprise has met with deserved success, and "the organ of the student body" is now issued as a four-page, five-column semi-weekly. It publishes the "news of the College," and is of general public importance as representing the interests, character, and accomplishments of the student body of the College. By action of the Board of Regents, resulting from a unanimous recommendation of the Student Body, a portion of the regular semester student fee of \$2.50 will be devoted to the "Barometer," and every student will regularly receive the paper.

THE ORANGE. This is the annual publication of the junior class, and made its initial appearance in 1907. It is a high-class

publication, substantially bound, and fully illustrated with photo-engravings, pen and ink sketches, line and wash drawings. It is a full dress carnival of the year's life, representing the dignity, the beauty, the versatility, the gaiety, the traditions, the sentiment, and the solidarity of the Oregon Agricultural College.

THE OREGON COUNTRYMAN. This is an illustrated monthly magazine, published by the Agricultural and Home Economics students under the supervision of the faculties of these courses. Besides dealing with the work of the various departments in a practical manner, it contains articles of scientific value contributed by the Experiment Station workers. Successful men and women of the State contribute articles for each issue.

THE STUDENT ENGINEER. This is a magazine devoted to engineering and mechanic arts. Its purposes are to record the engineering progress in the Northwest; to furnish news; to discuss methods relating to the mechanic arts; to publish records of scientific work done by the students in this institution; and to publish any matter of special technical and scientific interest. Items of interest will be found for civil, mining, mechanical, and electrical engineers, and for others who are engaged in technical pursuits. The journal is under the supervision of the faculty of the School of Engineering and Mechanic Arts, but the work and responsibilities of the publication are borne by the staff, elected by the students of the School of Engineering.

THE C-P JOURNAL. This magazine, published quarterly by the students of the Commerce and Pharmacy departments under the supervision of the faculty of the two schools, is devoted to the commercial and pharmaceutical interests of the school and State. Articles of merit are contributed for each issue by students, faculty, and prominent business men of the State. One distinguishing feature of the C-P Journal is the publication each semester of a complete directory of all the members of the institution, students, faculty, and employees.

STUDENT EXPENSES

GENERAL FEES

Tuition is free to all students, regardless of the place of residence. The regular College fees required of all students, with the

exception of special students in music who take no other College work, are as follows:

Entrance fee, payable annually on registration.....	\$5.00
Incidental (Student) fee, payable each semester..	2.50
Diploma fee on graduation.....	5.00
Binding fee for graduation thesis.....	1.00

LABORATORY FEES AND DEPOSITS

Students are charged small fees in the different laboratory courses to cover the cost of material used; and deposits are required to cover cost of breakage in laboratory courses where breakages are likely to occur. These fees are payable at the beginning of each semester. At the end of the semester, deduction is made for actual breakage, and the balance of the deposit is refunded to the student. The fees and deposits charged each semester in the different courses are as follows:

AGRONOMY:

Fees Deposits

Courses A, B, 101, 105, 201, 202, 203, 204, 205, 208, 211, 301, 302, 303, 306, 404, 505.....	\$.50	\$
Courses C, 103, 104, 111, 304, 311, 401, 402, 405..	1.00	1.00
Courses 102, 403, 411.....	1.00	2.00

ANIMAL HUSBANDRY:

Courses 1, 16.....	.25
Courses 210, 220, 230, 240.....	.50
Course 2.....	1.50

ART AND ARCHITECTURE:

Art—

Courses 102, 103, 204, 205, 206, 305, 306, 409, 410, 411, 412, 503, 504, 505, 506, 522, 526.....	.50
Courses 413, 414, 525, 600, 601.....	1.00

Architecture—

Courses 503, 504, 505, 506, 507, 508, 509, 512, 513, 514, 515, 518, 521, 522, 525, 526, 527, 528, 531, 532, 533.....	.50
Courses 501, 502, 510, 511, 516, 517.....	.75
Courses 519, 520, 529, 530.....	1.00
Courses 523, 524.....	2.00

	<i>Fees Deposits</i>	
BACTERIOLOGY:		
Courses 101, 102, 201, 202, 204, 205, 300, 302, 401, 406, 501, 502, 600.....	2.00	1.00
Courses 111, 112, 701.....	2.50	1.00
BOTANY:		
Courses 82, 83 (per credit).....	.50	
Course 105.....	1.00	
Courses 30, 31, 41, 42, 45, 62, 66, 70, 71, 101, 102, 104.....	1.50	
Courses 22, 36, 64, 111, 115, 116.....	2.00	
Courses 50, 51.....	2.50	2.00
CERAMICS:		
(See Engineering—Mining.)		
CHEMICAL ENGINEERING:		
(See Engineering—Mining.)		
CHEMISTRY:		
Courses 100, 101, 102, 103, 200, 201, 202, 300, 301, 400, 401, 402, 409, 500, 501, 502.....	3.00	2.00
CIVIL ENGINEERING:		
(See Engineering.)		
COMMERCE:		
Courses B, C, 100, 101, 102, 103, 404, 405, 410, 411, 412, 413.....	1.00	
Courses R, S, 400, 401, 402, 403.....	2.00	
DAIRY HUSBANDRY:		
Courses A, 1.....	1.00	2.00
DOMESTIC SCIENCE:		
Courses E, K, 510.....	.50	
Courses M, 190, 202.....	2.00	
Course 180.....	2.50	
Courses C, D, 101, 102, 103.....	3.00	
Courses 104, 105.....	3.50	
Course 201.....	4.00	
Courses H, I.....	6.00	
DOMESTIC ART:		
Courses 101, 102, 103, 201, 202, 203, 204, 501, 502, 601, 801, 802.....	.50	
Courses 301, 701.....	1.00	
Courses 401, 404.....	3.00	

ENGINEERING:

Fees Deposits

Civil—

Courses 105, 111, 511.....	50	
Courses 222, 223, 232, 233, 242, 243, 251, 272, 274, 513, 514, 553.....	1.00	

Electrical—

Courses 101, 102, 103, 105, 106, 108, 110.....	50	
Courses 201, 202, 203, 402.....	2.50	3.00

Experimental—

Courses 207, 208, 210, 237, 238, 262, 272.....	2.00	
Courses 201, 202, 203, 204, 205, 206, 231, 232, 233, 235, 240.....	3.00	
Courses 291, 292 arranged according to work undertaken.		

Irrigation—

Courses 204, 301, 402.....	1.00	
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Mining—

Courses 161, 171.....	1.00	
Courses 111, 112.....	3.00	
Course 401.....	7.50	
Courses 212, 323.....		2.00
Courses 301, 423.....		5.00

ENTOMOLOGY:

Courses 301, 302, 303, 304, 305, 306, 308, 309, 312, 317.....	1.00	
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FORESTRY:

Courses 201, 202, 203, 204, 301, 302, 303.....	1.00	
Course 504.....	1.50	
Courses 501, 502.....	2.00	

GEOLOGY:

(See Engineering—Mining.)

HORTICULTURE:

Course 123	50	
Courses 101, 103, 104, 105, 201, 401.....	1.00	
Course 125.....	3.00	

INDUSTRIAL ARTS:	<i>Fees Deposits</i>	
Courses 116, 152, 153, 202.....	1.50	2.00
Courses G, L, 105, 111, 112, 113, 114, 115, 116, 131, 132, 134, 154, 155, 156, 171, 202, 203, 204, 206, 207, 208, 209.....	3.00	2.00
Courses 103, 104, 135, 136, 175.....	4.50	2.00
Courses A-1, A-2, A-3, B-1, B-2, B-3, E-1, E-2, E-3, F-1, F-2, F-3, J-1, J-2, J-3, K-1, K-2, K-3, M-1, M-2, M-3, N-1, N-2, N-3, P-1, P-2, P-3, Q-1, Q-2, Q-3, T-1, T-2, T-3, U-1, U-2, U-3, V-1, V-2, V-3, W-1, W-2, W-3.....	6.00	2.00
IRRIGATION ENGINEERING:		
(See Engineering.)		
MINING ENGINEERING:		
(See Engineering.)		
PHARMACY:		
Courses 130, 140.....	.50	
Courses 160, 161.....	3.50	
Courses 111, 112, 151.....	5.00	1.00
PHYSICAL EDUCATION:		
All courses.....	1.50	
(All students using the Gymnasium pay the fee of \$1.50 per semester, for which they are given use of all equipment, baths, and are furnished with towels, soap, and medical supplies for injuries.)		
PHYSICS:		
All courses.....	2.00	
POULTRY HUSBANDRY:		
Courses 1, 2, 6.....	1.00	
VETERINARY MEDICINE:		
Courses 3, 4, 11, 14, 15, 18.....	.50	
Courses 2, 5, 6.....	1.00	
Course 1.....	2.00	
ZOOLOGY:		
Courses 101, 102, 103, 104, 105, 108, 109, 201, 202, 204, 206, 207, 208.....		1.00

BOARD AND ROOM

WOMEN'S DORMITORIES. Waldo Hall and Cauthorn Hall, with their large airy parlors, halls, music and play rooms, are pleasant residences for the young women who come from distant homes. The buildings are supplied throughout with pure mountain water, both hot and cold, electric lights, steam heat, and all modern conveniences. The rooms are furnished with an iron bedstead, a mattress, a chiffonier, a table, and chairs. Such other materials as are needed to make the furnishings complete, including pillows, pillow cases, sheets, blankets, bedspread, are furnished by the student; and many of the students prefer to make the rooms more homelike by bringing rugs, curtains, pictures, sofa cushions, etc. These latter articles, however, are not at all necessary. The rooms are cheerful and comfortable without additional furniture. The bedrooms average about 12 feet by 15 feet, with one window 3 feet by 7 feet. Many of the rooms are larger, and a few of them have two windows. Each student also furnishes her own towels and table napkins. Students who room together may choose to have a double bed or two single ones. Their preference must be indicated with application for a room. No definite promise for a single room can be made, the privilege of rooming alone depending upon the number of applications for rooms. The many advantages of having a roommate should not be overlooked by the student in making her plans for college life.

The conditions of living in Waldo Hall and Cauthorn Hall are such that the College considers it a distinct advantage to the women students to live in these halls of residence. A wholesome, busy, student atmosphere is maintained. Reasonable freedom is allowed, but week nights are reserved for study. All girls entering the College are expected to live either in one of the dormitories or in homes selected by the College Officials, unless their parents reside in the city, or they are given special permission to live with relatives or friends who assume the responsibility of their care.

The expenses of living for each student in the dormitories are as follows:

Room deposit.....	\$ 3.00
Room rent per semester—	
Single room.....	20.00
Double room.....	10.00
Board per week, payable monthly in advance.....	3.50
Incidentals, such as laundry fee, electric iron fee, etc., per semester.....	2.00

The deposit is returned to the student at the close of the semester or school year, in case the room is maintained in a condition satisfactory to the Preceptress.

Young ladies wishing to reserve rooms should send the deposit to the Registrar, Corvallis, Oregon.

Students who are planning to enter the School of Home Economics, or to live in one of the dormitories, are asked to write to the Registrar for special circulars giving more detailed information than will be found in the Catalogue.

The dormitories will be open for students September 17, 1914.

Students who wish to arrive in Corvallis previous to the opening day should make arrangements to board and lodge in town until the morning of that date, when the dormitories will be opened to receive them.

PRIVATE BOARD FOR MEN STUDENTS. No dormitory accommodations are available for men students. Board and room may be secured in private families in the city of Corvallis for from \$4.00 to \$5.50 per week. Good accommodations for self-boarding, or for club-boarding, can also be secured in the city. By clubbing, or renting rooms and boarding themselves, students materially reduce the cost of living. Students, however, will not be permitted to live at places not approved by the Faculty.

Lists of private boarding places can be secured from the Secretary of the Y. M. C. A. after the student arrives at the College.

PERSONAL EXPENSES

The personal expenses of students vary. Many students are able to go through the college year on a comparatively small income.

Each male student, immediately upon registration, is required to supply himself with a military uniform, the cost of which will be approximately as follows: Suit and cap, \$11; leggins, 90c; hat band and breast cord, \$1.15; collar ornaments, 25c; gloves, 40c per pair; total, \$13.70. Tan shoes (the regulation style, costing \$3.75) and a drab shirt (costing \$2.00) are appropriate elements of the uniform. The uniform is very serviceable and is more economical than civilian clothing; with reasonable care, it should serve for two or more years.

In physical education women are required to provide themselves with a gymnasium suit, consisting of blouse-waist and bloomers of regulation style, and with regulation gymnasium shoes. Good second-hand uniforms of outgoing girls will be on sale for about \$4.00, while new uniforms cost \$5.00. These suits should be ordered at the gymnasium office at the time of registration.

Male students are expected to supply themselves with a gymnasium suit and the regulation gymnasium shoes. The cost of the gymnasium uniform complete, including shoes, need not exceed \$2.75.

COST OF A YEAR IN COLLEGE

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year. The necessary cost of a year at the College will vary slightly with the particular course pursued by the student. In general, it may be said that the legitimate cost per year averages about \$224. An estimate of the average cost per year for the main expense items is given below. The cost for room and board is estimated at a safe average price. The board and room items are sometimes slightly reduced, where two students occupy the same room or where boarding clubs are economically managed.

Registration fee.....	\$ 5.00
Incidental (Student) fee.....	5.00
Laboratory fees and deposits.....	18.00
Textbooks and supplies	26.00
Board (for eight months).....	*120.00
Room rent (nine months).....	30.00

*On account of Christmas and other vacations which most students spend at home, the cost for board is estimated for eight months only.

In addition to the above, would be the cost to men of the military uniform and the regulation gymnasium suit, and to women of the gymnasium suit and shoes. Uniforms, however, as already indicated, should serve for more than one year. Personal expenses such as clothing, car fare, laundry, etc., vary greatly with the individual.

It is not recommended that any student come to the College without sufficient funds available to purchase his books and college stationery for the entire semester, pay his first month's board and room rent in advance, and pay his first semester entrance fees. For the average student, this initial outlay will be approximately \$70.00, the balance of the annual expenses being distributed about evenly throughout the remaining months of the school year.

SELF-SUPPORT

A considerable number of students manage, in one way or another, to earn the whole or a part of their expenses while attending the College. Such opportunities occur in the line of office and laboratory assistance, personal services of numerous kinds, the management of various student enterprises, agencies for laundries, etc.

The Student Employment Bureau (in charge of the Christian Associations) registers without charge all students who apply for employment after they arrive at the College, and supplies employers with student labor as demanded. In general, the demand and supply are nearly equal, but the attention of new students who intend to earn the whole or part of their living is called to the following results of past experience:

1. There is a constant *over-supply* of those wishing to do teaching and clerical work. None but those having superior qualifications and experience are likely to secure employment the first semester.

2. There is a considerable demand for efficient stenographers; also for men and especially women students who can do domestic labor of any kind; board and room rent may be earned by table service, dish washing, general housework, house cleaning, gardening, etc.

3. Students who can do any kind of domestic or manual labor well, and who have thoroughly good health, can earn their board by three hours' work per day, or board and room by four hours' work per day. *But no student should come to the College without resources sufficient for the expenses of one semester.* (See "Personal Expenses.")

4. No student should come expecting to earn money, who can do nothing well; skill is essential, as competition is quite as severe in the College community as elsewhere.

5. Opportunities for earning money during the summer vacations can usually be counted on, the demand for forest rangers, for field workers in engineering and mining, for skilled workmen in engineering shops, factories, canneries, and hop-yards, and for horticultural, farm, and forestry laborers being most constant.

Upon arrival at the College, new students should report for information to the Information Bureau of the Christian Associations.

STUDENT LOAN FUND

Through the liberality of friends of the Oregon Agricultural College, an irreducible student loan fund aggregating \$3,750.61, (June, 1914), has been established. The purpose, as expressed by one of the donors, is "not to induce students to attend school by providing money that can be easily obtained, but rather to aid those who have determined to secure an education and are paying the cost wholly or in part from their own earnings."

The fund consists of the following contributions:

1. One thousand dollars (\$1,000) from Hon. R. A. Booth of Eugene, restricted to students studying:

(a) Agriculture in its various phases, with a view to becoming producers from the soil.

(b) Such branches of mechanics as properly relate to agriculture.

(c) Home Economics.

2. Five hundred dollars (\$500) known as the Ashby Pierce Student Loan Fund.

3. Two thousand two hundred and fifty dollars and sixty-one cents (\$2,250.61), without restriction, from various College organizations, such as Folk Club, Philadelphian and Feronian Literary

societies, the Barometer, the Oregon Countryman, the Cosmopolitan Club, the Faculty, the Christian Associations, the Winter Short Course students of 1914, Chapter A. of P. E. O., Portland, and by various individuals including Mrs. Clara H. Waldo, Portland, and Hon. Thomas Kay, Salem.

PRIZE FUND

The Clara H. Waldo Prize of one hundred dollars is an award annually made in the proportions of forty, thirty, twenty, and ten dollars respectively, to the woman of highest standing registered as a regular student in one of the degree courses in the senior, junior, sophomore, and freshman year. In the distribution of the prizes, the committee is guided by the following points:

- (a) Proficiency in literary and scholastic attainments.
- (b) Success in student activities.
- (c) Qualities of womanhood.
- (d) Qualities of leadership.

ADMISSION TO THE COLLEGE

A student who wishes to be admitted to the Oregon Agricultural College may do so in one of two ways: (1) By examination, (2) by certificate.

Students who seek admission by examination must present themselves for examination at the College on registration days, September 18, 19, 20.

Students who seek admission by certificate may do so in one of the following ways:

FOR ADMISSION TO THE VOCATIONAL COURSES—By presenting properly certified evidence of the completion of the eighth grade course of study in the public schools, and by meeting the other requirements for admission specified in the paragraph on *Vocational Courses*, under *Entrance Requirements*.

FOR ADMISSION TO THE DEGREE COURSES—By presenting (for the year 1914-1915) properly certified evidence of the completion of three years of the course of study (12 units) in an accredited or standard high school, and by meeting the other requirements for admission specified in the paragraph on *Degree Courses*, under *Entrance Requirements*.

FOR ADMISSION AS A SPECIAL STUDENT—By presenting properly certified evidence of suitable preparation for the studies desired, and by meeting the other requirements specified under *Special Students*.

FOR ADMISSION AS AN OPTIONAL STUDENT—By presenting properly certified evidence of meeting all the regular entrance requirements, and by meeting the other requirements specified under *Optional Students*.

FOR ADMISSION TO ADVANCED STANDING—By presenting properly certified evidence of the completion, in other institutions of recognized standing, of such work as is equivalent to corresponding work required in the College courses, and by meeting the other requirements specified under *Advanced Standing*.

FOR ADMISSION TO GRADUATE STUDY—By presenting properly certified evidence of graduation from this or other educational institutions of equal rank, and by meeting the other requirements for admission specified under *Graduate Study*.

ENTRANCE REQUIREMENTS

VOCATIONAL COURSES

For admission to the vocational courses in Agriculture, Dairying, Forestry, Home Economics, and Commerce, applicants must be at least 18 years of age, and in addition to having completed the eighth grade course of study, must be of good moral character. For admission to the vocational course in Mechanic Arts, applicants must be at least 16 years of age, and in addition to having completed the eighth grade course of study, must be of good moral character. Applicants who have not completed the eighth grade course of study, but who are 21 years of age or over, and of good moral character, may be admitted to any of the vocational courses at the discretion of the dean of the school in which the work is to be carried on. For a statement of the length and character of the vocational courses, see *Courses of Study*.

DEGREE COURSES

Applicants for admission to the degree courses must be 16 years of age or over and of good moral character. In 1914-15 they will be required to present twelve units of entrance credits (three years) in a standard high school, and in 1915-16 fifteen units (four years) in a standard high school. The twelve units required for 1914-15, and the fifteen units required for 1915-16, distributed in the most advantageous way for admission to the various College courses in Agriculture, Home Economics, Forestry, Engineering, Commerce, and Pharmacy, are indicated in the table entitled "Prescribed Units for Admission." If the distribution of units presented by the matriculate does not correspond to that recommended, as indicated by the table, the student will be required to carry in College the courses lacking in his secondary credits, in order to make up his deficiency.

PRESCRIBED UNITS FOR ADMISSION	Agricul- ture		Home Economics		For. & Log. Engin'g		Enginer- ing		Commer- ce		Pharmacy	
	14- 15	15- 16	14- 15	15- 16	14- 15	15- 16	14- 15	15- 16	14- 15	15- 16	14- 15	15- 16
English	3	3	3	3	3	3	3	3	3	3	3	3
Mathematics—												
Algebra	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Plane Geometry	1	1	1	1	1	1	1	1	1	1	1	1
Solid Geometry	0	0	0	0	0	0	½	½	0	0	0	0
Physics	0	0	0	0	0	0	0	1	0	0	0	0
Bookkeeping	0	0	0	0	0	0	0	0	1	0	0	0
Electives	6½	9½	6½	9½	6½	9½	6	8	6½	8½	6½	9½
Total units.....	12	15	12	15	12	15	12	15	12	15	12	15

A unit, as referred to in the table, implies one high school subject carried for five 45-minute periods a week throughout the school year.

The electives listed in the table may be selected from any of the subjects, except Music, offered in the "Oregon Course of Study" for high schools.

While History and Foreign Languages are not prescribed by the College as entrance requirements, students are urged to pursue these subjects in the high school. For credit involved in this work, see *Advanced Standing*.

To be admitted as an unconditioned freshman during the school year 1914-15, a student must not lack more than one and one-half of the total units listed above. To be admitted as an unconditioned freshman in 1915-16, a student must not lack more than two of the total number of entrance units listed for that year. All entrance conditions must be removed during the freshman year.

ENTRANCE REQUIREMENTS FOR ADMISSION TO THE FRESHMAN YEAR

IN ENGLISH

INTERPRETATION AND VALUE OF THE THREE UNITS

Unit 1 will be interpreted as signifying the candidate's ability to express himself in writing in a manner at once clear and accurate; as possessing the power to distinguish in a broad sense literary values; i. e., the qualities that stamp a work as being literature.

Unit 2 should signify that the candidate is proficient in spelling, punctuation, grammar, sentence structure, and the formation of the paragraph; and that his style is plain and natural.

Unit 3 should signify some acquaintance on the part of the candidate with recognized literature, in particular the books adopted by the National Conference on Uniform Entrance Requirements. Greater emphasis is placed on his power of intelligent appreciation than on his knowledge of specific books.

IN MATHEMATICS

The entrance requirements in Mathematics; namely, one and one-half units in Algebra and one unit in Plane Geometry, will be satisfied by the applicant's ability to pass a satisfactory examination in the following topics: addition, subtraction, multiplication, and division of positive and negative numbers; use of parentheses, factoring, highest common factor, lowest common multiple, fractions, fractional and literal equations, simultaneous equations, prob-

lems involving linear equations with one or more unknown numbers, graphical representation of simultaneous linear and quadratic equations, involution, evolution, theory of exponents, radical expressions, imaginary numbers, quadratic equations, problems involving quadratic equations with one unknown number, equations in the quadratic form, factoring of quadratic equations, solution of quadratic equations by factoring, simultaneous quadratic equations, problems involving simultaneous quadratic equations with two unknown numbers.

The requirements in Plane Geometry are the five books of Wentworth's Plane Geometry, or any other standard text on the subject. That the student may be trained to think for himself and not be dependent upon the published proofs of the text, much importance is placed upon the proving of original exercises. It is distinctly advised that students preparing for entrance examination in Geometry devote considerable time to the study of original exercises.

IN PHYSICS

The "one unit" entrance requirement in Physics for the year 1915-16 will be satisfied by one school year's work in physics, using the State text, Millikan and Gale, or any other of the standard high school texts. The class should meet five times a week, each period being at least 45 minutes in length. At least one period each week should be devoted to laboratory work. In order to concentrate the attention upon the fundamental principles, rather than upon manipulation and computation, it is well frequently to make the experiments qualitative rather than quantitative in nature. A neat report should be required upon every experiment; each report should include: (1) a concise statement of the *object* of the experiment; (2) a brief description of the *apparatus* and the *method*; and (3) *data* and *results*, tabulated whenever possible. These reports should be criticised by the teacher, and the student should be compelled to correct not only mistakes in physics, but also mistakes in grammar, rhetoric, and spelling, as it is certainly true that a correct form of expression is just as important to the student as correct ideas; clear expression and clear ideas go hand in hand.

IN BOOKKEEPING

The entrance requirements in bookkeeping for the year 1915-16 are the elements of double entry. The applicant must be familiar with the principles of debit and credit, the usual forms of entries, the standard books of entry, and of trial balances, balance sheets, and statements. He must be able to write a good, plain business hand, and be able to handle figures readily and accurately. Candidates who are deficient in these requirements must register conditioned in the subject, and remove the condition during the freshman year.

ACCREDITED SCHOOLS

Pending the preparation of a classified list of high schools by the Oregon State Department of Public Instruction, students who have completed the work of the tenth, eleventh, and twelfth grades of the Oregon high school course of study, or its equivalent, will be admitted to the degree courses on presentation of the diploma or a signed statement of the principal showing work completed. It is recommended that the Certificate of Record blank issued by the Oregon Agricultural College, be used. Copies will be sent by the Registrar on the application of either student or principal. These blanks must be filled out and signed by the principal or other authorized official of the school. The certificate, so authenticated, should be filed with the Registrar of the College on or before September 12, 1914. Acknowledgement of the receipt of such certificates will be made by the Registrar up to and including September 12.

SPECIAL STUDENTS

Students who have presented satisfactory evidence of suitable preparation for the studies they desire, who are 18 years of age and of good moral character, may be admitted as special students, provided they have neither already been admitted to the College, nor, having applied for admission, been rejected.

Special students may be allowed to graduate in any of the courses, on condition that they complete the required work and pass the necessary examinations.

Special students are expected to select their studies from courses open to freshmen. If they desire to take studies to which only advanced students are regularly admitted, they must show special preparation or special necessity for such courses.

Candidates applying for admission on the above basis should file with the Registrar before September 12, 1914, a detailed statement of their preparatory work.

OPTIONAL STUDENTS

Students who have presented satisfactory evidence of meeting all the entrance requirements for the freshman class, who are of mature years and of good moral character, may be admitted as optional students, provided they furnish satisfactory evidence that they are unable, because of poor health, or outside business, or professional duties, to take a full course. They should file with the Registrar, before September 12, 1914, a certified statement of all preparatory work.

ADVANCED STANDING

Students matriculating in the degree courses with more than the number of credits required for entrance to the freshman class, will be given advanced standing for any surplus credits, in so far as such credits may be equivalent to the requirements of the course in which the student matriculates.

No credit will be allowed either for any Science carried for less than one full year, or for any Foreign Language carried for less than two full years.

Students from accredited high schools presenting credits in one or more years of History, or two years of Foreign Languages, will be permitted to substitute such work for the History and Foreign Languages required in course.

ADMISSION FROM OTHER COLLEGES

Any student who has attended another college or university and desires to enter the Oregon Agricultural College, should file with the Registrar, on or before September 12, 1914, an official certificate from the college from which he wishes to transfer, giving evidence of: (1) his honorable dismissal; (2) a detailed

statement of the entrance credits presented at the time of his matriculation at the other college; (3) a detailed statement of the work pursued while in attendance at that college; and (4) a marked copy of the catalogue of the institution, showing by conspicuous markings the courses which he completed.

REGISTRATION

All candidates for admission should file with the Registrar a certificate of their preparatory record on or before September 12, 1914. Blank forms for such record may be secured from the Registrar. Such candidates should present themselves for registration at the College on September 18, 19, or 21, 1914. Registration at a later date will be permitted only on presentation of a satisfactory reason for the delay. Students in all courses register at the beginning of the collegiate year for the work of the entire year. Credit for work not so registered, and changes in registration, will be allowed only by special permission of the College Council.

Students who have not before registered at the College are advised to reach Corvallis not later than September 17, 1914, in order that they may secure a boarding and rooming place before the first day of registration.

GRADUATION

The degree of Bachelor of Science in Agriculture, in Forestry, in Logging Engineering, in Home Economics, in Civil Engineering, in Electrical Engineering, in Irrigation Engineering, in Highway Engineering, in Mechanical Engineering, in Mining Engineering, in Ceramics, in Chemical Engineering, in Commerce, in Pharmacy, and in Industrial Arts, are conferred upon those who have satisfactorily completed the respective four-year courses which in the aggregate comprise 136 credits of College work. A graduate in any of the courses may receive the bachelor's degree in any other course by completing the studies required in that course.

GRADUATE STUDY

The Oregon Agricultural College offers to its graduates and to those of other institutions of equal rank, work in Agriculture,

Home Economics, and Pharmacy leading to the degree of Master of Science, and work in Engineering, Mining, and Forestry, leading to the usual professional degrees.

This work is done in the several departments of the College under the general supervision of a standing committee of the Faculty known as the committee on "Graduate Students and Advanced Degrees."

REQUIREMENTS FOR THE HIGHER DEGREES

Candidates for any one of the higher degrees will be required to complete a certain minimum of resident work, to prepare a suitable thesis, and to pass an oral examination.

The resident work is planned so that it may be completed in a single year by a student who devotes full time to his studies; it consists of a minimum of 32 credits, including the preparation of the thesis. One credit requires approximately three hours of the student's time per week for one semester. From 16 to 24 of these credits will be devoted to the thesis and to allied subjects in the same department, and will constitute the candidate's major. From 8 to 16 of these 32 credits will be selected from other departments of the College and will constitute the minor. Undergraduate work may, at the discretion of the committee, be taken as part of the minor, but when so taken, the number of credits allowed for any course will be reduced to two-thirds of the number listed in the catalogue, the assumption being that the candidate can, in work of that grade, accomplish as much in two hours as the average undergraduate in three. Upon the suggestion of the professor in charge of the major, and at the option of the committee, a graduate student may be given additional work in an undergraduate course and granted credit accordingly. All graduate students taking regularly announced courses must attend the examinations given as part of such courses.

The thesis must embody the results of investigative, though not necessarily original research, and a typewritten copy of the thesis, prepared according to the specifications of the committee, must be deposited with the chairman of the committee not later than May 15 of the year in which the degree is desired.

After the thesis has been deposited, the chairman will appoint a special examining committee and set a date for the oral examina-

ation. This special committee will consist of: (1) the one or more professors in charge of the major; (2) the one or more professors in charge of the minor; and (3) one or more members of the Committee on Graduate Students and Advanced Degrees. The report of this committee will be presented to the College Council by the chairman of the Committee on Graduate Students and Advanced Degrees. The chairman will deposit the theses of successful students with the Librarian as soon as possible after the oral examination.

Higher degrees will be conferred only at the regular commencement exercises, but the committee may under exceptional circumstances allow the candidate to be absent from such exercises.

ADMISSION TO THE COLLEGE AS A GRADUATE STUDENT

All students who have been graduated from four-year courses in the Oregon Agricultural College or in other colleges of equal rank, will be considered graduate students and will be registered as such by the Registrar. Graduate students will present their registration certificates to the chairman of the Committee on Graduate Students and Advanced Degrees, and will receive from him detailed instructions regarding the completion of their registration.

FEEES

Graduate students will pay the same entrance, incidental, diploma, and binding fees as undergraduates. Laboratory fees will in each case be determined by the head of the department concerned, and must be paid at the beginning of the year in which the laboratory work is done.

COURSES OF STUDY

The Oregon Agricultural College offers the following courses of study, each of which extends over four years and leads to the degree of Bachelor of Science:

In the *School of Agriculture*, major courses in—

- | | |
|--------------------------|---------------------------------|
| (a) General Agriculture. | (g) Agricultural Chemistry. |
| (b) Agronomy. | (h) Agricultural Bacteriology. |
| (c) Animal Husbandry. | (i) Botany and Plant Pathology. |
| (d) Dairy Husbandry. | (j) Economic Zoology. |
| (e) Horticulture. | (k) Economic Entomology. |
| (f) Poultry Husbandry. | |

In the *School of Forestry*, major courses in—

- | | |
|-----------------------|--------------------------|
| (a) General Forestry. | (b) Logging Engineering. |
|-----------------------|--------------------------|

In the *School of Home Economics*, major courses in—

- | | |
|-----------------------|-------------------------------|
| (a) Domestic Science. | (c) Home Administration. |
| (b) Domestic Art. | (d) Institutional Management. |

In the *School of Engineering*, major courses in—

- | | |
|-----------------------------|-----------------------------|
| (a) Civil Engineering.* | (d) Highway Engineering. |
| (b) Electrical Engineering. | (e) Irrigation Engineering. |
| (c) Mechanical Engineering. | (f) Industrial Arts. |

In the *School of Mines*, major courses in—

- | | |
|-------------------------|---------------------------|
| (a) Mining Engineering. | (c) Chemical Engineering. |
| (b) Ceramics. | |

In the *School of Commerce*, a major course in—

- (a) Commerce.

In the department of *Pharmacy*, a course in—

- (a) Pharmacy.

In addition to the above baccalaureate courses, provision has been made for the following vocational courses:

- A. Agriculture (one year).
- B. Dairying (one year).
- C. Home Makers' Course (one year).
- D. Mechanic Arts (three years).
- E. Forestry (November 2 to April 16).
- F. Business Short Course (two years).

*No work below Sophomore grade will be given in Civil Engineering during the year 1914-15.

SCHOOL OF AGRICULTURE

The School of Agriculture offers the following courses of study: a one-year course in General Agriculture; a one-year course in Dairying; a three-months winter course in Dairying; a four-weeks winter course in Agronomy, Animal Husbandry, Horticulture, and Poultry Husbandry (known as the Winter Short Course); and eleven four-year courses, each of which leads to the degree of Bachelor of Science.

VOCATIONAL COURSES. The one-year courses are provided especially for those who have had no opportunity to pursue their public school courses beyond the eighth grade, or who, from necessity or choice, desire, upon completing the work of this grade, to obtain as quickly as possible a working knowledge of the principles of agricultural practice. They are also open to students with one or more years of high school preparation, and to men of mature years and practical experience, who may desire to familiarize themselves with the most modern thought on this subject. Those who pursue the one-year course in Agriculture will have the opportunity of specializing in general farm practice, live stock husbandry, horticulture, or poultry husbandry; and those who pursue the one-year course in Dairying will have the opportunity of specializing in Dairy Production or Dairy Manufacturing.

In this State there are thousands of young men who are to become future farmers and orchardists. It is to the interest both of the individual and of the State that these young men should keep pace with the rapid development of agriculture. Each and every one should have, if possible, the opportunity of obtaining an agricultural education. Many of these young men are so situated, however, that it is impossible for them to attend any of our regular four-year courses. There are also many mature men well past the usual school age, no doubt, who desire to acquaint themselves more fully with the more recent developments in agricultural science and practice. It is to meet the needs of such men, both young and old, that these one-year courses are offered. They are designed to provide the largest amount of practical information and training that can be given in one year.

THE DEGREE COURSES. The various degree courses in Agriculture are open only to those who have completed the equivalent of

at least three years of the Oregon State high school course (see *Admission to the College*). The aim of these courses is to train young men to become successful farmers, stockmen, and fruit growers; to equip them to become efficient managers of orchard and ranch properties and of agricultural cooperative organizations; to prepare them to become specialists in some branch of agricultural college or experiment station work, or to fit them to become teachers of agriculture in the public schools. In short, they offer to those who have faith in the farm and in rural life, opportunities for individual development and technical training equal to those provided for the educated in other professions.

The various subjects of instruction may be conveniently arranged into three groups, as follows:

(a) Sciences related to Agriculture; *i. e.*, Botany, Zoology, and Entomology; Chemistry, Physics, and Bacteriology; (b) Technical Agricultural subjects; *i. e.*, Agronomy, Animal Husbandry, Dairy Husbandry, Horticulture, Poultry Husbandry, and Veterinary Medicine; (c) non-technical subjects; *i. e.*, English Language and Literature, Modern Languages, Political Science, Rural Economy, Rural Sociology, and similar subjects.

The subjects of the first group are designed to furnish the student with an insight into the principles of agricultural science. Those of the second group teach him the application of these principles and give him also, both theoretically and practically, various subjects of agricultural technology. The subjects of the third group tend further to develop the student's intellect, broaden his view, and train him in good citizenship.

To indicate briefly the nature of the work, it may be stated that in the courses in Agronomy, the student studies the origin, structure, fertility, cultivation, and improvement of various soils; the history, growth, culture, improvement, and value of the different field crops; the structures, machinery, drainage, and irrigation of the farm; and the history, economics, methods, and business principles in farm management. Thorough courses in Business Administration, Rural Economy, and Sociology, and Political Science for Agricultural students are given by the School of Commerce. In the course in Animal Husbandry, consideration is given to the history and characteristics of the various breeds of livestock; the principles of breeding; the principles and practice of feeding, with

particular reference to conditions in this State. By constant practice in stock judging, the student is made familiar with the good points of the various breeds. In Horticulture the student studies the problems of the orchard and garden, such as choice of sites, soils, planting, pruning, choice of varieties, sprays and spraying, and thinning; he obtains instruction and practice in the propagation of plants by various methods; in the harvesting, packing, storage, and marketing of fruits; he may study the principles of plant breeding, or the construction and management of greenhouses, or the culture of small fruits and vegetables for market or canning purposes. In Dairy Husbandry he studies the secretion, composition, and separation of milk and cream; and obtains abundant practice in the use of the Babcock and other tests, in butter and cheese making, and in creamery practice. A department of Poultry Husbandry offers to students exceptional opportunities to specialize in this line. The instruction will include a study of breeds, the principles of feeding, housing, and incubation, and will be supplemented by practical work on the farm. In Veterinary Medicine the student is taught to prevent disease, diagnose existing pathological conditions, arrest outbreaks of contagious and infectious diseases among domestic animals, give medical attention in emergency cases, and take care of the sick.

In response to the demand for special teachers of Agriculture in the high schools, an opportunity is given students to major in agricultural education. Certain courses are prescribed in the junior and senior years to broaden the general agricultural training of the first two years, so that the teacher may be prepared to meet the conditions in any section of the State. Courses in Pedagogy provide the necessary principles and methods of teaching. Some election is also allowed in order that the student may specialize along the lines of his greatest interest.

The degree courses in Agriculture can be conveniently arranged into a farm practice group, including the various courses in the departments of Agronomy, Animal Husbandry, Dairy Husbandry, Horticulture, and Poultry Husbandry, and Agriculture for Teachers; and an Agricultural science group, including the courses in the departments of Agricultural Chemistry, Agricultural Bacteriology, Botany and Plant Pathology, Economic Zoology, and Economic Entomology. As indicated in the following outlines, all can-

didates for the degree of Bachelor of Science in Agriculture will be required to pursue the prescribed studies of one of these groups during the first two years of the course, in order that each may become well grounded in the fundamentals of Agricultural science and practice. During the remaining two years of his course, each student will be given an opportunity to become proficient in some one branch of Agricultural practice, or of Agricultural science, by taking major work in one of the above mentioned subjects; or, if preferred, the student may elect to pursue a course in General Agriculture.

All students working for a degree will be required to carry at least seventeen credits through the junior year, and sixteen credits through the senior year. Subjects other than those prescribed in the following outlines must be selected with the advice of the head of the department in which the major is taken, except in the case of students who elect to pursue the course in General Agriculture. Minors may be selected from any of the above mentioned departments, or from the departments of English, Mathematics, Physics, Commerce, Industrial Pedagogy, Civil Engineering, Highway Engineering, Architecture, Modern Language, or Forestry.

One-Year Course in Agriculture

	Semester	
	1st	2nd
*Elementary Constructive English (Eng. A)	3	
*Composition (Eng. B)		3
Farm Accounting (Com. E)		3
Business and Social Organization (Com. I)	3	
Woodwork (Shop G)	2	
Blacksmithing (Shop L)		2
Soils (Agron. A)	3	
Farm Crops (Agron. B)		3
Agronomy (Optional)—		
Farm Machines and Engines (Agron. C)	3	
Farm Drainage (Agron. D)		2
Dry Farming Practice (Agron. E)	2	
Irrigation Farming Practice (Agron. F)		2
Animal Husbandry (Optional)—		
Stock Judging (A. H. A.)	2	
Feeding and Management (A. H. B.)		5
Elements of Stock Feeding (A. H. E.)	2	
Diseases of Domestic Animals (V. M. 15)	3	
Horticulture (Optional)—		
Horticultural Practice (Hort. A, B)	5	5
Poultry Husbandry (Optional)—		
Practical Poultry Keeping (P. H. A. B.)	5	5
**Drill (Military A, B)	1	1
**Gymnasium (Phys. Ed. 11, 12)	½	½

*Students who have a satisfactory knowledge of English may elect an equivalent amount of other work.

**Mature men may be excused from Military Drill and Gymnasium work.

One-Year Course in Dairying

	Semester	
	1st	2nd
*Elementary Constructive English (Eng. A)	3	
*Composition (Eng. B)		3
Dairy Accounting (Com. D)		3
Dairy Mechanics (Ind. Arts 230)		2
Testing Dairy Products (D. H. A)	2	
Dairy Bacteriology (Bact. 406)		2
Dairy Manufacturing (Optional)—		
Buttermaking and Factory Management (D. H. B)....	4	
Cheesemaking (D. H. C)		4
Ice Cream (D. H. D)		1
Judging Butter and Cheese (D. H. H, I).....	1	1
Dairy Practice (D. H. N, O)	1	1
Special Tests, Creamery Practice (D. H. E, F)	2	2
Dairy Production (Optional)—		
Diseases of Dairy Cattle (Vet. Med. 17, 18)	2	2
Farm Crops (Agron. B)		3
Judging Dairy Cattle (D. H. L, M)	1	1
Feeding, Breeding, and Managing Dairy Cattle (D. H. J, K).....	2	2
Dairy Practice (D. H. N, O)	1	1
**Drill (Military, A, B)	1	1
**Gymnasium (Phys. Ed. 11, 12)	½	½

*Students who have a satisfactory knowledge of English may elect an equivalent amount of other work.

**Mature men may be excused from Military Drill and Gymnasium work.

DEGREE COURSES IN AGRICULTURE

	Semester	
	1st	2nd
FRESHMAN YEAR		
Modern English Prose (Eng. 81, 82)	3	3
General Chemistry (Chem. 100, 101)	3	3
General Physics (Phys. 1, 2)	3	3
Agricultural Botany (Bot. 41, 42)	3	3
Soils (Agron. 101)	3	
Crop Production (Agron. 201)		3
Stock Judging (A. H. 1)	2	
Woodwork (Shop 106)		1
Library Practice (Libr. 1)		½
Hygiene (Phys. Ed. 10)		½
Drill (Military 1, 2)	1	1
Gymnasium (Phys. Ed. 15, 16)	½	½
	18½	18½
SOPHOMORE YEAR		
Farm Accts. & Business Methods (Com. 109)	2	
Principles of Economic Zoology (Zool. 108, 109)	3	3
Agricultural Chemistry (Chem. 500, 501)	3	3
Elementary Bacteriology (Bact. 101)	3	
Principles of Fruit Growing (Hort. 101)	3	
Vegetable Growing (Hort. 201)		2
Elements of Dairying (D. H. 1)		3
Live Stock Management (A. H. 2)		3
Farm Surveying and Leveling (C. E. 242)		2
Practical Poultry Keeping (P. H. 6)	2	
Blacksmithing (Shop 153)	1	
Drill (Military 3, 4)	1	1
Gymnasium (Phys. Ed. 17, 18)	½	½
	18½	17½

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2).....	1	1
Major and Minor Electives	12	15
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Major and Minor Electives	13	13
	—	—
	16	16

RECOMMENDED COURSES

JUNIOR AND SENIOR OUTLINES. The following outlines are intended to indicate the courses which it is recommended that students pursue who wish to major in any particular subject, such as Field Crops, Dairy Manufacturing, Pomology, Poultry Husbandry, etc. While it is expected that students will adhere rather closely to these outlines, the courses may be altered to suit the needs of individual students on consultation with the head of the department in which the major is taken.

COURSES IN AGRONOMY**(a) General Agronomy**

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Cereal Crops (Agron. 202)	4	
Field Machinery (Agron. 401)	2	
Land Drainage (Agron. 301)		3
Soil Physics (Agron. 102)		4
Farm Power Machinery (Agron. 402)		3
Junior Seminar (Agron. 503)		1
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	6	4
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Agrostology (Agron. 205)	4	
Soil Fertility (Agron. 104)	4	
Crop Improvement (Agron. 204)		3
Farm Management (Agron. 505)		3
Senior Seminar (Agron. 504)		1
Approved Electives	5	6
	—	—
	16	16

(b) Soils

JUNIOR YEAR	Semester	
	1st.	2nd.
Agricultural Economics (Com. 219)	3	
Forage Crops (Agron. 203)	2	
Cereal Crop Lectures (Agron. 202)	2	
Agricultural Bacteriology (Bact. 501, 502)	3	3
Land Drainage (Agron. 301)		3
Soil Chemistry (Chem. 503)	3	
Soil Physics (Agron. 102)		4
Junior Seminar (Agron. 503)		1
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	2	4
	—	—
	17	17

SENIOR YEAR

National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Agricultural Geology (Min. 171)	3	
Soil Fertility (Agron. 104)	4	
Crop Improvement (Agron. 204)		3
Farm Management (Agron. 505)		3
Soil Surveying (Agron. 106)		2
Senior Seminar (Agron. 504)		1
Approved Electives	6	4
	—	—
	16	16

(c) Field Crops

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Agricultural Bacteriology (Bact. 501)	3	
Introductory Entomology (Ento. 301)	2	
Cereal Crops (Agron. 202)	4	
Land Drainage (Agron. 301)		3
Crop Improvement (Agron. 204)		3
Soil Physics (Agron. 102)		4
Junior Seminar (Agron. 503)		1
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	3	4
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Agrostology (Agron. 205)	4	
Soil Fertility (Agron. 104)	4	
Farm Management (Agron. 505)		3
Advanced Crop Work (Agron. 211)		2
Senior Seminar (Agron. 504)		1
Feeds and Feeding (A. H. 23)		3
Approved Electives	5	4
	—	—
	16	16

(d) Irrigation Farming

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Irrigation Farming (Agron. 302)	3	
Climatology (Agron. 303)		1
Topographic Surveying (C. E. 243)	2	
Elementary Bacteriology (Bact. 101)	3	
Land Drainage (Agron. 301)		3
Elements of Dairying (D. H. 1)		3
Crop Improvement (Agron. 204)		3
Junior Seminar (Agron. 503)		1
Farm Power Machinery (Agron. 402)		3
Military Science (Theo. Inst. 1, 2)	1	1
Drill (Military 5, 6)	1	1
Approved Electives	4	1
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Hydraulics (I. E. 101)	3	
Irrigation Institutions (Agron. 305)	2	
Soil Fertility (Agron. 104)	4	
Advanced Drainage and Irrigation Work (Agron. 311)	2	
Farm Management (Agron. 505)		3
Senior Seminar (Agron. 504)		1
Feeds and Feeding (A. H. 23)		3
Dairy Herd Management (D. H. 2) (Lectures only)		3
Approved Electives	2	3
	16	16

*In the sophomore year students electing Irrigation Farming are required to take Trigonometry (Math. 11, 3 credits, 1st semester), and Soil Physics (Agron. 102, 4 credits, 2nd semester), instead of Elementary Bacteriology (3 credits, 1st semester), and Elements of Dairying (3 credits, 2nd semester).

(e) Farm Management

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Forage Crops (Agron. 203)	2	
Cereal Crops (Agron. 202) (Lectures only)	2	
Diseases of Live Stock (Vet. Med. 14)		3
Typewriting (Com. 410a)	1	
Commercial Law (Com. 306)	3	
Weed Eradication (Agron. 501)	1	
Practical Pomology (Hort. 102)	2	
Soil Physics (Agron. 102)		4
Farm Management (Agron. 505)		3
Farm Power Machinery (Agron. 402)		3
Junior Seminar (Agron. 503)		1
Land Drainage or Irrigation Farming (Agron. 311 or 302)	3	
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	1	1
	17	17
SENIOR YEAR		
Soil Fertility Lecture (Agron. 104)	3	
Semi-Arid Crop Production (Agron. 207)		1
Introductory Entomology (Ento. 301)	2	
Principles of Plant Pathology (Bot. 101)	2	
Cooperative Accounting and Management (Com. 130)	3	
Economic Organization of Agriculture (Com. 264)	3	
Composition of Addresses (Eng. 103)	2	
Advanced Farm Management (Agron. 511)		3
Senior Seminar (Agron. 504)		1
Feeds and Feeding (A. H. 23)		3
Dairy Herd Management (D. H. 2) (Lectures only)		3
Rural Finance (Com. 265)		3
Soil Surveying (Agron. 106)		2
Approved Electives	1	0
	16	16

COURSE IN ANIMAL HUSBANDRY

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Advanced Commercial Law (Com. 300, 301)	3	3
Agricultural Economics (Com. 219)	3	
Comparative Anatomy (Vet. Med. 1)	3	
Comparative Physiology (Vet. Med. 2)		3
Types and Breeds of Horses (A. H. 210)	2	
Types and Breeds of Cattle (A. H. 220)	2	
Types and Breeds of Sheep (A. H. 230)		2
Types and Breeds of Hogs (A. H. 240)		2
Soil Physics (Agron. 103)		3
Forage Crops (Agron. 203)	2	
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Elective		2
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Diseases of Live Stock (Vet. Med. 3, 4)	3	3
Animal Chemistry (Chem. 509)	2	
Animal Nutrition (A. H. 7)	2	
Principles of Breeding (A. H. 6)		3
Feeds and Feeding (A. H. 21)		5
Advanced Stock Judging (A. H. 16)	3	
Livestock Practice (A. H. 101, 102)	1	1
Seminar (A. H. 18, 19)	1	1
Approved Elective	1	
	—	—
	16	16

COURSES IN DAIRY HUSBANDRY

(a) Dairy Production

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Forage Crops (Agron. 203)	2	
Animal Nutrition (A. H. 7)	2	
Genetics (Zool. 120)	3	
Comparative Anatomy (Vet. Med. 1)	3	
Dairy Chemistry (Chem. 502)		3
Comparative Physiology (Vet. Med. 2)		3
Herd Management and Milk Production (D. H. 2)		5
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Electives	2	4
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Dairy Bacteriology (Bact. 401)	3	
Breeds and Breeding of Dairy Cattle (D. H. 5)	3	
Diseases of Live Stock (Vet. Med. 3, 4)	3	3
Dairy Inspection and Dairy Farm Equipment (D. H. 6) ..	3	
Dairy Mechanics (Ind. Arts 230)		2
Buttermaking and Factory Management (D. H. 3)		5
Seminar (D. H. 8)		1
Advanced Judging (D. H. 10)	1	
Approved Elective		2
	—	—
	16	16

(b) Dairy Manufacturing

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Forage Crops (Agron. 203)	2	
Animal Nutrition (A. H. 7)	2	
Business Organization and Management (Com. 110)	3	
Genetics (Zool. 120)	3	
Dairy Chemistry (Chem. 502)		3
Buttermaking and Factory Management (D. H. 3)		5
Milk Production and Herd Management (D. H. 2)		5
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	2	2
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Cheesemaking (D. H. 4)	4	
Dairy Bacteriology (Bact. 401)	3	
Breeds and Breeding of Dairy Cattle (D. H. 5)	3	
Dairy Inspection and Dairy Farm Equipment (D. H. 6)	3	
Ice cream and Ices (D. H. 7)		2
Dairy Mechanics (Ind. Arts 230)		2
Seminar (D. H. 8)		1
Butter and Cheese Judging (D. H. 9)		1
Electives		7
	—	—
	16	16

COURSES IN HORTICULTURE

(a) Pomology

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Floriculture (Hort. 401)	2	
Landscape Gardening (Hort. 301)		2
Plant Propagation (Hort. 105)		2
Practical Pomology (Hort. 102)	2	
Orchard Practice (Hort. 103, 104)	2	2
Plant Physiology (Bot. 50)		3
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	6	6
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Systematic Pomology (Hort. 115)	4	
Commercial Pomology (Hort. 117)		2
Introductory Entomology (Ento. 301)	2	
Entomology of Orchard and Small Fruits (Ento. 302)		2
History and Literature of Horticulture (Hort. 125)		2
Seminar (Hort. 123, 124)	1	1
Principles of Plant Pathology (Bot. 101)	2	
Diseases of Orchards and Small Fruits (Bot. 102)		2
Approved Electives	5	5
	—	—
	17	17

(b) Olericulture

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Plant Propagation (Hort. 105)		2
Practical Vegetable Gardening (Hort. 203, 204)	2	3
Plant Breeding (Hort. 127)	3	
Floriculture (Hort. 401)	2	
Landscape Gardening (Hort. 301)		2
Introductory Entomology (Ento. 301)	2	
Entomology of Truck and Field Crops (Ento. 303)		2
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	3	5
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Commercial Truck Gardening (Hort. 209, 210)	3	3
Forcing Vegetables (Hort. 205, 206)	2	2
Systematic Olericulture (Hort. 207)	1	
Seminar (Hort. 123, 124)	1	1
Principles of Plant Pathology (Bot. 101)	2	
Diseases of Vegetable Crops (Bot. 104)		2
Approved Electives	4	5
	—	—
	16	16

(c) Floriculture

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Floriculture (Hort. 401)	2	
Landscape Gardening (Hort. 301)		2
Plant Materials (Hort. 305, 306)	3	3
Greenhouse Construction (Hort. 403)		3
Introductory Entomology (Ento. 301)	2	
Entomology of Truck and Field Crops (Ento. 303)		2
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	4	4
	—	—
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Forcing Flowers (Hort. 405, 406)	3	3
Agricultural Bacteriology (Bact. 501)	3	
Forcing Vegetables (Hort. 205, 206)	2	2
Advanced Plant Breeding (Hort. 127, 128)	3	3
Diseases of Vegetable Crops (Bot. 104)		2
Approved Electives	2	3
	—	—
	16	16

(d) Landscape Gardening*

	Semester	
	1st.	2nd.
FRESHMAN YEAR		
Modern English Prose (Eng. 81, 82)	3	3
Plane Surveying (C. E. 222)		5
Modern Language (French, German or Spanish, first Yr.)	3	3
Library Practice (Libr. 1)		½
Hygiene (Phys. Ed. 10)		½
Agricultural Botany (Bot. 41, 42)	3	3
Trigonometry (Math. 11)	3	
Architectural Drawing (Arch. 501)	3	
Drill (Military 1, 2)	1	1
Gymnasium (Phys. Ed. 15, 16)	½	½
Approved Elective	1	1
	17½	17½
SOPHOMORE YEAR		
American Literature (Eng. 71, 72)	3	3
Modern Language (French, German or Spanish, second Yr.)	3	3
Topographical Surveying (C. E. 223)	5	
Railroad and Canal Surveying (C. E. 272)		5
Principles of Fruit Growing (Hort. 101)	3	
Landscape Gardening (Hort. 301)		2
Drill (Military 3, 4)	1	1
Gymnasium (Phys. Ed. 17, 18)	½	½
Approved Electives	3	4
	18½	18½

*Since freshman and sophomore outlines in Landscape Gardening differ from the corresponding outlines in the standard course in Agriculture, these outlines are included here with those for the junior and senior years.

	<i>Semester</i>	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Composition of Addresses (Eng. 103, 104)	2	2
Water Color Rendering (Arch. 505, 506)	2	2
Floriculture (Hort. 401)	2	
Plant Materials (Hort. 305, 306)	3	3
Hist. and Lit. of Landscape Architecture (Hort. 311)..		2
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Approved Electives	3	6
	<hr/> 17	<hr/> 17
SENIOR YEAR		
National Government (Com. 320)	3	
Constitutional Law and Politics (Com. 322)		3
Theory and Design (Hort. 307, 308)	2	3
Town Planning (Hort. 313)	3	
Field Practice (Hort. 309, 310)	3	3
Approved Electives	5	7
	<hr/> 16	<hr/> 16

COURSES IN POULTRY HUSBANDRY

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Poultry Husbandry (Poultry Hus. 1, 2)	4	4
Embryology and Histology (Zool. 104, 105).....	3	3
Markets and Marketing (Poultry Hus. 7)	2	
Feeds and Feeding (Poultry Hus. 10)		2
Anatomy of the Fowl (Vet. Med. 11)	2	
Poultry Disease Bacteriology (Bact. 701)		2
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2).....	1	1
Approved Electives	1	4
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Advanced Poultry Husbandry (Poultry Hus. 3, 4).....	4	6
Principles of Breeding (Animal Hus. 6).....		3
Farm Management (Agronomy 505)		3
Approved Electives	9	1
	16	16

OTHER COURSES

In the courses of this group, which for convenience has been designated the agricultural science group as distinguished from the farm practice group already outlined, students are allowed to major in Agricultural Chemistry, Agricultural Bacteriology, Botany and Plant Pathology, Economic Zoology, and Economic Entomology. The purpose of the courses is to train students for agricultural college and experiment station positions in these various sciences; for work in the scientific bureaus of the U. S. Department of Agriculture; for positions as fruit inspectors; and for technical positions in State and government fish and game propagation work.

	<i>Semester</i>	
	1st.	2nd.
FRESHMAN YEAR		
Modern English Prose (Eng. 81, 82)	3	2
Modern Language (German or French first year).....	3	3
Principles of Economic Zoology (Zool. 108, 109)	3	3
General Physics (Phys. 1, 2)	3	3
General Chemistry (Chem. 100, 101)	3	3
Gymnasium (Phys. Ed. 15, 16)	½	½
Library practice (Libr. 1)	½	
Hygiene (Phys. Ed. 10)	½	
Drill (Military 1, 2)	1	1
	<hr/>	<hr/>
	18 ½	17 ½
SOPHOMORE YEAR		
Modern Language (German or French, second year)..	3	3
Agricultural Botany (Bot. 41, 42)	3	3
Agricultural Chemistry (500, 501).....	3	3
Soils (Agron. 101).....	3	
Crop Production (Agron. 201)		3
Elementary Bacteriology (Bact. 101)	3	
Organic Chemistry (Chem. 201)		3
Drill (Military 3, 4)	1	1
Gymnasium (Phys. Ed. 17, 18).....	½	½
	<hr/>	<hr/>
	16 ½	16 ½

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2).....	1	1
Major and Minor Electives	12	15
	17	17

SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
*Major and Minor Electives	13	13
	16	16

COURSE IN AGRICULTURE FOR TEACHERS

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Agricultural Economics (Com. 219)	3	
General Psychology (Ind. Ped. 101)	3	
School Management (Ind. Ped. 130)		3
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2).....	1	1
Approved Electives	9	12
	17	17
SENIOR YEAR		
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
General Methods (Ind. Ped. 140)	3	
Special Methods in Agriculture (Ind. Ped. 150)		3
Extension Methods in Agriculture (Ind. Ped. 151)		1
Composition of Addresses (Eng. 103)	2	
Approved Electives	8	9
	16	16

*Not less than five credits per semester must be taken in the Major department. Other subjects must be elected with the approval of the head of the department in which the Major is taken.

SCHOOL OF FORESTRY

The State of Oregon is the most important timber state in the Union. The present stumpage is estimated at more than 477 billion feet, board measure. This immense property represents approximately one-fifth of the standing timber remaining in the United States. About three-fourths of this amount is in private holdings. The greater part of this will doubtless be cut within the next twenty-five years. That held by the Federal government, in the National Forests, covering an area of more than 16,000,000 acres, will be cut as the needs of the people require, but the land will be devoted to the production of new timber crops, for all time to come.

The courses in Logging Engineering and in General Forestry are designed to prepare men to be of use in harvesting and in caring for this great forest crop. In both courses the student is given thorough training in plane and topographic surveying. In addition to these subjects, each course deals with matters pertaining to its particular field. The man who plans to engage in general forestry work receives instruction in forest botany, silviculture, dendrology, timber technology, and forest management; while the man who proposes to go into the logging business is instructed in railroad surveying, bridge construction, the principles of steam engines and electric motors, and general logging devices and equipment.

In addition to the purely technical subjects, the student is required to take courses in economics, sociology, and government; for it is realized that it is as much the duty of the college to develop good citizens as it is to create efficient producers.

The industrial work is shaped, so far as practicable, to fit the peculiar conditions existing in the Pacific Northwest, and in Oregon in particular. Men in both courses are expected to devote the summer months to practical work in the woods and in the camps. During the college year frequent trips are made to adjacent forests, to nearby logging operations, to mills, to wood distillation plants, creosote works, and factories. Practical work in timber cruising, map making, and inspection and planning of logging operations may be done by the student at very small cost. The watershed which supplies the city of Corvallis, is at the disposal of the School of

Forestry for the demonstration of scientific methods. All things considered, the School of Forestry offers exceptional advantages to the man who wishes to study forestry in a region of real forests.

Forester's Short Course

(November 2, 1914, to April 16, 1915)

This course is designed to be of assistance to those who wish to enter the non-technical branches of the Forest Service, and to those who wish to engage in State forestry work. The standard of work, both in the State and in the Federal Service, is constantly advancing. Every man who desires to continue in either of these branches must keep abreast of this advancing standard. He should be able to do this through the medium of some or all the subjects offered in this course.

	<i>Semester</i>	
	1st.	2nd.
Forest Protection (For. A. B.).....	3	3
Forest Measurements (For. C. D.).....	3	3
Forest Surveying and Mapping (For. E. F.).....	3	3
Forest Improvements (For. G. H.).....	3	3
Forest Administration (For. K. L.).....	1	1
	—	—
	13	13

DEGREE COURSE IN GENERAL FORESTRY

FRESHMAN YEAR	<i>Semester</i>	
	1st.	2nd.
Modern English Prose (Eng. 81, 82).....	3	3
Trigonometry (Math. 14).....	3	
Elementary Analysis (Math. 34).....		3
General Forestry (Forestry 101).....	4	
Surveying (C. E. 232).....		4
General Chemistry (Chem. 100-101).....	3	3
Forest Botany (Botany 30, 31).....	3	3
Library Practice (Lib. 1).....	½	
Hygiene (Phys. Ed. 10).....	½	
Drill (Military 1, 2).....	1	1
Gymnasium (Phys. Ed. 15, 16).....	½	½
	—	—
	18 ½	17 ½

	<i>Semester</i>	
	1st.	2nd.
SOPHOMORE YEAR		
General Physics (Physics 1, 2).....	3	3
General Zoology (Zool. 101, 102).....	3	3
Topographic Surveying (C. E. 233).....	4	
Forest Pathology and Taxonomy (Bot. 35).....		4
Silviculture (Forestry 201-202).....	3	3
Forest Geology (Mining 161).....	3	
Forest Protection (Forestry 505).....		3
Drill (Military 3, 4).....	1	1
Gymnasium (Phys. Ed. 17, 18).....	½	½
	<hr/>	<hr/>
	17 ½	17 ½
JUNIOR YEAR		
National Government (Com. 320).....	3	
State and Municipal Government (Com. 322).....		3
Forest Mensuration (301-302).....	4	4
Forest Entomology (Zoology 304).....		3
Advanced Silviculture (Forestry 203, 204).....	3	2
Elementary Economics (Com. 210).....	3	
• Forest History and Economics (Forestry 103).....		3
Forest Surveying and Mapping (Forestry 303).....	2	
Military Science (Theo. Inst. 1, 2).....	1	1
Drill (Military 5, 6).....	1	1
	<hr/>	<hr/>
	17	17
SENIOR YEAR		
Management (Forestry 401-402).....	5	4
Dendrology (Forestry 501).....	5	
Lumbering (Forestry 404).....		5
Forest Administration and Improvement (For. 405).....	3	
Timber Technology (Forestry 502).....		4
Timber Testing (Exp. E. 238).....		1
Seminar (Forestry 408-409).....	3	2
	<hr/>	<hr/>
	16	16

DEGREE COURSE IN LOGGING ENGINEERING

	<i>Semester</i>	
	1st.	2nd.
FRESHMAN YEAR		
Modern English Prose (Eng. 81, 82).....	3	3
Trigonometry (Math. 14).....	3	
Elementary Analysis (Math. 34).....		3
General Forestry (Forestry 101).....	4	
Surveying (C. E. 232).....		4
General Chemistry (Chem. 100-101).....	3	3
Woodwork (Shop 105, 111).....	2	2
Library Practice (Lib. 1).....	½	
Hygiene (Phys. Ed. 10).....	½	
Drill (Military 1, 2).....	1	1
Gymnasium (Phys. Ed. 15, 16).....	½	½
	17½	16½

SOPHOMORE YEAR

Engineering Physics (Physics 101-102).....	4	4
Principles of Economics (Com. 210).....	3	
Labor Problems (Com. 213).....		3
Blacksmithing (Shop 151).....	2	
Toolmaking and Tempering (Shop 152).....		1
Machine Shop (Shop 202).....		1
Topographic Surveying (C. E. 233).....	4	
Railroad Surveying (C. E. 274).....		4
Mechanical Drawing (M. E. 151).....	2	
Forest Protection (Forestry 505).....		3
Drill (Military 3, 4).....	1	1
Gymnasium (Phys. Ed. 17, 18).....	½	½
	17½	17½

	JUNIOR YEAR	
	1st.	2nd.
National Government (Com. 320).....	3	
State and Municipal Government (Com. 322).....		3
Mensuration (Forestry 301-302).....	4	4
Logging Railroads (Forestry 601).....	3	
Dendrology (Forestry 504).....		3
Forest Surveying and Mapping (Forestry 303).....	2	
Logging Materials (Exp. E. 240).....		2
Elements of Steam Engineering (M. E. 300).....	3	
Mechanism (M. E. 204).....		3
Military Science (Theo. Inst. 1, 2).....	1	1
Drill (Military 5, 6).....	1	1
	<hr/>	<hr/>
	17	17
SENIOR YEAR		
Logging Engines (Forestry 602).....	4	
Bridge Construction (Forestry 603).....		3
Logging Devices and Equipment (For. 604, 605).....	5	4
Lumbering (Forestry 404).....		5
Management (Forestry 407).....	3	
Timber Technology (Forestry 502).....		4
Timber Testing (Exp. E. 238).....		1
Electrical Machinery (E. E. 403).....	2	
Special Subjects (For. 606).....	2	
	<hr/>	<hr/>
	16	17

SCHOOL OF HOME ECONOMICS

The School of Home Economics offers the following courses of study: a one-year vocational course entitled the Home Makers' Course; a four-weeks course in Food Preparation, Dressmaking, Textiles, etc., which is offered in connection with the Winter Short Course; a six-weeks course for teachers, offered in connection with the work of the Summer School; a night course of twelve weeks for women of mature years; and four four-year courses, each of which leads to the degree of Bachelor of Science.

VOCATIONAL COURSES. The one-year course for Home Makers is provided especially for those women whose schooling may not qualify them to enter the degree courses, whose duties demand that they shall content themselves with a briefer period of training for their life work, or whose aim in seeking training at the College is exclusively technical or vocational. The purpose of the other short courses in Home Economics is quite similar to this—to provide, in the short time assigned to the particular courses, the fullest and most fruitful training that is possible to offer with the facilities of a thoroughly modern School of Home Economics, and to present this training in such a way that it shall be most immediately and constructively helpful to the particular patrons of the given course. Only the one-year vocational course and the regular degree courses are outlined here, the others being presented in the usual special bulletins issued for the Winter Short Course and the Summer School. Admission to any of the vocational courses demands an educational qualification not greater than an eighth grade or common school course; and in the instance of mature persons, otherwise capable of carrying on the work, even this qualification may be waived.

DEGREE COURSES. Admission to the degree courses requires the completion of at least three years' work in a standard high school. These courses are planned fundamentally to equip women for their normal life service, that of home makers. While the first three years of all the courses are identical, opportunity is given during the senior year to specialize in any one of four fields; namely, Domestic Science, Domestic Art, Home Administration, and Institutional Management.

Fundamentally, the young women in the School of Home Economics are offered such training as will help them to be prepared to adjust themselves readily to their environment. Since the relation of women to the economic world has undergone great changes during the last one or two decades, it follows that the education of young women must be such that it will prepare them to be efficient and serviceable to their community.

That the young women completing this course may be good citizens as well as good housekeepers; good business managers in their homes, as well as good cooks; broadly educated women, as well as specially trained workers, the courses of study in the School of Home Economics have been planned to give a liberal as well as a technical education.

Many opportunities are open for the woman capable of solving the problems of good food service for large numbers of people, and for experts in the management of large institutions. Equally attractive opportunities are available for the expert needlewoman, the tasteful designer of gowns, the competent dressmaker or milliner, the ladies' tailor, and the woman with artistic resources as a household decorator and furnisher. Opportunities for teaching Home Economics, not only in the high schools and colleges, but as supervisors in the common schools of cities, and in the consolidated community schools of progressive rural communities, are becoming more general and more desirable. Facilities for specializing in this work at the College are therefore given special attention.

More and more the life of the modern community is dependent upon institutions. Women are rapidly taking their places as executive and administrative leaders in the important functions of these institutions. Hospitals, Institutional Homes, Asylums, Educational Institutions, and Social Centers, are more and more demanding the service of the women of skilled technical accomplishments. There is a growing demand for dietiticians in the hospitals and large institutions. The training in dietetics, catering, and business management offered the young women at the College through the School of Home Economics, assists in the liberal and practical preparation for this employment.

Quartered in a new building, provided with a thoroughly practical modern heating, ventilating, and sanitary system, and equipped with the most approved facilities for conducting the work of the

various departments, the School of Home Economics is in a very fortunate position for making its courses of the utmost value to its patrons—not only to its resident students, but to the communities of the State at large wherever its extension activities may penetrate.

Home Makers' Course

	Semester	
	1st.	2nd.
Food Preparation (D. S. H, 1)	6	6
Care of Children (D. S. J)		1
Hand Sewing and Garment Making, Dressmaking (D. A. K, L)	5	5
Sanitation and Care of the Home (D. S. K)	3	
Personal Hygiene (D. S. L)	2	
Preventive Medicine (Bact. 307)	1	
Home Nursing and Invalid Cookery (D. S. M)		2
House Furnishing (D. A. N)		2
Gynasium (Phys. Ed. 1, 2)	1	1
	<hr/>	<hr/>
	18	18

DEGREE COURSE IN HOME ECONOMICS

FRESHMAN YEAR	Semester	
	1st.	2nd.
General Chemistry (Chem. 102, 103)	3	3
Hand Sewing, Garment Making (D. A. 101, 102)	3	3
Freehand Drawing, Beginning Composition (Art 102, 103)	2	2
College Rhetoric (Eng. 31, 32)	3	3
Principles of Botany (Bot. 20)	3	
Functional Zoology (Zool. 103)		3
Library Practice (Libr. 1)	$\frac{1}{2}$	
Hygiene (Phys. Ed. 10)	$\frac{1}{2}$	
Home and Private Business Management (Com. 122)		2
Gymnasium (Phys. Ed. 5, 6)	1	1
	<hr/>	<hr/>
	16	17

	Semester.	
	1st.	2nd.
SOPHOMORE YEAR		
Organic Chemistry, Chemistry of Foods (Chem. 200, 402)	4	4
Food Preparation (D. S. 101, 102)	3	3
Design and Color (Art 204)	2	
Household Physics (Phys. 131)	4	
Household Bacteriology (Bact. 300)		3
Home Nursing (D. S. 511)		3
Essay, Drama (Eng. 51, 52)	3	3
Gymnasium (Phys. Ed. 7, 8)	1	1
	—	—
	17	17
JUNIOR YEAR		
Principles of Economics, Practical Sociology (Com. 211, 251)	2	2
*Modern Language (French, German, or Spanish first year)	3	3
Food Preparation (D. S. 104, 105)	3	3
Physiology (Zool. 207, 208)	3	3
House Sanitation (D. S. 301)	2	
Housewifery (D. S. 510)		2
Dressmaking (D. A. 201, 202)	3	3
	—	—
	16	16
SENIOR YEAR		
*Modern Language (French, German, or Spanish second year)	3	3
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Psychology (Ind. Ped. 101)	3	
House Decoration and Furnishing (D. A. 501)	3	
House Administration (D. S. 501)		3
Electives	4	7
	—	—
	16	16

*Students presenting credits for two years' study in any one foreign language may elect other subjects in place of modern language as required in the above course.

The following group electives are suggested. Other electives may be taken with the consent of the Dean of the School.

	<i>Semester</i>	
	1st	2nd
(a) DOMESTIC SCIENCE.		
Dietetics (D. S. 201)	4	
Invalid Cookery (D. S. 202)		2
Ind. Ped. (160, 162)	3	3
(b) DOMESTIC ART.		
Adv. Dressmaking (D. A. 203, 204)	3	3
Adv. Textiles (D. A. 601)		2
Costume Design (D. A. 701)	2	
Ind. Ped. (160, 161)	3	3
(c) HOME ADMINISTRATION.		
Dietetics (D. S. 201)	4	
Invalid Cookery (D. S. 202)		2
Adv. Dressmaking (D. A. 203, 204)	3	3
Handwork and Weaving (D. A. 405)		2
(d) INSTITUTIONAL MANAGEMENT.		
Dietetics (D. S. 201)	4	
Invalid Cookery (D. S. 202)		2
Institutional Management (D. S. 504)	3	
Catering (D. S. 210)		6
(e) EDUCATION.		
History of Education (Ind. Ped. 120)		3
General Methods (Ind. Ped. 140)	3	
Ind. Ped. (160, 161, 162)	3	6
(f) APPLIED DESIGN.		
Basketry (D. A. 402)	2	
Handwork and Weaving (D. A. 405)		2
Design (Art 204)	2	
Clay Modeling (Art 413, 414)	2	2
Metal Work (Art 600, 601)	2	2

SCHOOL OF ENGINEERING

Four-year courses leading to the degree of Bachelor of Science are offered in the School of Engineering as follows:

A course in Civil Engineering.*

A course in Electrical Engineering.

A course in Mechanical Engineering.

A course in Highway Engineering.

A course in Irrigation Engineering.

A course in Industrial Arts.

A three-year vocational course in Mechanic Arts is also offered.

While this course does not lead to a degree, a certificate or diploma will be awarded to those students who complete it.

COURSE IN CIVIL ENGINEERING*

The purpose of this course is to give the student thorough theoretical instruction, accompanied by as much laboratory and field practice as possible. The course includes such basic studies as English, Mathematics, Chemistry, Physics, Drawing, Materials of Engineering, Applied Mechanics, and Hydraulics, in addition to the technical work given by this department. The student has the opportunity, during the senior year, to select his work along lines that he is most interested in.

Recognizing the value of drawing to the professional engineer, not only as a means of expressing his ideas and of carrying out his plans, but also as a means by which the young graduate may enter some of the most desirable positions, the department lays special emphasis upon this subject. Much drawing is also required in connection with the preparation of plans and working drawings, as part of the office work of the higher technical courses.

The work in Surveying begins with the freshman year, and continues through the sophomore year, with from six to nine hours of field practice a week. The student serves in subordinate positions at first, and gradually advances as a knowledge of the instruments is acquired. After having served his term as an apprentice, he is placed in charge of field parties and is held responsible for

*No work below sophomore grade will be given in Civil Engineering during the year 1914-15.

the results accomplished. During the freshman year he is given practice in land surveying and leveling, and during the sophomore year in topographic and railroad surveying. At all times, conscientious attention to duty, accuracy, and speed will be demanded. Every student keeps full and accurate notes of all work done in the field. These, after being criticised, are transcribed and filed with the instructor.

DEGREE COURSE IN CIVIL ENGINEERING

SOPHOMORE YEAR	Semester	
	1st.	2nd.
Differential Calculus, Integral Calculus (Math. 51, 52)	4	4
Engineering Physics (Phys. 101, 102)	4	4
Topographic Surveying (C. E. 223)	5	
Railroad and Canal Surveying (C. E. 272)		5
Gymnasium (Phys. Ed. 17, 18)	$\frac{1}{2}$	$\frac{1}{2}$
Drill (Military 3, 4)	1	1
*Electives (Restricted)	3	3
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

JUNIOR YEAR

Statics and Dynamics (M. E. 251)	5	
Strength of Materials (M. E. 252)		3
Roads and Pavements (C. E. 405)	3	
Graphic Statics (C. E. 511)	2	
Hydraulics (I. E.)		3
Cement and Highway Laboratory (Exp. E. 231)	2	
Structural Materials Laboratory (Exp. E. 232)		3
Military Science (Theo. Inst. 1, 2)	1	1
Masonry and Foundations (C. E. 552)		3
*Electives (Restricted)	3	3
	17	17

*Approved Electives—English, Modern Language, Economics, Constitutional Law, State and Municipal Governments, Geology, Differential Equations, Least Squares.

The following group electives are suggested. Other studies may be arranged for by consultation with the head of the department.

	Semester:	
	1st.	2nd.
SENIOR YEAR		
Highway Bridges (C. E. 513, 514)	4	4
Engineering Seminar (C. E. 605, 606)	1	1
Reinforced Concrete (C. E. 553)	3	
Contracts and Specifications (C. E. 607)		2
Electives (Either group 1, 2, 3, 4)	8	9
	16	16
GROUP 1		
Highway Engineering (C. E. 407)	5	
Economics of Highway Construction (C. E. 410)		2
Highway Laboratory (Advanced) (Exp. E. 233)	2	
Road Machinery (M. E. 302)		1
Precise Surveying and Geodesy (C. E. 252)		3
Electives	1	3
	8	9
GROUP 2.		
Sanitary Engineering (C. E. 301)	3	
Hydraulics Laboratory (Exp. E. 262)		2
Water Supply Engineering (I. E. 301)	4	
Hydraulic Pumps and Motors (I. E. 202) or Chem- istry of Water (Chem. 403)		2
Study of Electric Machinery (E. E. 402)		4
Electives	1	1
	8	9
GROUP 3		
Structural Engineering (C. E. 515, 516)	3	2
Study of Electric Machinery (E. E. 402)		4
Electives	5	3
	8	9

GROUP 4.	Semester	
	1st.	2nd.
Railway Engineering (C. E. 281, 282)	3	3
Study of Electric Machinery (E. E. 402).....		4
Electives	5	2
	8	9

COURSE IN ELECTRICAL ENGINEERING

COURSES. Since the advent of steam as a motive power, it is probable that no agency has so deeply affected the course of history and the intimate life of a large portion of the human race as has the electric current, whether used in the transmission of intelligence, to furnish light, or to provide power for transportation and the industries.

Already the electrical industries are counted among the greatest in the world; their employees number more than a hundred thousand in the United States alone; their business in this country doubles every five years; and their field is ever expanding.

Notwithstanding this fact, most of the business is controlled by comparatively few corporations. The competition for desirable positions is therefore keen; and since the field in Electrical Engineering for the independent engineer is limited, only men of exceptional ability, energy, and character become more than salaried employees who are obliged to work very hard for comparatively small compensation.

Accordingly, no man is advised to take Electrical Engineering who does not consider himself, by taste and ability, exceptionally fitted therefor.

For men interested chiefly in the commercial, or business side of the profession, it is believed that the electrical supply and contracting business offers opportunities that are unusual, but which, nevertheless, have been practically overlooked by college graduates. Accordingly, special work in accounting, commercial law, the study of electrical appliances, and the principles of the contracting business are offered for those who would care to enter this field.

The College course is designed especially to train the young engineer in the theory of his profession, such practical work as is given in shop and laboratory being subordinated to this end. Prac-

tical acquaintance with actual conditions can be acquired only in the field, during vacation and after graduation. For this reason, and in order to supplement his college education, the student is urged to spend at least a part of his vacation in some line of electrical industry.

Starting with the foundation subjects of mathematics, science, drawing, and shopwork, the student proceeds through the study of form expression in Descriptive Geometry, Mechanism, the laws of Mechanics, Strength of Materials, stress in structures and machinery; through the study of electricity and its application to machinery, the characteristic performance of electrical apparatus, its design and operation; through the study of thermodynamics as applied to various types of heat engines, and finally to the composite power system involving the steam or hydro-electric power plant and the system for transmitting and distributing electrical energy.

ELECTIVES. The course in Electrical Engineering is designed to meet the needs of two classes of students, those who expect to become corporation employees, and those who desire to engage in the supply and contracting business on their own account. In the freshman year one of three elective subjects must be chosen, English, Modern Language, or Accounting. It is expected that the latter course will be elected by students who intend to prepare for the supply and contracting business.

DEGREE COURSE IN ELECTRICAL ENGINEERING

	Semester	
	1st.	2nd.
FRESHMAN YEAR		
Trigonometry, College Algebra (Math. 11, 21)	5	
Elementary Analysis (Math. 31)		5
General Chemistry (Chem. 10, 11)*.....	3	3
Mechanical Drawing (M. E. 151)	2	
Descriptive Geometry (M. E. 152)		3
Foundry (Ind. Arts 171)	2	
Patternmaking (Ind. Arts 131)		2
Library Practice (Libr. 1)	$\frac{1}{2}$	
Hygiene (Phys. Ed. 10)	$\frac{1}{2}$	
Modern English Prose (Eng. 81, 82) or Adv. German or Adv. French (Mod. Lang. 207, 208 or 107, 108)** or Accounting (Commerce 100, 108)***....	3	3
Drill (Military 1, 2)	1	1
Gymnasium (Phys. Ed. 15, 16)	$\frac{1}{2}$	$\frac{1}{2}$
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

SOPHOMORE YEAR

Differential and Integral Calculus (Math. 51, 52).....	4	4
Engineering Physics (Physics 101, 102)	4	4
Mechanical Drawing (M. E. 153)	3	
Mechanism (M. E. 204)		3
Blacksmithing (Ind. Arts 151)	2	
Machine Shop (Ind. Arts 206)		2
Drill (Military 3, 4)	1	1
Gymnasium (Phys. Ed. 17, 18)	$\frac{1}{2}$	$\frac{1}{2}$
Approved Option†	3	3
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

*Students entering with credits in high school chemistry will be expected to register for Chemistry 100 and 101.

**By special permission a student may elect beginning German or French, (Modern Language 201, 202 or 101, 102). Modern language elected in the freshman year must be continued in the sophomore year.

***If accounting is elected in the Freshman year it must be followed by Commercial Law (Commerce 300, 301), in the sophomore year.

†Restricted to English, Modern Language, Economics, Commercial Law, Chemistry, Surveying, Shopwork. See foot notes under schedules for freshman year.

	JUNIOR YEAR		<i>Semester</i>	
	1st.	2nd.	1st.	2nd.
- Principles of Applied Electricity (E. E. 101, 102).....	5		3	3
Electrical Engineering Laboratory (E. E. 201, 202)....	3		3	3
- Electrical and Magnetic Measurements (Physics 201)	2			
Statics and Dynamics (M. E. 251)	5			
Strength of Materials (M. E. 252)				3
Theory and Practice of Steam Engineering (M. E. 305)				3
Hydraulics (I. E. 102)				3
Drill (Military 5, 6)	1		1	1
Military Science (Theo. Inst. 1, 2)	1		1	1
	<hr/>		<hr/>	
	17		17	

Students desiring to elect Differential Equations may defer Physics 201 to the second semester. This involves the carrying of an extra credit in the first semester and two extra credits in the second semester.

	SENIOR YEAR		<i>Semester</i>	
	1st.	2nd.	1st.	2nd.
- Alternating Current Machinery (E. E. 103).....	3			
- Power Plants, Transmission and Distribution Systems (E. E. 108)				3
- Problems in Design (E. E. 105, 106)	2		2	
Electrical Engineering Laboratory (E. E. 203)	3			
Applied Mechanics Laboratory (Exp. E. 205)	3			
Power and Hydraulic Laboratory (Exp. E. 206)				3
Advanced Steam Engineering (M. E. 306)	3			
3 Optional and Thesis	2		8	
	<hr/>		<hr/>	
	16		16	

One of the following optional groups must be selected:

	RAILWAY		<i>Semester</i>	
	1st.	2nd.	1st.	2nd.
Electric Railways (E. E. 308, 309)	2		3	
Railway Signalling (E. E. 312).....				2
Thesis (E. E. 306).....				3
	<hr/>		<hr/>	
	2		8	

	<i>Semester</i>	
	1st.	2nd.
POWER PLANTS		
Storage Batteries (E. E. 304)	1	
Periodical Literature (E. E. 301)	1	
Steam Power Plant Design (M. E. 316)		3
Illumination (Physics 212)		3
Thesis (E. E. 306).....		2
	<hr/>	<hr/>
	2	8
ILLUMINATION AND CONTRACTING		
Elective	2	
Illumination (Physics 212)		3
Electrical Contracting (E. E. 110).....		3
Thesis (E. E. 306).....		2
	<hr/>	<hr/>
	2	3

COURSE IN MECHANICAL ENGINEERING

The course in Mechanical Engineering has for its purpose the preparation of young men for positions of usefulness and responsibility in the industrial life of the country.

The Pacific Northwest is just now entering upon a period of rapid progress in the building of railroads, the development of water power, the marketing of forest products, and the upbuilding of manufacturing, all of which require men conversant with the general principles of engineering. It is the purpose of all engineering courses to contribute to this general advancement, by turning out graduates equipped with the necessary knowledge and skill to make them active factors in this great work.

It is the general plan of the course in Mechanical Engineering to lay a broad foundation in English, Mathematics, Chemistry, and Physics, accompanied by Drawing and Shopwork, during the first two years of the course. The work of the last two years is more technical and professional in its nature, consisting in a study of the principles involved in the development of power by steam engines, water wheels, gas and gasoline engines, and steam turbines. It also involves a critical study of the design of machines and materials entering into their construction, as well as tests to determine their efficiency.

Instruction is given by means of lectures, recitations, and laboratory exercises. The scientific principles involved in machines and mechanical movements are taught in the class room, as well as the application of mathematics to the solution of problems in mechanical engineering. In the shops, the student learns the use of tools and the value of different methods of doing work from the standpoint of economical construction. In the draughting room, he learns to make working drawings and blueprints of machines, and to formulate designs of his own.

With these advantages to aid him, the ambitious student should be able to take and maintain a position in the general industrial and engineering development which is the leading and characteristic feature of the age in which we live.

DEGREE COURSE IN MECHANICAL ENGINEERING

FRESHMAN YEAR	Semester	
	1st.	2nd.
Modern English Prose (English 81, 82)*	3	3
Trigonometry, College Algebra (Math. 11, 21)	5	
Elementary Analysis (Math. 31)		5
General Chemistry (Chem. 100, 101)	3	3
Mechanical Drawing (M. E. 151)	2	
Descriptive Geometry (M. E. 152)		3
Foundry (Ind. Arts 171)	2	
Patternmaking (Ind. Arts 131)		2
Library Practice (Libr. 1)	$\frac{1}{2}$	
Hygiene (Phys. Ed. 10)	$\frac{1}{2}$	
Drill (Military 1, 2)	1	1
Gymnasium (Phys. Ed. 15, 16)	$\frac{1}{2}$	$\frac{1}{2}$
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

*Upon approval of the Dean, students may substitute a Modern Language for English in the freshman year and for Commercial Geography and the Principles of Economics in the sophomore year.

	<i>Semester</i>	
	1st.	2nd.
SOPHOMORE YEAR		
Differential and Integral Calculus (Math. 51, 52).....	4	4
Engineering Physics (Physics 101, 102).....	4	4
Mechanical Drawing (M. E. 153).....	3	
Mechanism (M. E. 204).....		3
Commercial Geography (Com. 202)*	3	
Principles of Economics (Com. 212)*		3
Blacksmithing (Ind. Arts 151).....	2	
Toolmaking and Tempering (Ind. Arts 152).....		1
Machine Shop (Ind. Arts 202).....		1
Drill (Military 3, 4).....	1	1
Gymnasium (Phys. Ed. 17, 18).....	½	½
	17½	17½

JUNIOR YEAR		
Statics and Dynamics (M. E. 251).....	5	
Strength of Materials (M. E. 252).....		3
Theory and Practice of Steam Engineering (M. E. 305)	3	
Advanced Steam Engineering (M. E. 306).....		3
Applied Mechanics Laboratory (Exp. E. 201).....	3	
Power and Hydraulic Laboratory (Exp. E. 202).....		3
Study of Electrical Machinery (E. E. 402).....		4
Graphic Statics (C. E. 511).....	2	
Machine Shop (Ind. Arts 203, 204).....	2	2
Military Science (Theo. Inst. 1, 2).....	1	1
Drill (Military 5, 6).....	1	1
	17	17

*Upon approval of the Dean, students may substitute a Modern Language for English in the freshman year and for Commercial Geography and the Principles of Economics in the sophomore year.

SENIOR YEAR	Semester	
	1st.	2nd.
Machine Design (M. E. 205, 206).....	4	3
Steam Boilers (M. E. 309).....	2	
Steam Turbines (M. E. 312).....		2
Hydraulics (I. E. 103).....	3	
Steam Power Plant Design (M. E. 316).....		3
Advanced Mechanics Laboratory (Exp. E. 203).....	3	
Advanced Power Laboratory (Exp. E. 204).....		3
Gas Engine Laboratory (Exp. E. 272).....		2
Internal Combustion Motors (M. E. 346).....		2
Heating and Ventilating (M. E. 331).....	3	
Seminar (M. E. 351, 352).....	1	1
	16	16

COURSE IN HIGHWAY ENGINEERING

There are few lines of public endeavor where more money is being spent, or where a higher degree of technical skill and training is required than in the field of highway engineering. The purpose of this course is to meet the demand in this State and throughout the Northwest for men equipped to take charge of road and city street construction and maintenance work. Aside from the opportunity for useful and honorable service, no field, it is believed, offers greater encouragement in a financial way to the young man of ambition and ability.

Thorough theoretical instruction is accompanied by as much laboratory and field practice as possible. The course includes such basic studies as English, Mathematics, Chemistry, Physics, Drawing, Materials of Engineering, Applied Mechanics, and Hydraulics, in addition to the technical work given by this department.

The department of Experimental Engineering is equipped with complete and thoroughly up-to-date testing laboratories, including the very latest and best cement and highway testing machinery, thus affording students in Highway and in Civil Engineering courses the opportunity of studying first hand the strength and properties of the various engineering materials.

In the study of highways, special reference is made to the conditions and needs of Oregon. Due consideration is given to the construction and maintenance of dirt, gravel, and broken stone roads

as well as to the higher types. In consequence of the vast area of the State, this class of roads must, of necessity, constitute the greater part of its highways for many years.

DEGREE COURSE IN HIGHWAY ENGINEERING

FRESHMAN YEAR	Semester	
	1st.	2nd.
Trigonometry, College Algebra (Math. 11, 21).....	5	
Elementary Analysis (Math. 31).....		5
General Chemistry (Chem. 100, 101).....	3	3
Mechanical Drawing (C. E. 105).....	4	
Engineering Drawing (C. E. 111).....		3
Descriptive Geometry (M. E. 152).....	3	
Library Practice (Libr. 1).....	$\frac{1}{2}$	
Hygiene (Phys. Ed. 10).....	$\frac{1}{2}$	
Plane Surveying (C. E. 222).....		5
Gymnasium (Phys. Ed. 15, 16).....	$\frac{1}{2}$	$\frac{1}{2}$
Drill (Military 1, 2)	1	1
	17 $\frac{1}{2}$	17 $\frac{1}{2}$
SOPHOMORE YEAR		
Differential Calculus, Integral Calculus (Math. 51, 52)	4	4
Engineering Physics (Phys. 101, 102).....	4	4
Topographic Surveying (C. E. 223).....	5	
Railroad and Canal Surveying (C. E. 272).....		5
Gymnasium (Phys. Ed. 17, 18).....	$\frac{1}{2}$	$\frac{1}{2}$
Drill (Military 3, 4).....	1	1
Electives (Restricted)	3	3
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Statics and Dynamics (M. E. 251).....	5	
Strength of Materials (M. E. 252).....		3
Roads and Pavements (C. E. 405).....	3	
Graphic Statics (C. E. 511).....	2	
Hydraulics (I. E. 102).....		3
Cement and Highway Laboratory (Exp. E. 231).....	2	
Structural Materials, Laboratory (Exp. E. 232).....		3
Military Science (Theo. Inst. 1, 2).....	1	1
Masonry and Foundations (C. E. 552).....		3
*Electives (Restricted)	3	3
	17	17
SENIOR YEAR		
Highway Bridges (C. E. 513, 514).....	4	4
Engineering Seminar (C. E. 605, 606).....	1	1
Reinforced Concrete (C. E. 553)	3	
Contracts and Specifications (C. E. 607).....		2
Road Machinery (M. E. 302).....	1	
Highway Engineering (C. E. 407, 408).....	4	4
Economy of Highway Construction (C. E. 410).....		2
Advanced Highway Laboratory (Exp. E. 233)	2	
**Electives	1	3
	16	16

IRRIGATION ENGINEERING

Successful agriculture in the arid parts of Oregon is based on the science of irrigation. The widespread development of irrigation lands in this and other states of the arid west, by means of both gravity supplies and pumping systems, has extended the necessary qualifications of the engineer to include a knowledge of irrigation methods, pumping, and power machinery. The province of the engineer, therefore, comprises the development, conservation, and economical use of limited water supplies. In recognition of the need,

*Approved Electives: English, Modern Language, Economics, National Government, State and Municipal Governments, Geology, Differential Equations, Least Squares.

**Chemistry of Road Materials, Design of Highway Structures or Materials Laboratory (Advanced Course).

in the Pacific Northwest, for Engineers trained in irrigation and hydraulics, the course in Irrigation Engineering has been established.

Realizing, however, that the young engineer is frequently obliged to take charge of work which properly falls outside of the field in which he has specialized, the course in Irrigation Engineering is arranged to cover as broad a field as practicable, in order that the graduate may experience little difficulty in accommodating himself to the available positions. The curriculum in this department has for its purpose, in the freshman and sophomore years, the laying of a foundation on which to build the more specialized and technical work of the junior and senior years. The last two years are intended to equip the student with a well-rounded knowledge of hydraulics and irrigation engineering—a knowledge which will enable the student to hold a responsible position in reclamation work.

The work of this department is designed to furnish a thorough course of theoretical instruction accompanied by practice in the various lines of irrigation engineering. The course, moreover, is made practical by a large proportion of laboratory and field practice in conjunction with the theoretical work. Special stress is laid on the solution of problems, and experiments in the laboratory. Emphasis is laid on skill in handling surveying and water-measuring instruments. The student is taught how to make stream measurements, design, lay out, and construct dams, canals, headworks, diversion weirs, flumes, pipe lines, and distributing systems.

Inspection trips are conducted in the junior and senior year to afford the students an opportunity to familiarize themselves with actual engineering work.

ELECTIVES. Ample opportunity is given the student to elect courses outside of the School of Engineering. This provision is made that the student may be encouraged to study Economics, Political Science, Accounting, English, and Modern Languages, a knowledge of each of which is helpful, if not essential, in the engineering profession.

DEGREE COURSE IN IRRIGATION ENGINEERING

	Semester	
	1st.	2nd.
FRESHMAN YEAR		
Trigonometry, College Algebra (Math. 11, 21).....	5	
Elementary Analysis (Math. 31).....		5
General Chemistry (Chemistry 100, 101).....	3	3
Mechanical Drawing (C. E. 105).....	4	
Engineering Drawing (C. E. 111).....		3
Descriptive Geometry (M. E. 152).....	3	
Library Practice (Libr. 1).....	$\frac{1}{2}$	
Hygiene (Phys. Ed. 10).....	$\frac{1}{2}$	
Plane Surveying (C. E. 222).....		5
Gymnasium (Phys. Ed. 15, 16).....	$\frac{1}{2}$	$\frac{1}{2}$
Drill (Military 1, 2).....	1	1
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

SOPHOMORE YEAR

Differential Calculus, Integral Calculus, (Math. 51, 52).....	4	4
Engineering Physics (Physics 101, 102).....	4	4
Topographic Surveying (C. E. 223).....	5	
Railroad and Canal Surveying (C. E. 272).....		5
Gymnasium (Phys. Ed. 17, 18).....	$\frac{1}{2}$	$\frac{1}{2}$
Drill (Military 3, 4).....	1	1
Electives (Restricted).....	3	3
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

	<i>Semester</i>	
	1st	2nd
JUNIOR YEAR		
Statics and Dynamics (M. E. 251)	5	
Strength of Materials (M. E. 252)		3
Roads and Pavements (C. E. 405)	3	
Graphic Statics (C. E. 511)	2	
Hydraulics (I. E. 102)		3
Cement and Highway Laboratory (Exp. E. 231)	2	
Structural Materials Laboratory (Exp. E. 232)		3
Masonry and Foundations (C. E. 552)		3
Military Science (Theo. Inst. 1, 2)	1	1
Drill (Military 5, 6)	1	1
Electives (Restricted)	3	3
	<hr/>	<hr/>
	17	17

SENIOR YEAR		
Engineering Seminar (C. E. 605, 606)	1	1
Reinforced Concrete (C. E. 553)	3	
Contracts and Specifications (C. E. 607)		2
Water Supply Engineering (I. E. 301)	4	
Irrigation Engineering (I. E. 401)	2	
Design of Irrigation Structures (I. E. 402)		2
Hydraulics Laboratory (Exp. E. 262)		2
Hydraulic Pumps and Motors (I. E. 202)		2
Soil Physics (Agron. 103)	3	
Irrigation Farming (Agron. 302)		3
Water Law (I. E. 602)		1
Electives (Approved)	3	3
	<hr/>	<hr/>
	16	16

The following is a list of approved electives from which the student must choose three credit hours each semester in those years in which elective courses are offered. Unless the student has credit for at least three credit hours of modern languages, he will not be permitted to register for less than twelve credits of any modern language course. Unless satisfactory credits are produced, no student will be permitted to register for less than six credits of economics, when such electives are chosen.

	<i>Semester</i>	
	1st	2nd
SOPHOMORE AND JUNIOR YEARS		
Modern English Prose (Eng. 81, 82).....	3	3
French, German or Spanish (Mod. Lang. 101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 304).....	3	3
Commercial Geography (Com. 202).....	3	
Principles of Economics (Com. 212)		3
General Accounting, Special Accounting (Com. 107, 108)	2	3
SENIOR YEAR		
Forage Crops (Agron. 203).....	2	
Land Drainage (Agron. 301).....		3
Highway Bridges (C. E. 513, 514).....	4	4
Water Power (I. E. 204).....		3
Electrical Machinery (E. E. 402).....		4
Advanced Materials Laboratory (Exp. E. 235).....		2
Climatology (Agron. 303)		1
Irrigation Institutions (Agron. 305).....	2	

COURSE IN INDUSTRIAL ARTS

There is a steadily increasing demand in Oregon for competent teachers of manual training. These instructors teach in both the elementary and high school grades. In fact, the up-to-date school provides for manual, or constructive work of various kinds from the first grade up. The well-trained teacher must therefore understand both the technique and theory of his subject as adapted to the needs of pupils.

Below the sixth grade this manual instruction for both boys and girls is given by the regular grade teachers; but the supervisor and special teacher of manual training should be able to organize this work and correlate it with the other school subjects, and particularly with the later formal course in manual arts. For the boys,

this will take the form of instruction in woodworking, metals, machine shop, and in some schools, vocational training in the various trades. For the girls, it will lead to the study of the several phases of home economics.

A college degree course of the same general standard as the other B. S. courses is provided, in order that the young men who specialize in this field may receive a preparation that will place them on a par with the high school teachers in other branches. The relation of industrial instruction in the elementary and secondary schools to the industries of life, is more fundamental and direct than most of the other branches taught. It also has its important relations to higher education. It becomes necessary, therefore, to give these instructors a training that will make them more than masters of the mechanical processes.

The properly prepared teacher of industrial arts must have an appreciative understanding of the origin and development of the industries; their relation to economic, social, and political life; and a profound conviction of the importance and dignity of their contribution to the progress of mankind. He should also have the broad sympathies of the cultured man, in order to enable him to set before his pupils high and worthy ideals of life. The artisan, artist, or professional man is first of all a man and a citizen, and our schools must make him aware of his high privileges and responsibilities.

The Industrial Arts department is a part of the School of Engineering and has under its supervision all the shop courses offered in the other departments of the College.

DEGREE COURSE IN INDUSTRIAL ARTS

	<i>Semester</i>	
	1st	2nd
FRESHMAN YEAR		
Modern English Prose (Eng. 81, 82).....	3	3
Trigonometry (Math. 12).....		3
Commercial Geography (Com. 202).....	3	
General Chemistry (Chem. 100, 101).....	3	3
Shop Drawing (Ind. Arts 301, 302).....	2	2
Manual Training (Ind. Arts 103, 104).....	3	3
Industrial Arts Drawing (Art 410, 411).....	1	2
Library Practice (Libr. 1).....	½	
Hygiene (Phys. Ed. 10).....	½	
Drill (Military 1, 2)	1	1
Gymnasium (Phys. Ed. 15, 16).....	½	½
	<hr/>	<hr/>
	17 ½	17 ½
SOPHOMORE YEAR		
English, German, French or Spanish.....	3	3
General Physics (Phys. 1, 2)	3	3
School Management (Ind. Ped. 130).....	3	
History of Education (Ind. Ped. 120).....		3
Patternmaking, Foundry (Ind. Arts 135, 171)	3	3
Industrial Arts Design (Art 412).....		1
Drawing (M. E. 156)		3
Drill (Military 3, 4).....	1	1
Gymnasium (Phys. Ed. 17, 18).....	½	½
Electives	4	
	<hr/>	<hr/>
	17 ½	17 ½

	<i>Semester</i>	
	1st	2nd
JUNIOR YEAR		
English, German, French or Spanish	3	3
General Psychology (Ind. Ped. 101).....	3	
General Method (Ind. Ped. 140).....		3
Forging (Ind. Arts 155)	2	
Hammered Metal Work (Ind. Arts 156).....		2
Architectural Drawing (Arch. 501)	3	
Descriptive Geometry (M. E. 152).....		3
Commercial Woods (For. 506).....		2
Plumbing (Ind. Arts M 1, N 1).....	2	
Drill (Military 5, 6).....	1	1
Military Science (Theo. Inst. 1, 2).....	1	1
Electives	2	2
	17	17

SENIOR YEAR

Special Methods (Ind. Ped. 170).....		3
Machine Shop (Ind. Arts 208, 209).....	2	2
Manual Training for Elementary Grades (Ind. Arts 231)	2	2
Machine Design (M. E. 205).....	2	
Applied Mechanics Lab. (Exp. E. 207).....	2	
Power and Hydraulics Lab. (Exp. E. 208).....		2
Electrical Construction (E. E. 110, 111).....	2	2
Electives	6	5
	16	16

COURSE IN MECHANIC ARTS

This is a vocational course extending through three years, during which the student devotes at least one-third of his time to shop-work and trade drawing. English, mathematics, chemistry, physics, and elementary economics are also included in order to balance the course and give it educational value.

The student is permitted to specialize in the vocational work according to his individual preferences and qualifications. The choice of work includes Cabinetmaking, Patternmaking, Machine Shop Work, Electrical Construction, Plumbing, Blacksmithing and Foundry Work.

This is not to be regarded as a preparatory course for the degree courses in engineering. Such preparation can best be obtained in the regular accredited high schools of the State. Neither is it intended that this course shall entice students away from the high schools, but that it shall fill a need not generally provided for by the secondary schools of the State.

It is the purpose of this course to assist those who expect to make their way in the world by their manual skill in various lines of activity—those who feel that they cannot afford to take a degree course in college, but desire to get some vocational training in special lines, and at the same time secure the broadening influence of education in English, mathematics, and elementary science. While it is not the primary aim to train foremen and superintendents, it is believed that students after completing the course and gaining a few years of practical experience will be able to hold positions of responsibility, or to go into business for themselves.

The shops are equipped with the latest approved machinery and are well suited to carry on these practical courses.

This work is open to students who have completed the eighth grade, or equivalent, of the common schools, and who are sixteen years of age. Those who complete the three years of work and take all of the work outlined will be entitled to a diploma. In order to secure a diploma in Patternmaking, Carpentry and Cabinetmaking, Machine Shop Practice, Electrical Construction, or Plumbing, at least two years must be devoted to the desired subject. The other year may be devoted to selected courses subject to the approval of the head of the department. A general shop course may

be taken by combining one year of Machine Shop, one year of Blacksmithing, and one year of Foundry Work; or one year of Woodworking, one year of Foundry, and one year of Machine Shop.

Three-Year Course in Mechanic Arts

	Semester	
	1st	2nd
FIRST YEAR		
Elementary Constructive English, Composition (Eng. A, B)	3	3
Algebra (Math. A, B)	5	5
History (Com. K)	2	2
Vocational Drawing (Ind. Arts A-1, B-1).....	2	2
*Shop Work (According to trade selected).....	4	4
Drill (Military, A, B).....	1	1
Gymnasium (Phys. Ed. 11, 12).....		
	17½	17½
SECOND YEAR		
Advanced Composition and Literature (Eng. C, D)....	3	3
Shop Arithmetic (Math. O).....	4	
Plane Geometry (Math. L).....		4
Trade Drawing (Ind. Arts A-2, B-2)	2	2
Chemistry (Chem. A, B).....	3	3
*Shop Work (According to trade selected)	4	4
Drill (Military C, D).....	1	1
Gymnasium Phys. Ed. 13, 14).....	½	½
	17½	17½
THIRD YEAR		
Geometry and Trigonometry (Math. T).....	4	
Elementary Industrial Problems (Com. J).....		3
Commercial Law (Com. L).....	2	
Shop Accounting (Com. F).....		2
Trade Drawing (Ind. Arts A-3, B-3).....	2	2
Physics (Phys. A, B).....	3	3
*Shop Work (According to trade selected)	4	4
Drill (Military E, F).....	1	1
Electives	2	2
	18	17

*Shop Work. The student will choose the general line of shop work which he desires to pursue from the following: Cabinetmaking, Patternmaking, Machine Shop Work, Electrical Construction, Plumbing, Blacksmithing, and Foundry Work.

SCHOOL OF MINES

The course in Mining Engineering is designed to give the student a thorough training in the essential fundamentals of the sciences of Mining and Metallurgy. The course is of such a comprehensive character, however, that a graduate may choose his life work from a varied assortment of employments. He may earn a good salary as an assayer and chemist; a land or deputy mineral surveyor; a draughtsman and designer in an engineering establishment; on the geological staffs of great railroad, mining, or exploration companies; in the land classification work of the Government Forest Service; in the Government Geological or Coast and Geodetic Surveys; in state geological surveys; in many branches of actual mining, milling, and smelting operations; or, when the requisite experience and standing have been secured, as an expert examining and consulting engineer. Scientific prospecting is also a very promising possibility.

In order to fill properly positions calling for such varied qualifications, a student's training must be unusually broad and thorough. Close application during student days and a willingness to work hard and faithfully are, then, essential prerequisites to success in mining engineering; but if the apprentice period is somewhat arduous, the work is of a very interesting nature, and the rewards, both in money and satisfaction, are unusually great.

DEGREE COURSE IN MINING ENGINEERING

	<i>Semester.</i>	
	1st	2nd
FRESHMAN YEAR		
Trigonometry, College Algebra (Math. 11, 21).....	5	
Elementary Analysis (Math. 31).....		5
General Chemistry (Chem. 100, 101).....	3	3
Mechanical Drawing (C. E. 105).....	4	
Dynamic and Structural Geology (Geol. 153).....	2	
Descriptive Geometry (M. E. 152).....		3
Plane Surveying (C. E. 232).....		4
Woodwork (Ind. Arts 105).....	2	
Blacksmithing (Ind. Arts 152).....		1
Drill (Military 1, 2).....	1	1
Gymnasium (Phys. Ed. 15, 16).....	½	½
	17½	17½

SOPHOMORE YEAR

Differential and Integral Calculus (Math. 51, 52).....	4	4
Engineering Physics (Phys. 101, 102).....	4	4
Qualitative Analysis (Chem. 301).....	5	
Quantitative Analysis (Chem. 401).....		5
Crystallograph and Blowpipe Analysis (Geol. 111).....	3	
Determinative Mineralogy (Geol. 112).....		3
Drill (Military 3, 4).....	1	1
Gymnasium (Phys. Ed. 17, 18).....	½	½
	17½	17½

	Semester	
	1st	2nd
JUNIOR YEAR		
Statics and Dynamics (M. E. 251)	5	
Strength of Materials (M. E. 252)		3
Hydraulics (I. E. 102)		3
Electrical Machinery (E. E. 402)		4
General Metallurgy (Chem. E. 411)	2½	
Historical Geology (Geol. 155)	1½	
Petrology (Geol. 131)		2
Fire Assaying (Chem. Eng. 401)	3	
Mine Surveying and Mining Law (Min. E. 212)		3
Ore Dressing (Min. E. 251)	3	
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
	17	17
SENIOR YEAR		
Matallurgical Laboratory (Chem. E. 423)	2	
Cyanidation of Ores (Chem. E. 421)	3	
Matallurgy of Lead and Copper (Chem. E. 412)	3	
Design of Mine and Mill Structures (Min. E. 241)		3
Mining Methods (Min. E. 221)		3
Mining Geology (Geol. 181)	3	
Power Equipment (Min. E. 231)		3
Mine Economics (Min. E. 222)		3
Economic Geology (Geol. 182)		3
Mine Examinations and Reports (Min. E. 223)		1
General Engineering Laboratory (Exp. E. 210)	2	
Technical English (Eng. 141)	3	
	16	16

Note—Practical Work. All students in the School of Mines are required to do not less than two months' work in mines or industrial plants allied to the course chosen, or to take Geol. 190, before entering upon their senior year.

DEGREE COURSE IN CERAMICS

Freshman and sophomore years are identical with the freshman and sophomore years of the Degree Course in Mining Engineering.

	Semester	
	1st	2nd
JUNIOR YEAR		
Statics and Dynamics (M. E. 251)	5	
Strength of Materials (M. E. 252)		3
Hydraulics (I. E. 102)		3
Electrical Machinery (E. E. 402)		4
General Matallurgy (Chem. E. 411)	2½	
Historical Geology (Geol. 155)	1½	
Petrology (Geol. 131)		2
Ceramic Chemistry (Cer. 301)	3	
Ceramic Raw Materials (Cer. 303)	3	
Raw Materials Testing (Cer. 310)		2
Ceramic Calculations (Cer. 312)		1
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
	<hr/>	<hr/>
	17	17
SENIOR YEAR		
Technical English (Eng. 141)	3	
Power Equipment (Min. E. 231)		3
General Engineering Laboratory (Exp. E. 210)	2	
Principles of Economic Geology (Geol. 181)	3	
Manufacture of Clay Products (Cer. 321)	4	
Clay Products Laboratory (Cer. 322)		3
Limes and Cements (Cer. 326)		3
Glasses, Glazes, and Enamels (Cer. 323)	4	
Ceramic Laboratory (Cer. 324)		2
Field Work and Report (Cer. 328)		1
Thesis (Cer. 330)		2
	<hr/>	<hr/>
	16	16

(See note after Degree Course in Mining Engineering.)

DEGREE COURSE IN CHEMICAL ENGINEERING

Freshman and sophomore years are identical with the freshman and sophomore years of the Degree Course in Mining Engineering.

	Semester	
	1st.	2nd.
JUNIOR YEAR		
Statics and Dynamics (M. E. 251)	5	
Strength of Materials (M. E. 252)		3
Hydraulics (I. E. 102)		3
Electrical Machinery (E. E. 402)		4
Physical Chemistry (Chem. 410)	3	
Organic Chemistry (Chem. 201)	4	3
Thermochemistry (Chem. E. 452)		3
Chemical and Metallurgical Processes (Chem. E. 431) ..	3	
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
	<hr/>	<hr/>
	17	18
SENIOR YEAR		
Chemical Technology (Chem. E. 461, 462)	4	4
Electro-chemistry (Chem. 406)	3	
Electro-metallurgy (Chem. E. 442)		3
*Approved Electives	9	9
	<hr/>	<hr/>
	16	16

(See note after the Degree Course in Mining Engineering.)

*Elective courses may be chosen in the departments of Physics and Chemistry, and the Schools of Engineering, Forestry, and Mines, upon the approval of the Dean of the School of Mines and the heads of the other departments or schools concerned.

THE SCHOOL OF COMMERCE

The School of Commerce offers two distinct courses of study; namely, (1) a four-year course leading to the degree of Bachelor of Science in Commerce; (2) a two-year vocational course leading to a Certificate of Business Proficiency. The practical side of every subject is especially emphasized, the constant aim being to train the student for service and efficiency.

THE VOCATIONAL COURSE

This course has been arranged primarily for the benefit of persons who have been unable to finish a high school course. The only entrance requirements are that the applicant must have had an eighth grade education, or its equivalent, and must be at least eighteen years of age. The student may emphasize bookkeeping and business methods, or stenography and typewriting; or he may have an opportunity to take both courses.

THE DEGREE COURSE

In the degree course all freshmen follow the same schedule; in the sophomore year, however, the student may choose as a major either accounting or secretarial studies, the latter including stenography and office practice. In the junior year, the student may further select a major course from one of the following: (1) Business Administration, (2) Economics, (3) Political Science and History, (4) Secretarial Studies. Instead of the above options, a liberal range of general electives is offered so that in the junior or senior year, the men may elect courses in Agriculture, Forestry, or Industrial Arts, while the women may elect courses in Home Economics.

DEPARTMENTS

For administrative purposes, the School of Commerce is organized into four distinct departments: (1) Business Administration, (2) Economics, (3) Political Science, and (4) Stenography and Office Training.

BUSINESS ADMINISTRATION

The distinctive work of the department of Business Administration in the School of Commerce is to train men and women for efficient business management. This includes thorough courses in the

various phases of Accounting, Auditing, Business Organization, Scientific Management, Advertising, and Salesmanship.

While the courses in Business Administration are primarily designed to fit students for the countinghouse and business office, including banking, it is found that such positions are generally only stepping stones to more advanced positions of trust and responsibility. A large percentage of the commercial students eventually engage in business of their own.

The School of Commerce has taken a leading part in developing courses in business methods especially adapted to the farm, the home, and cooperative enterprises. Such courses are given not only in residence but also by correspondence.

When it is remembered that every vocation has its business side, and that this phase of all pursuits is receiving increasing attention, it is apparent that the avenues for employment and the chances for promotion by the really competent business expert are almost unlimited. As a preparation for law or public accounting, this course, combined with economics and political science, is especially attractive. A large percentage of the graduates in commerce find employment as teachers of commercial subjects in state and private schools; to them the courses in business administration are very important.

ECONOMICS

The work of this department serves a three-fold purpose:

(1) *The training of men and women for citizenship.* Every citizen has business relations requiring a knowledge of the fundamental principles of political economy. The necessity of such knowledge is especially felt in a democracy where every man and woman has the right to vote, and is called upon to mold legislation directly. The basis for intelligently exercising this paramount duty of citizenship can only be supplied by a training in economics and sociology, the problems of which form the subject matter of all legislation.

(2) *To provide courses supplementary to the various branches of applied science.* To the agricultural college belongs the special task of developing the field of Agricultural Economics and Rural Sociology. It is the aim of this department to provide the necessary training for teachers in these subjects, to prepare specialists for research work in economic and social surveys of rural communities,

and to equip those who will make a life work of organizing farmers' associations for the more economical conduct of the business side of farming.

POLITICAL SCIENCE

The commercial work of the department of Political Science trains in the elements of business law, and prepares the student for ordinary business transactions. Politically, the department instructs in the composition and operation of our government, its relations with other nations, and indicates the need and field for individual participation in governmental affairs.

STENOGRAPHY AND OFFICE TRAINING

The courses offered by the department of Stenography and Office Training are for four classes of students: (a) those desiring a thorough training as stenographers and typists; (b) those desiring to go still further into the field of court reporting and secretarial training; (c) those desiring to enter the teaching profession; and (d) those commercial teachers desiring advanced training.

The ground covered by the special subjects offered by this department is as follows: Stenography and Typewriting, two years; Court Reporting, one year; Secretarial Training, one year; and Method of Teaching Commerce, one year.

Two-Year Business Course in Commerce

	FIRST YEAR	
	1st	2nd
Elementary Constructive English and Composition (Eng. A, B)	3	3
U. S. History (Hist. D).....	3	
Civics (Com. K)		3
Stenography (Com. 400, 401)	4	4
Commercial Arithmetic (Math. M, N)	3	3
Bookkeeping (Com. B, C)	3	3
Office Training and Typewriting (Com. R, S)	2	2
Penmanship (Com. U, V)	2	2
Gymnasium (Phys. Ed. 11, 12)	$\frac{1}{2}$	$\frac{1}{2}$
Drill (Military A. B)	1	1
	<hr/>	<hr/>
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

	SECOND YEAR	
	1st	2nd
Advanced Composition and Literature (Eng. C, D).....	3	3
Business English (Eng. M)	3	
Accounting (Com. 100, 101)	3	4
or Stenography (Com. 402, 403)	4	4
Commercial Geography (Com. 200)	3	
History of Commerce (Com. 205)		3
Commercial Law (Com. L, M)	2	2
Technical English (Eng. N)		3
Penmanship (Com. W, X)	1	1
Gymnasium (Phys. Ed. 13, 14)	½	½
Drill (Military, C D)	1	1
	<hr/>	<hr/>
	16½	17½

DEGREE COURSE IN COMMERCE

	FRESHMAN YEAR	
	1st	2nd
Modern English Prose (Eng. 81, 82)*.....	3	3
Science (Chem. 100, 101, or Phys. 1, 2, or Bact. 101, or Zool. 204, or Bot. 20)	3	3
Accounting (Com. 100, 101).....	3	4
Advanced Arithmetic (Math. 10)	3	
Contemporary American History (Hist. 62)		3
Commercial Geography (Com. 200)	3	
History of Commerce (Com. 205)		3
Library Practice (Libr. 1)	½	
Hygiene (Phys. Ed. 10)	½	
Gymnasium (Phys. Ed. 15, 16)	½	½
Drill (Military 1, 2)	1	1
	<hr/>	<hr/>
	17½	17½

*Or French, German, Spanish (Mod. Lang. 103, 104; 203, 204; 303, 304).

	<i>Semester</i>	
	1st	2nd
SOPHOMORE YEAR		
Technical English (Eng. 142).....	3	
Practical Sociology (Com. 250)*.....		3
Economic History of United States (Com. 206)	3	
Principles of Economics (Com. 210)		3
Advanced Commercial Law (Com. 300, 301)	3	3
Accounting (Com. 102, 103) or Stenography (Com. 400, 401)	4	4
Modern European History (Hist. 40)		3
History of Oregon (Hist. 70)	3	
Gymnasium (Phys. Ed. 17, 18)	½	½
Drill (Military 3, 4)	1	1
	17½	17½
JUNIOR YEAR		
Money and Banking (Com. 230)	3	
Labor Problems (Com. 213)**		3
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Business Organization and Management (Com. 110)** 3		
Advertising and Selling (Com. 112)		3
Drill (Military 5, 6)	1	1
Military Science (Theo. Inst. 1, 2)	1	1
Electives †	6	6
	17	17
SENIOR YEAR		
Public Finance (Com. 233)	3	
Transportation (Com. 240)		3
Comparative Study of Governments (Com. 325).....		3
International Relations (Com. 302)	3	
Electives (see groups)	10	10
	16	16

*Or Modern Language continued. Credit will not be given for less than two years in any modern language.

**Students desiring formal training must substitute School Management (Ind. Ped. 130) for Labor Problems and Psychology. (Ind. Ped. 101) for Business Organization and Management.

†Students who elect Stenography in the sophomore year must take eight credits of advanced stenography in the junior year.

SUGGESTED ELECTIVE GROUPS

While the student may choose other subjects than those enumerated below, he is strongly urged to adopt one of the suggested groups.

Group 1

JUNIOR YEAR

Semester
1st 2nd

Commercial Pharmacy (Phar. 160, 161)	3	3
Practical Public Speaking (Eng. 105, 106)	3	3
National Vitality (Com. 254)	1	
Journalism (Eng. 301)	1	
Bibliography (Com. 414)		1
	—	—
	8	7

SENIOR YEAR

Accountancy Problems (Com. 105)	3	
Public Accounting and Auditing (Com. 106)		3
General Psychology (Ind. Ped. 101)	3	
History of Education (Ind. Ped. 120)		3
Economic Organization of Agriculture (Com. 264)....	3	
Insurance (Com. 235)		3
Thesis (Com. 111)	1	1
	—	—
	10	10

Group 2

JUNIOR YEAR

American Literature (Eng. 71, 72)	3	3
or Modern Language.		
Cooperation (Com. 260)		3
Science	3	
National Vitality (Com. 254)	1	
Bibliography (Com. 414)		1
	—	—
	7	7

	<i>Semester</i>	
	1st	2nd
SENIOR YEAR		
Accountancy Problems (Com. 105)	3	
Public Accounting and Auditing (Com. 106)		3
Insurance (Com. 235)		3
Practical Public Speaking (Eng. 105)	3	
General Psychology (Ind. Ped. 101)	3	
History of Education (Ind. Ped. 120)		3
Thesis (Com. 111)	1	1
	—	—
	10	10

Group 3

JUNIOR YEAR		
History of English Literature (Eng. 61, 62)	3	3
Economic Organization of Agriculture (Com. 264)	3	
Insurance (Com. 235)		3
National Vitality (Com. 254)	1	
Bibliography (Com. 414)		1
	—	—
	7	7

SENIOR YEAR

American Literature (Eng. 71, 72)	3	3
History of the British Empire (Hist. 52)	3	
American Diplomatic History (Hist. 80)		3
Accountancy Problems (Com. 105)	3	
Public Accounting and Auditing (Com. 106)		3
Journalism (Eng. 301)	1	
	—	—
	10	9

Group 4

JUNIOR YEAR		
Stenography (Com. 402, 403)	4	4
Office Training for Stenographers (Com. 412)	2	
Secretarial Training for Stenographers (Com. 413)		2
National Vitality (Com. 254)	1	
Bibliography (Com. 414)		1
	—	—
	7	7

OREGON AGRICULTURAL COLLEGE

	Semester	
	1st	2nd
SENIOR YEAR		
Special Methods (Ind. Ped. 180, 181) or Expert.Speed Course (Com. 404, 405)	2	2
General Methods (Ind. Ped. 140)	3	
Business Organization and Management (Com. 110)....	3	
History of Education (Ind. Ped. 120)		3
Labor Problems (Com. 213)		3
Public Speaking (Eng. 103, 104 or 201, 202)	2	2
	10	10
Group 5		
JUNIOR YEAR		
Soils (Agron. 101)	3	
Crops (Agron. 201)		3
Approved Electives	4	4
	7	7
SENIOR YEAR		
Stock Judging (An. Husb. 1)	2	
Live Stock Managing (An. Husb. 2)		3
Plant Propagation (Hort. 105)		2
Orchard and Garden Practice (Hort. 103)	2	
Approved Electives	6	5
	10	10
Group 6		
JUNIOR YEAR		
Food Preparation (D. S. 101)	3	
Food Preparation (D. S. 102)		3
Approved Electives	4	4
	7	7
SENIOR YEAR		
Dressmaking (D. A. 201)	3	
Dressmaking (D. A. 202)		3
Approved Electives	7	7
	10	10

DEPARTMENT OF PHARMACY

It is now so generally recognized as to need but passing comment, that in order to attain to any degree of success in a scientific profession, it is necessary to be thoroughly trained in the science upon which the profession is based.

Pharmacy is one of the applied sciences; the pharmacist has constant use for a knowledge of the sciences of chemistry, physics, bacteriology, and botany. It is therefore of the utmost importance to the individual who has decided to enter pharmacy that he begin properly in the matter of an education. The institution in which the study of the natural sciences is prominently featured, is without doubt the one best qualified to afford him the training suited to his particular needs. In this connection, attention is directed to colleges of the land-grant or agricultural type. Financed by State and Federal Government, the material welfare of the institutions of this class is assured. With unusual facilities in the way of laboratories and equipment, and with an instructional force selected especially for the purpose, they are prepared to offer exceptional advantages for mental and manual training in those professions having for their foundation a knowledge of the sciences.

In recognition of the fitness of conditions and of an apparent need for such instruction, the Oregon Agricultural College, in 1898, added to its curricula a course in Pharmacy, the purpose of which is to afford the young men and women of the State an opportunity of obtaining a thorough training in the theoretical and practical features of this profession.

The course comprehends instruction in class and lecture room, extensive practice in the laboratory, and excursions afield in botany. The value of laboratory practice is fully appreciated; it is in this connection that facts mentioned in textbook and lecture are brought to the student's notice in such a way that their importance is emphasized, their significance demonstrated, and the facts themselves fixed in mind. In the pharmaceutical laboratories, the student becomes experienced in the manufacture of medicinal preparations and in filling prescriptions. In the laboratories of chemistry, botany, bacteriology, physics, and biology, he gains valuable experience in connection with each of these related sciences. It is

expected that owing to the nature and extent of the instruction given, graduates of this course will be qualified to assume positions of trust and responsibility in the professional world. Not only is this training of benefit to the pharmacist, but it forms an ideal pre-medical course.

The enactment of the Pure Food and Drug Law of 1906 has opened a new and attractive field for those who are proficient in chemical and pharmaceutical knowledge. Laboratories for the examination of food and drug samples are being established in the various large cities of the country by the Federal Government. Positions in these laboratories are in many instances held by graduates in pharmacy.

A four-year course, leading to the degree, Bachelor of Science in Pharmacy, is offered.

DEGREE COURSE IN PHARMACY

FRESHMAN YEAR	<i>Semester</i>	
	1st.	2nd.
Modern English Prose (Eng. 81, 82)	3	3
General Chemistry (Chem. 100, 101)	3	3
General Zoology (Zool. 101, 102)	3	3
Pharmaceutical Botany (Bot. 70, 71)	3	4
Modern Language (French, German, or Spanish).....	3	3
Library Practice (Libr. 1)	$\frac{1}{2}$	
Hygiene (Phys. Ed. 10)	$\frac{1}{2}$	
Drill (Military 1, 2)	1	1
Gymnasium (Phys. Ed. 15, 16)	$\frac{1}{2}$	$\frac{1}{2}$
	17 $\frac{1}{2}$	17 $\frac{1}{2}$

	<i>Semester</i>	
	1st.	2nd.
SOPHOMORE YEAR		
Qualitative Analysis (Chem. 300)	3	
Organic Chemistry (Chem. 201)		3
Physiology and Anatomy (Zool. 201, 202)	3	3
Nomenclature (Phar. 100, 101)	2	2
Principles of Economics (Com. 210)		3
Business English (Eng. M)	3	
Commercial Law (Com. 306)	3	
Pharmacy Accounting (Com. 124)		2
Modern Language (French, German, or Spanish).....	3	3
Drill (Military 3, 4)	1	1
Gymnasium (Phys. Ed. 17, 18)	½	½
	<hr/>	<hr/>
	18½	17½
JUNIOR YEAR		
General Pharmacy (Phar. 110, 111).....	3	5
Pharmacognosy (Phar. 130, 131)	3	3
Therapeutics (Phar. 120)	2	
Quantitative Analysis (Chem. 400)	3	
Physiological Chemistry (Chem. 409)		4
Composition of Addresses (Eng. 103, 104)	2	2
National Government (Com. 320)	3	
State and Municipal Government (Com. 322)		3
Drill (Military 5, 6)	1	1
	<hr/>	<hr/>
	17	18
SENIOR YEAR		
*American Literature (Eng. 71, 72)	3	3
Pharmacy Bacteriology (Bact. 201, 202)	3	3
General Pharmacy (Phar. 112)	2	
Materia Medica (Phar. 140, 141)	3	3
Prescription Practice (Phar. 150, 151)	3	6
Military Science* (Theo. Inst. 1, 2)	1	1
Electives, Approved	2	1
	<hr/>	<hr/>
	17	17

*Note.—With the consent of the head of the department, certain other subjects may be elected in place of those in regular course indicated with an asterisk, thus *.

DEPARTMENTS OF INSTRUCTION

SCHOOL OF AGRICULTURE

AGRONOMY

PROFESSOR SCUDDER
ASSOCIATE PROFESSOR HYSLOP
ASSISTANT PROFESSOR POWERS
ASSISTANT PROFESSOR LARSON
MR. BRACKER
MR. COOTER

Agronomy is the science of the fields and the crops of the fields. Instruction in this science is offered by the department of Agronomy in the following subjects:

(a) Soils: Their origin, structure, fertility, cultivation, and improvement.

(b) Field Crops: Their history, growth, culture, improvement, and value.

(c) Irrigation and Drainage: The principles and methods of land drainage; the handling of land under irrigation.

(d) Farm Mechanics: The structure and machinery of the farm.

(e) Farm Management: Practical methods and systems for the operation of the farm under different conditions as a permanent money-making business.

In every subject, instruction is accomplished equally through class room, laboratory, and field work; theory is checked by practice. For the latter methods of instruction, the well-equipped laboratories of this department, the various soil conditions, numerous experimental crops, and extensive structures of the Experiment Station farms, offer excellent facilities. The large and newly equipped laboratories for the courses in Field Crops and the courses in Soils, in the Agronomy building, and for Farm Mechanics in the Farm Mechanics building, are not excelled by those of any institution in the west.

The one-year courses in Agronomy deal with the practical application of the underlying principles of agriculture to specific conditions—aiming to give the less prepared student as much information as possible in a short time concerning those practices most vital to successful farming—to send him back to the farm better prepared to cope with its problems.

The object of the collegiate courses in this department is to give the student such mastery of all the subjects relating to the soil, field crops, rural engineering, or farm management, as will help prepare him for the highest type of practical farming or farm management; or for a successful career in professional agriculture, such as is found in the U. S. Department of Agriculture, in the State Experiment Stations and Agricultural Colleges, or in Agricultural Extension work.

The farms of the Northwest offer even greater opportunities for men trained in knowledge of the soil, in the growing of crops, in irrigation and dry farming, and in farm management.

Agronomy 101 and 201 are prescribed for all collegiate agricultural students. The succeeding courses are the majors and minors offered to all upper classmen in Agriculture.

Those who elect Agronomy for their major work, may take any one of the following courses:

- (a) General Agronomy.
- (b) Soils.
- (c) Field Crops.
- (d) Irrigation Farming.
- (e) Farm Management.

Students majoring in Agronomy should confer with the head of the department to arrange for taking any one of the specialized courses named. Liberal elections in other departments are permitted wherever advisable.

One-Year Courses

A. FARM SOILS. A brief history of the origin of soils; the fertility of soils; the most valuable chemical constituents; their exhaustion and replenishment; the most important physical factors; their deterioration or improvement. The physical components; their relative value and amounts in soil mixtures. Practice in judging the chief soil types of Oregon. The effects upon soils of tillage, manuring, crop rotation, drainage, and irrigation.

One-year course; first semester; 3 credits; 2 recitations; 1 laboratory period.

B. FARM CROPS. A brief consideration of the adaptability, relative value, and best methods of growing the chief cereal, grass, legume, and succulent crops of Oregon for grain, pasture, meadow, soiling, silage, or seed purposes. Investigation of the sources of crop seed and the importance of seed purity and germinating power, with methods of testing seeds. Eradication of the most common weed enemies of field crops.

One-year course; second semester; 3 credits; 2 recitations; 1 laboratory period.

C. FARM MACHINES AND ENGINES. A general course in Farm Mechanics. The more important field machines and gasoline engines are studied. Farm buildings, concrete work, rope work, etc., are also given attention.

One-year course; first semester; 3 credits; 1 recitation; 2 laboratory periods.

D. PRACTICAL FARM DRAINAGE. The value of drainage, and the methods and cost of installing drainage systems under different soil and land conditions, district drainage, etc.

Elective in one-year course; second semester; 2 credits; 2 recitations; 1 laboratory period.

E. DRY FARMING PRACTICES. Soil and climatic conditions, and tillage and cropping methods as affecting successful dry farming practices.

Elective in one-year course; first semester; 2 credits; 2 recitations.

F. IRRIGATION FARMING PRACTICES. The most effective methods of handling irrigation waters and the different crops under irrigation, and the cost and profits thereof. Organization as affecting water use and control in irrigated districts.

One-year course; second semester; 2 credits; 2 recitations.

G. PRACTICAL FARM MANAGEMENT. The chief factors bearing on successful farming, such as the type of farming, factors of size, use of capital, handling of labor, proper equipment, cropping systems, marketing, etc., are given consideration from the practical standpoint.

One-year course; second semester; 2 credits; 2 recitations.

DEGREE COURSES

Soils

101. **SOILS.** Fundamental facts concerning the origin and formation of soils; soil moisture, heat and air; common soil processes, physical and chemical; plant foods and soil fertility; tillage, crop rotation, and manuring; the more important effects of bacteria on soil fertility; the benefits derived from drainage and irrigation; common farm machines, their use and care. The course will close with a brief survey of the agriculture of the State. Instruction will be given through lectures and notes, text and recitation, laboratory, and field observations.

Freshman year; first semester; 3 credits; 2 recitations; 1 laboratory period.

102. **SOIL PHYSICS.** Advanced study of the geology of soils, with their origin, formation, physical composition, and classification. Soil moisture and moisture movements and conservation. The various physical processes of the soil—surface tension, osmosis, capillarity, diffusion, etc. The effects of the various crops and the different methods of culture upon the texture, aeration, temperature, and moisture of the soil, and the resulting alteration in crop producing power. The influence of washing, drainage, and irrigation upon soils. Work in the laboratory will consist of the determination and comparison of such physical properties in the various soil types as, specific gravity, water retention, capillarity, organic content, etc.; the physical effect of mulches, rotations, and cropping; soil sampling and judging; the mechanical analysis of soils.

Elective; junior year; second semester; 4 credits; 2 recitations; two laboratory periods.*

103. **SOIL PHYSICS. ELECTIVE.** Similar to 102, but shorter, dealing with the more important phases of the subject. Designed as an elective for agricultural students unable to take the regular course in Soil Physics, and for students in Irrigation Engineering.

Elective; junior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

104. **SOIL FERTILITY.** The effect of the various crops upon the fertility of the soil. The maintenance or improvement of fertility by the use of fertilizers and manures. The composition and value

*By special arrangement students outside the Agronomy department may take this as a 3 credit course.

of the different fertilizers and manures. The effect of different rotations upon fertility. The fertility of the different types of Oregon soils; their plant food requirements and comparative values; methods of improvement of each. The effects of different systems of farming. Analysis, field plot, wire basket, and pot culture investigations. By arrangement, where necessary, the laboratory work may be omitted and the lecture work only, taken.

Prerequisite: Agronomy 102.

Elective; senior year; first semester; 5 credits; 3 recitations; 1 laboratory period.

105. DRY FARMING TILLAGE. One of the special courses given in Dry Farming, others of which are described under the Field Crops section as Semi-Arid Crop Production, and under the Farm Management section as Semi-Arid Farm Management. This course takes up the advanced study of the subject of moisture conservation, special tillage methods and machinery, soil and climatic conditions, etc., in dry farming regions, with particular reference to Oregon and the Northwestern states.

Prerequisite: Agronomy 102 or 103.

Elective; junior or senior year; second semester; 2 credits; 1 recitation; 1 laboratory period.

106. SOIL SURVEYING. For the advanced student who wishes to specialize in soils for service in the state experiment stations or the Government Bureau of Soils. The course includes some advanced study of the classification of soils and soil areas of the United States, of Oregon, and of the Northwest, but most of the time is devoted to work in the field, making regular and completed soil surveys of assigned areas, with a report thereon.

Prerequisite: Agronomy 102 or 103.

Elective; senior year; second semester; 2 credits; 2 laboratory periods.

111. ADVANCED SOIL WORK. The advanced student specializing in soils may study the various soil types of Oregon through mechanical analysis, and other physical tests; may undertake field work in soil surveying and mapping; or, through wire basket, pot culture, and field plot tests, may determine the effects of various systems of cropping, or fertilizing, or of soil bacteria, upon soil fertility.

Prerequisites: Agronomy 101, 102, and 104.

Elective; senior or graduate year; either semester or both; 2 to 5 credits.

Field Crops

201. CROP PRODUCTION. The study of the chief field-crop seeds of Oregon; wheat, barley, oats, corn, vetch, clover, alfalfa, grasses, etc., their vitality, germination, preservation, growth and reproduction; preliminary judging; seed bed and seeding; climate and soil; culture and rotation; weed enemies, their prevention and eradication; harvesting, marketing, and profits; distribution and value to the State; methods of crop improvement. Class room, laboratory, and field work.

The course in Agriculture; freshman year; second semester; 3 credits; 2 recitations; 1 laboratory period.

202. CEREAL CROPS. A study of grains with special reference to those of Oregon, and the varying conditions of soil and climate under which they are grown; the culture and rotation best adapted to each; the various methods of harvesting and storage; the judging of grain; grading for market; markets and uses of each crop; improvement of crop seed; plant breeding.

Junior year; first semester; 4 credits; 2 recitations; 2 laboratory periods.

203. FORAGE CROPS. A less technical study of the legumes, grasses, and succulent crops, the course being especially adapted to the needs of the students in Animal and Dairy Husbandry. The adaptability and value of each of the forage plants as pasture, hay, soiling, or silage crops, together with the practical methods of growing each and the planning of rotations that will supply continuous green feed, will be fully discussed.

Elective; junior year; first semester; 2 credits; 2 recitations.

204. CROP IMPROVEMENT. A course dealing with the practical problems in the improvement of the quality and yield of the more important field crops, a knowledge of which would be necessary for the successful Oregon crop growers, especially those engaged in seed production. The different systems of breeding and the general principles of selection will be briefly discussed, and the best planting and cultural methods for the breeding plots studied. The work will be largely in the laboratory and field.

Junior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

205. **AGROSTOLOGY.** A study of the grasses, legumes, and other forage crops. Methods of seeding for meadow, pasture, cover and soiling crops; maintenance of meadows and pastures; harvesting, curing, storing, baling, and using the various meadow crops; grazing, siloing, and soiling. The comparative structure and identification of the different forage plants, their adaptability to different conditions of soil and climate. Examination of commercial seed for viability and purity. The identification of weed seed. The production of forage crop seed.

Elective; senior year; first semester; 4 credits; 3 recitations; 1 laboratory period.

206. **ADVANCED CROP BREEDING.** A study of the laws, theories, and known facts concerning heredity, variation, and evolution in plant life. The causes of variation, behavior of characters in transmission, and the possibilities of inducing stability of character and establishing desirable types, will be discussed with special reference to field-crop improvement.

Prerequisite: Agronomy 204.

Senior year; second semester; 2 credits; 2 recitations.

207. **SEMI-ARID CROP PRODUCTION.** A course for students making a special study of Dry Farming or Irrigation Farming. Advanced work with the grain and forage crops adapted to the semi-arid regions of the United States, and the Northwest in particular. The course embraces the special methods of seeding, cultivating, and harvesting; comparison of water requirements, drouth and alkali resistance; special methods of seed production and plant breeding, etc., as applied to semi-arid production.

Prerequisite: Agronomy 202 and 205.

Elective; senior year; second semester; 1 credit; 1 recitation.

208. **SEED TESTING.** A course for students preparing themselves for positions as seed experts in Government, State, or commercial seed testing laboratories. The work accomplished by seed testing laboratories; the various methods and apparatus employed; details and operations of the pure seed laws of the different states. Most of the time of the student, however, is devoted to actual seed testing work, following the regulation Government methods and using the regulation equipment, forms, etc. Students expecting

to take this course should consult with the department of Agronomy at the beginning of their junior year, so that certain preparatory work in Agronomy and Botany may be taken prior to the course in Seed Testing.

Prerequisite: Courses in Agronomy and Botany during junior year, to be arranged by consultation.

Elective; senior year; first semester; 2 credits; 2 laboratory periods.

209. **ADVANCED SEED TESTING.** A continuation of the preceding course, consisting largely of actual work required in the Seed Testing laboratory to qualify the student for successful work as a seed expert.

Prerequisite: Courses in Agronomy and Botany during junior year, to be arranged by consultation.

Elective; senior year; second semester; 2 credits; 2 laboratory periods.

210. **POTATO GROWING.** Complete discussion of the potato crop in this country and abroad. The literature of this interesting subject is fully covered. Especial study is given to varieties, growing methods, harvesting, storing, marketing, and manufacturing, of the Oregon and Northwest potato crop. Seed selection, potato exhibiting and scoring, and potato statistics are given attention.

Elective; senior or graduate year; first semester; 1 credit; 1 recitation.

211. **ADVANCED CROP WORK.** In this subject, a complete study may be made of some special crop in which the student is interested, or on which information is lacking. Methods of field experimentation may be compared and carried out; or plant breeding theories and their practical use in commercial seed production may be made the subject of investigation or preparation for expert seed testing taken up.

Aside from these phases of advanced crop study, special one-hour lecture courses are offered (to groups of not less than five students) in each of the following specific subjects: Sugar Beets; Hops; Legume Seed Production.

Elective; senior or graduate year; first or second semester or both; 1 to 5 credits.

Drainage and Irrigation

301. **LAND DRAINAGE.** The history of drainage; road, field, and sanitary drainage on the farm; the different systems of drainage; methods of locating, installing, operating, and maintaining drainage conduits; cost, efficiency, and profits; the effect on crops and soil; laws governing. Lectures, notes, readings, and field work.

Elective; junior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

302. **IRRIGATION FARMING.** Methods of obtaining, distributing, and conserving irrigation waters. Handling of different crops under irrigation. Cost and profits thereof, and duty of water in various districts of Oregon. Water rights and irrigation codes. Field and laboratory studies of irrigable quantities of different soils, laying out of irrigation systems, and field examinations, where possible, of some of the largest projects in the State.

Prerequisites: Agronomy 102 and 301.

Elective; junior or senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

303. **CLIMATOLOGY.** Practical meteorology; observing and recording local weather and forecasting; a study of the climate of Oregon and the effect of climate upon agriculture. Class room and laboratory work.

Elective; junior or senior year; second semester; 1 credit; 1 laboratory period.

304. **ADVANCED LAND DRAINAGE.** A study of drainage problems and conditions in the field. The actual surveying, laying out, draughting of plans, estimation of cost, and installation of drainage systems at different points in the State, is required of students taking this course. A complete report of the organization of a drainage district is prepared by each class.

Prerequisites: Agronomy 301 and 102, and C. E. 231 and 236.

Elective; senior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

305. **IRRIGATION INSTITUTIONS.** A brief history of the development of water laws. Riparian rights and irrigation codes in the different states, particularly in the Northwest and Oregon. Recla-

mation and other Government and State land acts affecting irrigation development. Organization and administration of irrigation districts and projects; of water users' associations, etc.

Elective; senior year; first semester; 2 credits; 2 recitations.

306. IRRIGATION FARMING ELECTIVE. Special course for Irrigation Engineering students or other students who cannot take the regular course in Irrigation Farming the first semester. This course deals with the handling of irrigation water after it reaches the farm, and of the different crops under irrigation. The irrigable quality of different soils, the duty of water in various districts of Oregon, and water rights and irrigation codes from the standpoint of the farmer, are important features of the course.

Elective; junior or senior year; second semester; 2 credits; 2 recitations.

311. ADVANCED DRAINAGE AND IRRIGATION WORK. Under this head the student who has completed the courses offered may take up further study of special problems in either subject, such as the drainage of alkali lands, drainage against seepage, study of water table fluctuations, etc.; or field studies of the irrigation of a certain crop region, conservation of irrigation waters, effect of irrigation on soil moisture conditions, etc.

Prerequisites: Agronomy 102, 301, and 302 or 304, and C. E. 231 and 236.

Elective; senior or graduate students; either semester or both; 2 to 5 credits.

Farm Mechanics

401. FIELD MACHINERY. A detailed and comparative study of plows, harrows, rollers, packers, cultivators, seed cleaners, drills, mowers, rakes, binders, and manure spreaders. Factors having to do with the intelligent selection, use, and care of these machines are emphasized. Practical work in assembling, testing, and operating some of the more important field machines. Practice in splicing ropes, and tying useful knots and hitches.

Elective; junior year; first semester; 2 credits; 1 recitation; 1 laboratory period.

402. FARM POWER MACHINERY. Special study of the gasoline engine, its construction and operation, with practice in adjusting, .

testing, and trouble hunting. Feed grinding and cutting machinery, pumps and hydraulic rams. Pipe fitting, babbiting, soldering, belt lacing, and valve grinding.

Elective; junior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

403. FARM MOTORS AND TRACTORS. Study of gasoline and steam tractors. Practice in handling and operating. Gasoline tractor accessories, such as lubricators, carburetors, ignition system, etc., are especially considered, as is also valve setting on steam engines. Electricity in its adaptation to farm operations, and to threshing and pumping machinery, are given attention.

Prerequisites: Agronomy 401 and 402.

Elective; senior year; first semester; 3 credits; 1 recitation; 2 laboratories.

404. FARM STRUCTURES. Farm buildings, fences, and roads. The design and construction of farm houses, barns, granaries, and silos; their arrangement and cost. The various kinds of fencing; cost, construction, and quality. Road building, and maintenance, and cost of same. The laboratory will include practical work in concrete construction and the rough sketching of building plans and specifications.

Elective; junior year; first semester; 2 credits; 1 recitation; 1 laboratory period.

405. ORCHARD MACHINERY. The construction, proper adjustment, operation, and efficiency of the machinery most commonly used in orchard work—tillage and seeding implements, gasoline engines, spray pumps, etc. Practice work also for those that require it, in plowing, methods of hitching, etc. This is a shorter course in Farm Mechanics especially adapted to the needs of horticultural students who cannot take the regular courses in Farm Mechanics. The work is given altogether from the mechanical standpoint—not from the standpoint of the horticultural applications or uses of the various machines.

Elective; junior or senior year; second semester; 2 credits; 2 laboratory periods.

406. FARM PRACTICE. A field practice course for students who have had no farm experience. All the time is spent in the field

in actual practice work in carrying on ordinary farm operations, such as plowing and other tillage operations, seeding and harvesting work of different sorts, etc.

Elective; any year; first semester; 1 credit; 1 laboratory period.

407. FARM PRACTICE. Continuation of Course 406.

Second semester; 1 credit; 1 laboratory period.

411. ADVANCED FARM MECHANICS. For the student with inclinations toward mechanics, a wide field is offered in advanced work in testing the efficiency and cost of running various types of farm power machines and engines; or of becoming expert on harvesting machinery; or in the designing of a complete series of farm buildings or in practical work on cement construction for farm purposes, etc.

Elective; senior or graduate years; either semester or both; 2 to 5 credits.

Farm Management

501. WEED ERADICATION. A course designed for those specializing in crop production, dealing with the best farm practices of extermination of the more noxious or persistent weeds common to the United States, and particularly Oregon.

Elective; junior or senior year; first semester; 1 credit; 1 recitation.

503. SEMINAR. The preparation and discussion of papers or demonstrations on subjects of especial Agronomic interest. Inquiry into the development of different phases of the science at home and abroad. Joint fortnightly meetings, open to all agricultural students.

Junior year; second semester; 1 credit; 1 recitation.

504. SEMINAR. Senior year; second semester; 1 credit; 1 recitation.

505. FARM MANAGEMENT. A study of the various systems of extensive, intensive, and mixed farming, and the conditions under which each prospers or fails; methods of successful farmers; the application of business methods to farm operations; farm capital; farm labor; economic management of fields, work, stock, structures, crops, and machines; markets and marketing; relation of farming to other industries.

Elective; senior year; second semester; 3 credits; 3 recitations.

507. SEMI-ARID FARM MANAGEMENT. A study of the farm management problems of the dry farmer and irrigation farmer, and the preparation of management plans dealing with fertility, rotations, equipment, labor distribution, forms of production, marketing, etc., as adapted to semi-arid conditions. A special feature of this course, when circumstances permit, will be a field excursion into the dry farming and irrigated sections of Oregon.

Elective; senior year; second semester; 1 credit; 1 recitation.

511. ADVANCED FARM MANAGEMENT. There is a rapidly growing demand for men of special knowledge in the management of farms, or of farming areas of distinct types, where ordinary methods of crop production, crop rotations, and profit making do not suffice. In this course advanced study is made of different farming systems, or the management of special types of farming, such as dry land or irrigated areas, swamp or dyked lands, etc.

Elective; senior or graduate year; either semester or both; 2 to 5 credits.

ANIMAL HUSBANDRY

PROFESSOR POTTER

ASSISTANT PROFESSOR KENNEDY

ASSISTANT PROFESSOR REYNOLDS (Ext.)

MR. SAMSON

MR. NELSON

The course in Animal Husbandry is planned to fit the student for the actual raising of live stock on the farm, so that he may produce the highest grade of stock in the most economical and business-like manner. The student is thoroughly grounded in the underlying principles in order that he may successfully continue his study after leaving school, but the practical details are thoroughly treated and a special effort is made to keep the students in close touch with the financial phases of the industry. Students who take this work as their specialty are not expected to devote their entire time to live stock; but, on the contrary, to familiarize themselves with crop production, soil fertility, and other phases of general Agriculture. They are expected also to study English, Economics, Commercial Law, and kindred subjects, all of which are so essential in the training of the young man who expects to

become not only an up-to-date business stockman, but a good, useful citizen.

A. **STOCK JUDGING.** A thorough drill in the judging of all kinds of farm animals, accompanied by textbook and lecture work on types and breeds of live stock.

First semester; 2 credits; 3 laboratory periods.

B. **FEEDING AND MANAGEMENT.** The practical details of the feeding, care, and management of all kinds of live stock, with special reference to practices common in the Northwest.

Second semester; 5 credits; 4 recitations; 1 laboratory period.

E. **ELEMENTS OF STOCK FEEDING.** This course gives the students a working knowledge of the elementary principles of stock feeding, and familiarizes them with the methods of balancing rations, with feeding standards, and with nutritive ratios.

First semester; 2 credits; 2 recitations.

1. **STOCK JUDGING.** The various types of farm animals are studied by score card and comparative methods, and the student is made familiar with the desirable and undesirable types of beef and dairy cattle, sheep, swine, and horses.

Freshman year; first semester; 2 credits; 3 laboratory periods.

2. **LIVE STOCK MANAGEMENT.** The practical details of the care and management of live stock, stabling, grooming, sanitation, practical feeding, and kindred details of live stock farming, all with especial reference to Oregon conditions.

Sophomore year; second semester; 3 credits; 2 recitations; 1 laboratory period.

6. **PRINCIPLES OF BREEDING.** The principles of breeding as related to the development of our domestic animals. Among the topics discussed are variation, transmission of variations and modifications, fecundity, inbreeding, crossing, and like topics.

Senior year; second semester; 3 credits; 3 recitations.

7. **ANIMAL NUTRITION.** The chemical and physiological principles of animal nutrition, including digestion, assimilation and metabolism; the composition of feed stuffs, and the function of the various classes of nutrients when taken into the animal body. Special attention is devoted to nutritive ratios, feeding standards, compounding rations, and the general significance of the chemical composition and energy ratio of the feeds.

Prerequisites: Chemistry 500 and 501.

Senior year; first semester; 2 credits; 2 recitations.

13. **RESEARCH WORK.** The student is expected to select some line for individual investigation, either by library methods or otherwise. The object is: first, to allow the student to study some particular subject in which he is especially interested; and, second, to give him training in working out problems for himself, such as he will have to do after leaving school. This course is open only to those who are taking Animal Husbandry as their major, or who have taken practically all of the regular courses in Animal Husbandry.

Elective; senior year; second semester; credits according to arrangement.

16. **ADVANCED STOCK JUDGING.** Practical judging of all kinds of live stock, with occasional trips to fairs and stock farms. Judging teams for the Pacific International Stock Show will be chosen for the most part from the class.

Prerequisites: At least two semesters of stock judging.

Senior year; first semester; 3 credits; 3 three-hour laboratory periods.

18. **SEMINAR.** Weekly meetings are held in which papers on Animal Husbandry subjects are read and discussed. These papers are prepared under the supervision of the department, although considerable latitude is allowed in the selection of subjects and the manner of presentation.

Junior or senior year; first semester; 1 credit.

19. **SEMINAR.** A continuation of Course 18.

Second semester; 1 credit.

21. **FEEDS AND FEEDING.** An advanced course in the feeding of horses, beef cattle, sheep, and swine, consisting of a thorough training in the most approved methods of stock feeding. Especial study is made of the practices of the best stockmen, and of the investigations carried on by the various experiment stations. Students desiring to take only such parts of the course as relate to certain lines of live stock will be permitted to do so by arrangement with the head of the department.

Prerequisite: Animal Husbandry 7.

Senior year; second semester; 5 credits; 5 recitations.

23. **FEEDS AND FEEDING.** A condensed course intended for those students who do not have the time necessary for Courses 7

and 21. While brief, the work is complete in itself and does not depend upon any other course. The feeding of beef cattle, sheep, hogs, and horses is studied, with reference to both principles of nutrition and farm practice.

Elective to juniors and seniors in all agricultural courses except Animal Husbandry; second semester; 3 credits; 3 recitations.

101. **LIVE STOCK PRACTICE.** A course in the details of live stock management, taking up the subject in a more advanced form than in Animal Husbandry 2. The laboratory hour will be devoted to such work as dipping, dehorning, hoof trimming, shearing, horse training, and other common operations of the stock farm.

Elective to senior Animal Husbandry students; first semester; 1 credit; 1 three-hour laboratory.

Note.—The department reserves the right to limit the number of students in this course.

102. **LIVE STOCK PRACTICE.** A continuation of Course 101.

Second semester; 1 credit; 1 three-hour laboratory.

210. **TYPES AND BREEDS OF HORSES.** A study of the leading types and breeds of both light and heavy horses, beginning with the market grades and classes, followed by the breeds. Each breed is studied with reference to its early history, the environment under which developed, the foundation stock, the men who were instrumental in establishing the breed, subsequent development, and present status. Careful consideration is given to the leading families, or strains, and the most prominent animals, both in the country at large and in the Northwest. While the work is not entirely local in its application, especial effort is made to make the students familiar with the herds and the breeders with which they will come in contact when they engage in practical work after graduation. The lecture work is accompanied by comparative judging, in which particular attention is given not merely to the general merits of the animal, but to its conformity to the type or breed in question.

Prerequisite: Animal Husbandry 1.

Junior year; first semester; 2 credits; 1 recitation; 1 three-hour laboratory period.

220. **TYPES AND BREEDS OF BEEF CATTLE.** A study of the types and breeds of beef cattle as outlined under Course 210.

Prerequisite: Animal Husbandry 1.

Junior year; first semester; 2 credits; 1 recitation; 1 three-hour laboratory period.

230. TYPES AND BREEDS OF SHEEP. A study of the types and breeds of sheep as outlined under Course 210.

Prerequisite: Animal Husbandry 1.

Junior year; second semester; 2 credits; 1 recitation; 1 three-hour laboratory period.

240. TYPES AND BREEDS OF HOGS. A study of the types and breeds of hogs as outlined under Course 210.

Prerequisite: Animal Husbandry 1.

Junior year; second semester; 2 credits; 1 recitation; 1 three-hour laboratory period.

DAIRY HUSBANDRY

PROFESSOR GRAVES

ASSISTANT PROFESSOR SIMPSON

MR. STOCKWELL

ASSISTANT PROFESSOR FITTS (Ext.)

Dairy Production and Dairy Manufacturing are the courses which the Dairy department will offer.

Dairying is rapidly becoming the leading animal industry of the United States. The last census report shows that there are more than twenty million dairy cows in the United States and the annual value of their products is approximately six hundred million dollars.

Since the population of the country is rapidly increasing, as is also the per capita consumption of dairy products, it seems likely that the importance of the Dairy Industry will continue to advance.

The Pacific Northwest, on account of its even temperature and abundant growth of forage crops, is peculiarly adapted to dairying; and the rapid growth of this industry is creating splendid opportunities for young men in the various fields of dairying, such as the breeding of pure bred dairy cattle, the management of dairy farms, and the management of creameries, cheese factories, and city milk plants. There are many other openings in government work, college work, and county advisory positions for those who do not care to enter the field of practical work.

The production and manufacturing courses are so arranged that the student may major in one course, and yet elect enough of the other course to enable him to have a working knowledge of that phase of the industry.

In the production work, it is the intention to give the student a thorough course in the breeding, feeding, judging, care, management, and diseases of dairy cattle.

In order to meet the needs of the industry and the demand for information, the department offers the following courses: A One-Year Course, designed to fit students for positions as operators of creameries and cheese factories or as managers of dairy farms. A Winter Short Course of three months in both Dairy Manufacturing and Dairy Production. The Four-Year Course, designed to qualify students for agricultural college and experiment station work; for inspectors of dairy products and dairy establishments in city, state, or government service; or as managers of creameries or large dairy farms.

A. TESTING DAIRY PRODUCTS. The testing of dairy products by the Babcock test, with special emphasis on conditions affecting the results of the test under practical conditions.

Required in one-year dairy course in Dairy Production, and in Dairy Manufacturing; first semester; 2 credits; 2 laboratory periods.

B. BUTTERMAKING AND FACTORY MANAGEMENT. The principles of creamery buttermaking; construction, management, and care of the creamery; a comparison of the various methods commonly used in the manufacture of butter in creameries.

LABORATORY. Practice in sampling and grading cream; pasteurization and ripening of cream; churning and packing butter.

Required in one-year course in Dairy Manufacturing; first semester; 4 credits; 2 lectures; 2 laboratory periods.

C. CHEESEMAKING. The commercial manufacture of cheddar cheese, covering the process in detail; a comparison of the different methods commonly employed; a study of other varieties of cheese; factory management and construction.

LABORATORY. Practice in making cheddar and other varieties of cheeses. Records are kept of the different operations to note their effect on the finished product.

Required in one-year course in Dairy Manufacturing; second semester; 4 credits; 2 lectures; 2 laboratory periods.

D. ICE CREAM. The preparation of mixes for various frozen products by different formulas; the freezing, packing, and sale of frozen products.

Required in one-year course in Dairy Manufacturing; second semester; 1 credit; 1 three-hour laboratory period.

E. CREAMERY PRACTICE. Work in the creamery, care of creamery machinery, repairing and cleaning apparatus, to familiarize the student with practical creamery work.

Required in one-year course in Dairy Manufacturing; first semester; 2 credits; 2 three-hour laboratory periods.

F. CREAMERY PRACTICE. Continuation of E; second semester; 2 credits; 2 three-hour laboratory periods.

G. ADVANCED TESTING. Advanced work in the use of the Babcock test. Short cuts and conveniences for rapid and efficient testing; rapid tests for adulterants and preservatives; curd, acidity, and sediment tests.

Required in one-year course in Dairy Manufacturing; first semester; 1 credit; 1 three-hour laboratory period.

H. BUTTER AND CHEESE JUDGING. Judging butter and cheese with score card; discussion of the defects of body and flavor.

Required in one-year course in Dairy Manufacturing; first semester; 1 credit; 1 three-hour laboratory period.

I. BUTTER AND CHEESE JUDGING. Continuation of H; second semester; 1 credit; 1 three-hour laboratory period.

J. BREEDING, FEEDING, AND MANAGEMENT OF DAIRY CATTLE. The history and development of the dairy breeds; a study of the breeding of the principal families of the various breeds; the selection and use of the pure bred dairy sire in grading up the herd; the practice of inbreeding, linebreeding, and crossbreeding in improving dairy cattle. Feeding dairy cattle for economical milk production; feeding for records; developing the dairy calf; developing the dairy heifer; care of the dairy herd; care of the cow at time of parturition; methods of testing and record keeping; care and handling of the bull; the organization and purpose of cow testing, bull and community breeders' associations; the construction of dairy barns, milk houses, manure sheds, and silos; practical problems.

Required in one-year course in Dairy Production; first semester; 2 credits; 2 lectures.

K. BREEDING, FEEDING, AND MANAGEMENT OF DAIRY CATTLE. Continuation of J; second semester; 2 credits; 2 lectures.

L. JUDGING DAIRY CATTLE. Scoring animals by breeds and general score cards and placing classes of animals.

Required in one-year course in Dairy Production; first semester; 1 credit; 1 laboratory period.

M. JUDGING DAIRY CATTLE. Continuation of L; second semester; 1 credit; 1 laboratory period.

N. DAIRY PRACTICE. Practice in computing and mixing rations; tracing and compiling extended pedigrees; fitting animals for the show ring.

Required in one-year course in Dairy Production; first semester; 1 credit; 1 three-hour laboratory period.

O. DAIRY PRACTICE. Continuation of N; second semester; 1 credit; 1 three-hour laboratory period.

1. ELEMENTS OF DAIRYING. The secretion and composition of milk, and the causes of variation in composition; brief discussion of dairy cattle, and the factors in milk production; the Babcock test applied to milk and other products; use of the lactometer; the various methods of creaming; the operation of cream separators; the care of milk and cream; making butter under farm conditions. The general principles of cheesemaking; marketing of milk; dairy by-products; statistics and economics of the dairy industry.

LABORATORY. The use of the Babcock test applied to milk and dairy products, with special attention to conditions that may affect the accuracy of tests; use of the lactometer; churning and working butter; a study of the construction, operation, and efficiency of various makes of cream separators; practice in ascertaining the yield of milk and fat, and the cost of production of cows in the College herd.

Required in all courses in Agriculture; sophomore year; second semester; 3 credits; 2 recitations; 1 laboratory period.

2. DAIRY HERD MANAGEMENT AND MILK PRODUCTION. Form and its relation to production; difference in the efficiency of dairy cows; improvement of dairy herds; methods of testing and record keeping; the use and importance of the pure bred dairy sire in

grading up the herd. *Care of the Dairy Herd*: care of the cow at time of parturition; the dairy calf and its successful development; developing the dairy heifer; care of the bull; feeding for economical milk production and for records. Registered dairy cattle and their management, fitting for the show ring, advertising cattle, and sales. *Dairy Farm Economics*: the preservation and saving of manure; labor; crop systems for the dairy farm, soiling, pasturing, feeds; silage crops and the making of silage; the organization and purpose of cow testing, bull, and community breeders' associations. *Milk Production*: the production of market and certified milk; sources of infection and contamination of milk; the effect of different kinds of feed on flavor and healthfulness of milk; pasteurization of milk; contracts between milk companies and drivers.

LABORATORY. Judging dairy cattle; scoring animals by breed and general score cards and judging classes of animals. Animals of the College herd will be used; and trips to local dairies, and an annual trip to prominent dairy farms in the Willamette Valley will be taken by College classes.

Required in courses in Dairy Production and Dairy Manufacturing; junior year; second semester; 5 credits; 3 recitations; 2 laboratory periods. Text: Eckles' Dairy Cattle and Milk Production.

3. BUTTERMAKING AND FACTORY MANAGEMENT. The composition of milk and cream; the effects of condition of milk and cream on the quality and yield of butter; pasteurization; starters; ripening and churning cream; packing and marketing butter. The location, organization, and construction of creameries; creamery refrigeration and management; creamery accounting; and other studies designed to fit the student to manage and operate creameries.

LABORATORY. Practice in sampling and grading cream; pasteurization and ripening of cream; the use of starters; churning, with special attention to factors that control the composition of butter; packing and wrapping butter; the use of the acidity, moisture, and salt tests.

Prerequisites: Dairy Husbandry 1, Bacteriology 101.

Required in courses in Dairy Production; senior year; second semester; in course in Dairy Manufacturing; junior year; second semester; 5 credits; 3 recitations; 2 laboratory periods.

4. **CHEESEMAKING.** The importance of quality and composition of milk in the manufacture of cheddar cheese; composition and characteristics of common American and European cheeses; ferments and fermentations and their control; factory management and construction; the making of cheddar cheese and some forms of soft cheeses.

LABORATORY. Practice work in receiving and sampling milk; the use of the various tests for acidity, ferments, fats, solids, and casein; the making and curing of cheddar and other varieties of cheeses; the computation of yields, cost of manufacture, and profit; the effect of different methods of manufacture on yield and quality.

Prerequisites: Dairy Husbandry 1, Chemistry 502.

Required in course in Dairy Manufacturing; senior year; first semester; 4 credits; 2 recitations; 2 laboratory periods. Text: Principles and Practice of Cheesemaking, by Van Slyke and Publow.

5. **BREEDS AND BREEDING OF DAIRY CATTLE.** The origin, history, and development of breeds of dairy cattle, their distribution and their characteristics. A study of the breeding of the principal families of the various breeds. Application of the principles of Genetics to the breeding of dairy cattle.

LABORATORY. Practice in the use of the breed herd books in tracing and making pedigrees. A study of methods of registering animals and advanced registry systems.

Required in courses in Dairy Production and in Dairy Manufacturing; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

6. **DAIRY INSPECTION AND DAIRY FARM EQUIPMENT.** A. Application of Babcock test; use of the lactometer in detecting adulterations; rapid tests for various preservatives and methods of detecting adulterations; moisture, acidity, salt, curd, casein, and sediment tests; the score card system of dairy inspection; study of federal, state, and city laws governing the production and sale of dairy products; city milk inspection. B. Arrangement, construction, and equipment of dairy barns, milk houses, milk bottling plants, silos, manure sheds, covered exercise sheds, ice houses, and in planning and laying out dairy plants for special purposes.

Prerequisite: General Bacteriology.

Required in courses in Dairy Production and Dairy Manufacturing; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period. Text: Farrington and Woll's Testing Milk and Its Products.

7. ICE CREAMS AND ICES. A study of the preparation, packing, and marketing of ice creams, sherbets, and related frozen products.

LABORATORY. Practice in selecting and aging of cream for ice cream; standardizing and preparing the mix for the various frozen products; the freezing, packing, bricking, molding, coloring, and sale of the various frozen products; judging ice cream and related frozen products by the score card.

Required in course in Dairy Manufacturing; senior year; second semester; 2 credits; 1 recitation; 1 three-hour laboratory period.

8. SEMINAR. The study and review of new experiment station bulletins, and general dairy periodicals and literature. Papers are presented by the student on dairy subjects. Practice in outlining investigational work is given.

Required of all seniors and advanced students majoring in Dairy Production and Dairy Manufacturing; senior year; second semester; 1 credit.

9. BUTTER AND CHEESE JUDGING. Judging of butter and cheese with score cards; discussion of defects of body and flavor.

Required in course in Dairy Manufacturing; senior year; second semester; 1 credit; 1 three-hour laboratory period.

10. ADVANCED JUDGING. Practice in judging dairy animals. This work, which includes trips to fairs and breeders' farms, is especially for those who desire to try for the Dairy Judging Team.

Elective; senior year; first semester; 1 credit; 2 two-hour laboratory periods.

HORTICULTURE

PROFESSOR LEWIS
ASSOCIATE PROFESSOR GARDNER
ASSOCIATE PROFESSOR PECK
ASSOCIATE PROFESSOR KRAUS
ASSISTANT PROFESSOR BOUQUET
ASSISTANT PROFESSOR BROWN (Ext.)
MR. BROWN
MR. BRADFORD
MR. TUFTS
MR. WOODMAN
MR. BARSS
MR. MARSHALL
MR. MAGNESS
MR. MASTERTON.

The scope of the work in Horticulture is very broad, giving instruction in Pomology, Olericulture, Floriculture, Landscape Gardening, and School Gardening. In these courses the student is first thoroughly grounded in the fundamentals, and is then allowed to specialize as he may desire. Thus, he may fit himself for station or government work, or prepare for the many lines in horticultural business, such as fruit growing, truck gardening, floriculture, or landscape gardening; for in all these lines there are splendid opportunities throughout the Pacific Northwest. At the present time there are openings for young men to become managers of orchards or to develop fruit lands for outside investors; those having a taste for teaching, can find a broad field in college or rural work or as supervisors of horticulture.

The required work for students electing horticulture covers a wide range, giving the student a thorough training, not only in plant propagation and the general principles of orchard management and vegetable growing, but in floriculture and landscape gardening as well, thus broadening his views and interesting him in the aesthetic and all that pertains to more beautiful surroundings.

The courses consist of lectures, reference reading, field exercises, and laboratory work. Much stress is placed upon the practical phases of all the work. In all courses horticultural truths are illustrated by practice, whenever possible. Students are given field and

laboratory exercises in all such operations as planting, seeding, budding, grafting, cultivating, thinning, pruning, harvesting, and spraying.

The Horticultural Building contains modern laboratories for spraying, plant propagation, fruit packing, systematic pomology, and vegetable preparation. There are special class rooms, large draughting rooms, museum, and research laboratories. A new floriculture building and range of greenhouses assist materially in the work. The department is also establishing young orchards and vegetable gardens, and has at its disposal a large campus upon which are planted many species of trees and shrubs. The student is materially assisted in all of his work, and the research work especially, by the large additions that have recently been made to the horticultural library.

A. HORTICULTURAL PRACTICE. Practical fruit growing, dealing with such subjects as the choice of locations, sites, soils, and varieties; the establishment of orchards, including staking, setting trees; the maintenance of the orchard, including such topics as tillage, maintaining orchard fertility, thinning, pruning, spraying; the propagation of the principal fruits, and the study of the most common methods of budding and grafting; handling the fruit crop, including picking and packing.

One-year course in Agriculture; first semester; 5 credits; 3 recitations; 2 laboratory periods.

B. HORTICULTURAL PRACTICE. Continuation of course A. The greater part of the work, however, will be devoted to vegetable gardening and landscape gardening. The first part of the semester will be devoted to a fundamental study of vegetable gardening, and will deal with such problems as the choice of soils and locations; production of plants, including problems connected with the use of manures and fertilizers, irrigation, tillage, etc.; the harvesting and market preparation and disposal of vegetable products. The latter part of the semester will be devoted to a fundamental study of landscape gardening; and will deal with the fundamental principles and their application in beautifying the farm home.

One-year course in Agriculture; second semester; 5 credits; 3 recitations; 2 laboratory periods.

101. PRINCIPLES OF FRUIT GROWING. The problems incident to the establishing of an orchard. It includes a consideration of such

questions as location, site, soils, windbreaks, variety selection, selection of nursery stock, and planting. Some attention is also given to problems incident to maintenance, especially the maintenance of the home orchard. It is designed especially for general agricultural students who are interested mainly in the orchard as an accessory of the general farm. At the same time, it is a fundamental course for students desiring to pursue other horticultural studies. The study of the principles of fruit growing will cease with the Christmas holidays, and the remainder of the semester will be devoted to landscape gardening. A series of lectures and laboratory practicums will be given on the beautifying of the farm home and rural public buildings.

Required of all Agricultural students; sophomore year; first semester; 3 credits; 3 recitations; 1 laboratory period.

Pomology

102. PRACTICAL POMOLOGY. A continuation of course 101. It deals especially with the problems incident to the maintenance of the commercial orchard, including a study of such questions as cover crops, fertilization, irrigation, frost occurrence and prevention, pollination, pruning, thinning, spraying, and spray injury.

Required of students majoring in Pomology; junior year; first semester; 2 credits; 3 recitations.

103. ORCHARD PRACTICE. A laboratory course in which the student obtains actual practice in regular orchard and packing house operations. The work includes tree planting, pruning, the preparation of spray solutions, a study of spray machinery, orchard spraying, orchard heating, and the picking, grading, packing, and judging of fruits.

This course is open only to those who have taken or are taking course 102.

Required of juniors majoring in Pomology; junior year; first semester; 2 credits; 1 laboratory period of four hours scheduled for Saturday forenoons.

104. ORCHARD PRACTICE. A continuation of course 103.

Required of juniors majoring in Pomology; junior year; second semester; 2 credits; 1 laboratory period of four hours, scheduled for Saturday forenoons.

105. **PLANT PROPAGATION.** A study of the propagation of plants by means of seeds, separation, and division, layerage, cuttage, and graftage. Sufficient attention is given the subject of nursery management to acquaint the student with its more important features.

Required of juniors majoring in Pomology; junior year; second semester; 2 credits; 1 recitation; 2 laboratory periods.

109. **VITICULTURE.** A study of the problems pertaining to the growing, harvesting, and marketing of both the American and European types of grapes. Soils, locations, pruning, training, harvesting, grading, packing, storage, etc., are some of the questions receiving attention.

Elective; open to juniors and seniors; second semester; alternate years; 2 credits; 2 recitations.

111. **SMALL FRUIT CULTURE.** A study is made of the problems connected with the growing, harvesting, and marketing of such fruits as the strawberry, currant, gooseberry, raspberry, blackberry, loganberry, and cranberry.

Elective; open to juniors and seniors; second semester; 2 credits; 2 recitations.

113. **NUT CULTURE.** A study of the methods of growing, harvesting, curing, and marketing such nut crops as the walnut, filbert, almond, and pecan. In the laboratory a detailed study is made of the leading varieties of these different nuts.

Elective; open to juniors and seniors; second semester; alternate years (not given in 1915); 2 credits; 1 recitation; 1 laboratory period.

115. **SYSTEMATIC POMOLOGY.** A study of the principles underlying pomological nomenclature and variety description, classification, and adaptation. A critical study is made of many varieties of fruits, of the influence of environment upon behavior of fruit trees and the development of their products. The student becomes acquainted with the more important fruit groups and their interrelationships.

Required of seniors majoring in Pomology; senior year; first semester; 4 credits; 2 recitations; 3 laboratory periods.

117. **COMMERCIAL POMOLOGY.** The problems of handling fruit, including the picking and grading and packing of fruits; a study of the problems of transportation, storage, distribution, and market-

ing. Considerable attention will also be given to the planning of buildings for the packing and storing of fruit.

Required of seniors electing Pomology as a major; senior year; second semester; 2 credits; 2 recitations.

119. SUB-TROPICAL POMOLOGY. This course takes up in detail the problems concerned with the growing and marketing of such sub-tropical fruits as oranges, figs, olives, pineapples, etc.

Elective; senior year; first semester, 2 credits; 2 recitations.

121. ADVANCED POMOLOGY. A finishing course in pomology. The students will first be given a general review to determine their knowledge of pomology. The course is designed especially to fit students for Civil Service examinations. The latter part of the course will be devoted to the study of some advanced problems in pomology, and will also include a study of orchard costs and economics, the cost of production, and marketing.

Elective; senior year; second semester; 3 credits; 3 recitations.

123. SEMINAR. A course especially arranged for senior and graduate students in Horticulture. A study is made of some of the advanced problems. Articles from the leading magazines on horticultural subjects, as well as station and Government publications, are reviewed.

Required of Agricultural seniors and advanced students having their major in Horticulture; senior year; first semester; 1 credit; 1 two-hour recitation.

124. SEMINAR. A continuation of course 123.

Prerequisite: Course 123.

Required of seniors electing Pomology as a major; senior year; second semester; 1 credit; 1 two-hour recitation.

125. HISTORY AND LITERATURE OF HORTICULTURE. A study is made of the literature and history of Horticulture from the time of the Egyptians to modern times.

Required of seniors electing Pomology as a major; senior year; second semester; 2 credits; 2 recitations.

127. PLANT BREEDING. The principles of breeding. A study of some of the facts pertaining to variation, classification of variations, causes of variation, and the theories that have been advanced to explain the inheritance of characters. The class room work will

consist of lectures, reference readings, and recitations; the laboratory work will acquaint the student with statistical methods of studying variation; and through greenhouse experiments he will become acquainted with some of the ways in which environment influences plant growth.

Elective; open to seniors and graduate students (and to juniors by special permission); first semester; 3 credits; 3 recitations; 1 laboratory period.

128. **PLANT BREEDING.** A continuation of course 127. A study of breeding systems and recent breeding work. For the laboratory work, each student will be assigned to some problem that will give him a knowledge of the technique involved in plant breeding studies, and of the methods that are employed in plant breeding investigations.

Elective; open to seniors and graduate students (or to juniors by special permission); second semester; 3 credits; 2 recitations; 2 laboratory periods.

Vegetable Gardening

Students taking their major in this course are required to take Horticulture 301 and 401.

201. **VEGETABLE GROWING.** This course is offered for the purpose of teaching the student the value of a well conducted farm or home vegetable garden, serving especially those students who cannot further pursue a horticultural course. At the same time, the work will be fundamental in the instruction of higher courses in commercial vegetable growing and marketing, for those students who desire to pursue work in this branch of Horticulture.

Required; sophomore year; second semester; 2 credits; 1 lecture; 1 laboratory period.

203. **PRACTICAL VEGETABLE GARDENING.** This course is offered to those students wishing to learn the fundamentals of the business of vegetable gardening. The practices of the leading commercial growers in all phases of field management will be studied, including such problems as vegetable soils, locations, production of plants, distribution of crops, successions, rotations, manures and fertilizers, irrigation, implements, capital, labor, and other vital factors in the management of a commercial vegetable farm.

Required of juniors electing Vegetable Gardening as a major; junior year; first semester; 2 credits; 1 lecture; 1 laboratory period.

204. PRACTICAL VEGETABLE GARDENING. A continuation of the above course, designed especially for those who are specializing in vegetable growing. Course 204 offers work dealing with the methods used in the commercial production of vegetables for market, consisting largely of practicums in field and greenhouse so as thoroughly to acquaint the student with proper methods and management. The commercial testing grounds, trips to vegetable farms, and the College greenhouses give ample opportunities for the student to fit himself for later commercial work.

Required of juniors electing Vegetable Gardening as a major; junior year; second semester; 3 credits; 2 lectures; 1 laboratory period.

205. FORCING VEGETABLES. The problems connected with the forcing of such vegetables as lettuce, cucumbers, tomatoes, rhubarb, and melons, in cold frames, hotbeds, and greenhouses. Lectures and exercises in the greenhouses.

Required of seniors electing Vegetable Gardening as a major; senior year; first semester; 2 credits; 1 lecture; 1 laboratory period.

206. FORCING VEGETABLES. Continuation of course 205.

Prerequisite: Horticulture 205.

Required of seniors electing Vegetable Gardening as a major; senior year; second semester; 2 credits; 1 lecture; 1 laboratory period.

207. SYSTEMATIC OLERICULTURE. Description, nomenclature, and classification of vegetables. Exercises are given in displaying and judging vegetables.

Required of seniors electing Vegetable Gardening as a major; senior year; first semester; 1 credit; 1 laboratory period.

209. COMMERCIAL TRUCK GARDENING. Only the purely commercial aspects of market gardening and trucking are offered in this course. Problems of growers in the production of vegetables on an extensive scale for market and cannery will be considered. Students will be fitted by this course for extensive or intensive operations, and for managerial positions. Particular attention will

be paid to modern methods of marketing vegetables; and the economics of producing vegetable crops will be treated in lectures and discussions.

Required of seniors electing Vegetable Gardening as a major; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

210. COMMERCIAL TRUCK GARDENING. A continuation of Course 209.

Prerequisite: Horticulture 209.

Required of seniors electing Vegetable Gardening as a major; senior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

Landscape Gardening

301. LANDSCAPE GARDENING. All students should be interested in everything that pertains to the decoration of the home, the improvement of school grounds, the beautifying of streets, and the establishment of recreation grounds and parks. In the course in Landscape Gardening the general principles of this art are so treated as to apply to the up-building of the aesthetic in everyday life.

Required of Agricultural juniors electing Horticulture as a major; junior year; second semester; 2 credits; 1 recitation; 1 laboratory period.

303. TREE SURGERY. The principles of tree surgery are presented and put into execution in the laboratory. All the varying cuts, cavities, fillings, bracing, and cultivating will be worked out in a practical manner.

Elective; junior year; first semester; 1 credit; 1 laboratory period.

304. TREE SURGERY. A continuation of Course 303.

Elective; junior year; second semester; 1 credit; 1 laboratory period.

305. PLANT MATERIALS. To create satisfactory landscape effects, one must have a broad knowledge of the materials with which landscape architects must work. A thorough study is given to trees, both evergreen and deciduous, shrubs, vines, perennial herb-

aceous plants, biennials and annuals, with a view to bringing out their characteristics, such as foliage, color, form, adaptation, hardness, and artistic effect.

Prerequisite: Horticulture 301.

Elective; junior year; first semester; 3 credits; 1 recitation; 2 laboratory periods.

306. PLANT MATERIALS. A continuation of Course 305.

Elective; junior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

307. THEORY AND DESIGN. A study of the best works of prominent landscape architects, together with a wide range of collateral reading bearing upon the various problems. Private estates, public parks and play grounds, boulevards, and cemeteries will be carefully studied. Reports, such as those of park boards and landscape architects, will also be studied.

Prerequisites: Horticulture 301, 305, 306.

Elective; senior year; first semester; 2 credits; 2 laboratory periods.

308. THEORY AND DESIGN. A continuation of Course 307, in which a large portion of the time will be devoted to the preparation of planting plans. Outside time will be required for collateral reading.

Prerequisites: Horticulture 301, 305, 306, 307.

Elective; senior year; second semester; 3 credits; 3 laboratory periods.

309. FIELD PRACTICE. A course in practical problems brought in from the field of practice. The student is required to make the surveys, do the engineering work incidental to the solving of the problem, make general plans, planting plans, grading plans, details, and, in short, perform all the duties ordinarily met with in the landscape architect's office.

Prerequisites: Horticulture 301, 305, 306. Civil Engineering required in freshman and sophomore year.

Elective; senior year; first semester; 3 credits; 3 laboratory periods.

310. FIELD PRACTICE. A continuation of Course 309.

Prerequisites: Horticulture 301, 305, 306, 309. Civil Engineering required in freshman and sophomore year.

Elective; senior year; second semester; 3 credits; 3 laboratory periods.

311. HISTORY AND LITERATURE OF LANDSCAPE ARCHITECTURE. Designed to give the student a good idea of the development of the art, and to bring him into close touch with the literature, past and current, that is related to the subject.

Elective; senior year; second semester; 2 credits; 2 recitations.

313. TOWN PLANNING. This course is offered in order that the student may understand, in a general way, the underlying ideas of municipal, town, and village improvement. Literature and reports are studied, town problems discussed, and methods of procedure in town improvement worked out.

Elective; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

Floriculture

Students taking their major in Floriculture are required to take Horticulture 301 and 401.

401. FLORICULTURE. An elementary course in the cultivation of greenhouse and home plants and of the common annuals and perennials used in outdoor work. The course is designed to broaden the views of those students who are unable to take advanced courses in Floriculture, and to make them more useful citizens.

Required of Agricultural juniors electing Horticulture as a major; first semester; 2 credits; 1 recitation; 1 laboratory period.

403. GREENHOUSE CONSTRUCTION. A course particularly adapted for students specializing in Floriculture and Truck Gardening. The problems connected with the building of greenhouses, hotbeds, and cold frames are dealt with; also the selection of materials; the various systems of heating and ventilating, and the value of the various types of buildings. Lectures and laboratory exercises in greenhouse and draughting room are conducted.

Elective; junior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

405. **FORCING FLOWERS.** The propagation and problems of culture; such as soils, ventilation, and heat, connected with the forcing of plants used in the florist's trade.

Prerequisite: Horticulture 401.

Elective; senior year; first semester; 3 credits; 1 recitation; 2 laboratory periods.

406. **FORCING FLOWERS.** A continuation of Horticulture 405.

Elective; senior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

501. **FLORICULTURE.** As related to the cultivation of the common household and dooryard flowers, instruction is given in various subjects; namely, proper soils, planting of seed, transplanting, making of cuttings, cultivation, principles of heating and ventilating and control of insect pests and diseases. In addition, such problems as the grouping and arranging of flowers, so as to obtain the best color harmonies and most pleasing effects while growing, as well as for decoration purposes, are included. The lectures are supplemented by reference readings and laboratory periods in the greenhouse and garden.

Course in Home Economics; junior year; first semester; 2 credits; 1 recitation; 1 laboratory period.

503. **LANDSCAPE GARDENING.** The general principles of Landscape Gardening are taught, the aim being to give the student sufficient foundation to understand landscape gardening as applied to home decoration; to interest the student in the home beautiful; and the improvement of our public school grounds and city and village streets. A study is made of photographs, and of famous landscape paintings, showing good taste and design in various phases of Landscape Gardening. Lectures and reference readings are supplemented by field exercises.

Course in Home Economics; second semester; 2 credits; 1 recitation; 1 laboratory period.

505. **VEGETABLE GARDENING AND SMALL FRUIT CULTURE.** Care of soil, seeding, rotation, fertilizing, and the selection of the best varieties of vegetables and small fruits for use in the home garden. Lectures, laboratory, and field exercises.

Course in Home Economics; second semester; 3 credits; 2 recitations; 1 laboratory period.

By-Products

601. **HORTICULTURAL BY-PRODUCTS.** A general study of horticultural by-products, including a study of the growth and development of this important industry in this country and abroad, but more especially in the Pacific Northwest. In addition, the course will deal with the establishment of plants, their operation, and the fundamental principles connected with canning, evaporating, drying, and the manufacture of fruit juices.

Elective; junior or senior year; first semester; 1 credit; 1 recitation.

603. **DRIED PRODUCTS.** A detailed study of the evaporation and drying of fruits and vegetables. It will include a study of the types of buildings now used, and of the machinery and apparatus needed in the successful operation of the various types of driers. This course will also deal with the technique connected with the evaporation and drying and processing of such products as apples, pears, peaches, apricots, berries, and vegetables.

Elective; junior or senior year; first semester; 3 credits; 1 recitation; 2 laboratory periods. Not offered in 1914-15.

605. **CANNING.** A study of the establishment, management, and operation of canneries, including a study of necessary buildings, machinery, and the successful operation of canneries. It will also include a detailed study of the various methods used in canning, and in the manufacture of syrups, jellies, etc.

Elective; junior or senior year; second semester; three credits; one recitation; two laboratory periods. Not offered in 1914-15.

607. **FRUIT JUICES.** A study of the manufacture of cider, vinegars, and juices of such fruits as the apple, grape, and Loganberry. A study will be made of various types of buildings and machinery suitable for the manufacture of such juices, together with the study of the best methods embraced in the manufacture of fruit syrups and juices.

Elective; junior or senior year; first semester; 3 credits; 1 recitation; 2 laboratory periods. Not offered in 1914-15.

Research

The department of Horticulture is unusually well equipped for offering research work. In addition to the laboratory facilities, there are the greenhouses, experimental plots, and a splendid research library, well supplied with scientific books and periodicals, all combining to give the student unsurpassed facilities.

701. **RESEARCH WORK FOR SENIORS.** This course is offered for those seniors who are contemplating following college, experiment station, or Government work as a life career, or for those students who desire to have some special training in research technique. Problems will be assigned to the students which will give them experience in the laboratory, greenhouse, field, and library.

Elective; senior year; first semester; 3 credits.

702. **RESEARCH WORK FOR SENIORS.** A continuation of Course 701.

Elective; senior year; second semester; 3 credits.

703. **ADVANCED THESIS AND RESEARCH WORK.** A course offered only for graduate students. Such students will be allowed to select problems in pomology, vegetable gardening, landscape gardening, floriculture, plant breeding, and the like.

Elective; for graduate students only; first semester; from 10 to 20 credits.

704. **ADVANCED THESIS AND RESEARCH WORK.** A continuation of Course 703.

Elective; for graduate students only; second semester; from 10 to 20 credits.

705. **METHODS OF RESEARCH.** This course is offered to graduate or senior students interested in research work. It will be conducted as a research round table. Special drill will be given in the making of briefs and outlines of research problems, in methods of procedure in conducting investigative work, and in the preparation of bulletins and reports. The study of research problems conducted by the department of Horticulture will be taken up, and a close study made of the research work which is presented in bulletins from other institutions.

Elective; senior or graduate students; first semester; 1 credit.

706. **METHODS OF RESEARCH.** Continuation of Course 705.

Elective; senior or graduate students; second semester; 1 credit.

POULTRY HUSBANDRY

PROFESSOR DRYDEN

ASSISTANT PROFESSOR LUNN

MISS NIXON

In recognition of the importance of the poultry industry, and to meet the demands of students who aim to give special attention to this industry after leaving college, the department of Poultry Husbandry was established. Poultry keeping is a part of every well regulated system of diversified farming, and at the same time offers opportunity for profit-making as a special business under special conditions. The two poultry plants at the College give exceptional opportunities for study of the practical as well as the theoretical side of the poultry industry.

A. **POULTRY HUSBANDRY OPTIONAL COURSE.** To meet the demands of those who are unable to take up the degree course, a one-year course has been arranged. The course will be thoroughly practical, and the student will be required to do work pertaining to the various branches of poultry keeping, which will be supplemented with lectures and recitations in the class room.

One-year course in Agriculture; first semester; 5 credits.

B. A continuation of Course A; second semester; 5 credits.

1. **POULTRY HUSBANDRY.** Includes a study of breeds of domestic poultry, their history, and classification. Laying and market qualities of different breeds are emphasized. Breeding fowls for different purposes will be considered, as will the location and construction of the poultry plant and its equipment. Laboratory work consists of practice in judging; preparing poultry products for market; construction of houses, coops, poultry plant equipment; and drawing of plans.

Required of all juniors in Poultry Husbandry; junior year; first semester; 4 credits; 2 recitations; 2 laboratory periods.

2. **POULTRY HUSBANDRY.** A continuation of Course 1, but may be taken separately. Includes a study of poultry feeds and feeding with reference to egg and meat production. Reproduction by natural and artificial methods. Markets and marketing. Laboratory work consists of a study of poultry food stuffs and rations. Students will be given practice in preparing different rations. Prac-

tice will also be given in hatching and brooding. Each student will have charge of a pen of fowls, and during his period of management will do all the feeding and keeping of records.

Required of all juniors in Poultry Husbandry; junior year; second semester; 4 credits; 2 recitations; 2 laboratory periods.

3. **ADVANCED POULTRY HUSBANDRY.** For students specializing in Poultry Husbandry advanced work will be given in the senior year. The work of this course consists of a study of poultry literature, conducting experiments, and writing up results.

Prerequisites: Poultry Husbandry 1, 2.

Required of all seniors in Poultry Husbandry; senior year; first semester; 4 credits.

4 **ADVANCED POULTRY HUSBANDRY.** A continuation of Course 3, together with assignments of special and original problems. Successfully to complete the advanced work will mean that the student has demonstrated his ability to lay out and manage a poultry farm; or to fill a college or station position in Poultry Husbandry. There is a growing demand for specialists along these lines.

Prerequisites: Poultry Husbandry 1, 2, 3.

Required of all seniors in Poultry Husbandry; senior year; second semester; 6 credits.

6. **PRACTICAL POULTRY KEEPING.** A course arranged to meet the demands of students who desire a knowledge of practical poultry keeping, but who are unable to elect a full year's course. The course includes the selection of stock; breeding farm poultry; poultry house and equipment; methods of reproducing the flock; feeds and feeding; as well as markets and preparation of poultry products for market.

Optional for sophomores in Agriculture; 2 credits; 2 lectures or recitations.

7. **MARKETS AND MARKETING.** Arranged for advanced study of poultry market conditions and the marketing of poultry and poultry products. Lectures or recitations consist of a study of available data and reports on original work. The laboratory course will supplement the work taken up in lecture and recitations. Students are required to do practical work, such as preparing poultry products for market, fattening, killing, dressing, and marketing fowls; and when possible, they will be in charge of actual marketing.

Elective; required of all juniors in Poultry Husbandry; first semester; 2 credits; 1 lecture or recitation; 1 laboratory period.

10. FEEDS AND FEEDING. A study of feeds and feeding related to the different branches of poultry keeping. Lectures or recitations consist of a study of food stuffs, their composition, etc., used in poultry feeding; also methods of feeding chickens of different ages and the feeding of chickens for different purposes. Laboratory work consists of a study of the various food mixtures and practice in mixing various rations.

Elective; required of all juniors in Poultry Husbandry; second semester; 2 credits; 1 lecture or recitation; 1 laboratory period.

11. POULTRY DISEASES. Elective; required of all seniors in Poultry Husbandry; 2 credits; 1 lecture or recitation; 2 laboratory periods.

12. ANATOMY OF THE FOWL. (Vet. Med. 11.) Elective; required of all juniors in Poultry Husbandry; 1 lecture or recitation; 1 laboratory period.

VETERINARY MEDICINE

PROFESSOR SIMMS

The object of the courses in veterinary medicine is to prepare the students to recognize disease, treat emergency cases, diagnose and control outbreaks of infectious diseases, and take care of sick animals.

1. COMPARATIVE ANATOMY. Anatomy is taught in the most practical manner possible. Special attention is paid to the digestive systems of the horse and the cow; to the foot, the muscles of locomotion, and the teeth of the horse. The laboratory work includes complete dissection of the digestive, urinary, genital, and respiratory systems, and partial dissection of the circulatory, muscular, and nervous systems.

Junior year; first semester; 3 credits; 1 recitation; 2 laboratory periods.

2. COMPARATIVE PHYSIOLOGY. The study of the functions of the body. Special attention is paid to the digestive system. The physiological processes of all the domestic animals are studied, with special emphasis on the horse and the cow. The laboratory work consists of practical experiments which are correlated with the lectures.

Junior year; second semester; 3 credits; 2 lectures; 1 laboratory period.

3. DISEASES OF LIVE STOCK. The parasitic, infectious, and non-infectious diseases of domestic animals are considered in this course. Special attention is given to the prevention and control of parasitic and infectious diseases. The laboratory work consists of a free clinic, which provides an abundance of both medical and surgical work. The students assist in handling and diagnosing the medical cases, and in operating on the surgical cases. They also observe the results of treatment of all animals in the hospital.

Senior year; first semester; 3 credits; 2 lectures; 1 laboratory period.

4. DISEASES OF LIVE STOCK. A continuation of course 3.

Senior year; second semester; 3 credits; 2 lectures; 1 laboratory period.

5. VETERINARY HISTOLOGY. The histology of the domestic animals.

Elective; senior year; first semester; credits to be arranged.

6. VETERINARY HISTOLOGY. A continuation of Course 5.

Elective; senior year; second semester; credits to be arranged.

11. ANATOMY OF THE FOWL. A study of the structure of the body of the fowl. The laboratory work consists principally of dissection.

Junior or senior year; first semester; 2 credits; 1 recitation; 1 laboratory period.

12. POULTRY DISEASES. The parasitic, infectious, and non-infectious diseases are considered. Special emphasis is placed upon methods of prevention and control of parasitic and infectious diseases. Students observe autopsies, methods of diagnosis, and treatment of fowls.

Junior or senior year; second semester; 2 credits; 1 lecture; 1 laboratory period.

14. DISEASES OF LIVE STOCK. A one-semester course for Agronomy students. The more common diseases, with the methods of prevention and control, are considered. The laboratory work consists of a free clinic, which provides an abundance of animals for both surgical and medical treatment.

Junior or senior year; second semester; 3 credits; 2 lectures; 1 laboratory period.

15. DISEASES OF DOMESTIC ANIMALS. A practical course given to the Animal Husbandry students who are taking the one-year course. The laboratory work consists of a free clinic, which provides an abundance of animals for treatment.

One-year students; first semester; 3 credits; 2 recitations; 1 laboratory period.

17. DISEASES OF DAIRY CATTLE. A practical course given to the Dairy Husbandry students who are taking the one-year course.

One-year students; first semester; 2 credits; 2 recitations.

18. DISEASES OF DAIRY CATTLE. A continuation of Course 17. The laboratory work consists of a free clinic. The students observe methods of diagnosis and treatment of both medical and surgical cases.

One-year students; second semester; 2 credits; 1 lecture; 1 laboratory period.

BACTERIOLOGY

PROFESSOR BECKWITH

ASSISTANT PROFESSOR VASS

MR. HORTON

MR. CURTIS

The relationships of the comparatively new science of Bacteriology to everyday life in the various industries have increased so largely in numbers and intimacy that it is necessary for any student properly equipped in Dairying, Agriculture, Agronomy, Pharmacy, Domestic Science, etc., to have a working knowledge of the subject.

As in any well-rounded subject, effort is in two directions which are closely associated, theory and practice. It is impossible for a student intelligently to carry out operations unless he understands the fundamental underlying theories.

The courses are so arranged in the department of Bacteriology that a student may take thorough preparation in the subject in a specific line, such as Pharmacy, Domestic Science, Agronomy, Sanitation, etc. This, in turn, if desired, may be followed by special research problems and advanced work.

In addition to the work outlined below, a series of lectures will be given to students in Forestry on the subject of Camp Sanitation.

406. DAIRY VOCATIONAL BACTERIOLOGY. This course is given for the benefit of students taking the vocational course in Dairying. All matter presented is given from the most practical standpoint. The work to be included consists of consideration of the various kinds of contaminating organisms found in milk and their source, simple methods of control, bacteria in relation to milk inspection, methods of propagation of starters, and general methods for bacteriological examination of dairy products.

Vocational course in dairying; second semester; 2 credits; 1 lecture; 2 laboratory periods.

101. ELEMENTARY BACTERIOLOGY. A series of lectures, experiments, and recitations to familiarize students with the underlying principles of bacteriology as applied to everyday life; and as an introduction to the more advanced courses in this subject.

The course in Agriculture; sophomore year, or Commerce, first year; first semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

102. ELEMENTARY LABORATORY BACTERIOLOGY. A course given for the purpose of supplementing the lecture and laboratory work of Bacteriology 101, to those who care to take it.

Prerequisite: Bacteriology 101.

Elective; junior year; second semester; 2 credits; 2 laboratory periods.

111. GENERAL BACTERIOLOGY. Beginning with the first semester of the junior year, a student may take bacteriology through the two semesters of that year, then continue advanced work through the two semesters of the senior year.

Elective; junior year; first semester; 4 credits; 1 lecture; 1 recitation period; 3 laboratory periods.

112. ADVANCED BACTERIOLOGY. A continuation of course 111, the laboratory work familiarizing the student with special bacteriological apparatus and its use, then gradually proceeding into advanced work involving questions of pure science, as well as the application of bacteriology to the professions and industries.

Elective; junior year; second semester; 4 credits; lectures; laboratory work.

116. RESEARCH IN BACTERIOLOGY. A thesis may be selected in this subject, beginning with the first semester, junior year, major bacteriology, and continuing through four semesters. The laboratory

is especially equipped for work in agricultural bacteriology, and has ample facilities also for research in veterinary, domestic science, or pharmaceutical bacteriology. Work for the master's degree, either as a major or minor in the department, may be selected. The investigations are all outlined and conducted by the student in cooperation with the head of the department.

Elective; senior year; credits to be arranged.

201. PHARMACY BACTERIOLOGY. The regular course in Bacteriology required for Pharmacy students, consisting of lectures and laboratory work dealing with the medical aspects of pharmacy.

The course in Pharmacy; senior year; first semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

202. PHARMACY BACTERIOLOGY. Continuation of Pharmacy Bacteriology 201, elementary clinical diagnosis, classification of bacteria, qualitative and quantitative determinations.

Prerequisite: Bacteriology 201.

The course in Pharmacy; senior year; second semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

203. CLINICAL BACTERIOLOGY. This course, intended primarily for students in Pharmacy, deals with practice work in the ordinary methods of clinical diagnosis in use. Typhoid, diphtheria, tuberculosis, various pus formations, bacteriological examination of urine and feces, blood counting and differentiation into its elements, and dark ground illumination, are some of the subjects treated.

Prerequisites: Bacteriology 201, 202.

Elective; senior year; first semester; 2 credits; 2 laboratory periods.

204. CLINICAL BACTERIOLOGY. A continuation of the outline presented in course 203.

Prerequisites: Bacteriology 201, 202, 203.

Elective; senior year; second semester; 2 credits; 2 laboratory periods.

205. IMMUNITY AND VACCINE THERAPY. A study of the standard methods in vogue in the various immunity and therapeutic reactions, such as antitoxin formation, preparation of vaccines, and standardization.

Prerequisites: Bacteriology 201, 202, or equivalents.

Elective; senior or graduate year; credits to be arranged.

300. DOMESTIC SCIENCE BACTERIOLOGY. This course deals with bacteriology in its relation to home life. An introduction to the

subject, therefore, is made along theoretical lines, with application to sanitation as concerns the house, covering such subjects as water supply, action of septic tanks, house sanitation, control and prevention of specific diseases, vinegar making, etc.

Course in Home Economics; sophomore year; second semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

301. **SANITARY BACTERIOLOGY.** This course is primarily for Domestic Science and Art Students in continuation of Bacteriology 300. It deals with methods of sanitary bacterial examination in vogue for water, milk, butter, cheese, meat, air, etc. Certain simple clinical methods are also taught. Use and action of antiseptics and germicides, and the methods of efficient fumigation are given proper attention.

Prerequisite: Bacteriology 300 or equivalent.

Elective for students in Home Economics, or others of equivalent preparation; junior or senior year; 2 credits; 2 laboratory periods.

302. **ZYMOLOGY.** An elective for those of the course in Home Economics who desire a graduate course dealing with technical yeast methods. The subjects include the microscopic structure of the yeast plant, the preparation and manipulation of special media designed for the growth of yeasts, pure culture methods used in zymology, methods of laboratory testing of commercial yeasts, both for use in breadmaking and alcohol production, and the bacteriology of salt-rising bread.

Prerequisites: Bacteriology 300 or equivalent.

Elective; 2 credits; 2 laboratory periods.

307 **PREVENTIVE MEDICINE.** This course is intended for the vocational home makers' course of the School of Home Economics, and deals with questions of bodily resistance to disease in everyday life, and the factors which aid or deter the spread of disease organisms. It includes such questions of home sanitation as pertain to the occurrence and transmission of disease organisms.

Vocational Home Makers' Course in Home Economics; first semester; 1 credit; 2 lectures.

401. **DAIRY BACTERIOLOGY.** This course is devoted exclusively to milk and dairy products. It considers the source of bacteria in dairy products, simple methods of control, the usefulness of certain varieties, special media for milk, etc., methods for milk exam-

ination. It deals also with the economic use of pure cultures of micro-organisms in buttermaking; methods of perpetuating pure cultures for starters; laboratory methods of demonstration of pathogenic bacteria; leucocyte determinations.

Prerequisite: Bacteriology 101.

Senior year; first semester; 3 credits; 2 lectures or recitations; 2 laboratory periods.

501. AGRICULTURAL BACTERIOLOGY. Lectures and laboratory work relating to micro-organic life in the soil in its various activities, such as destruction of organic matter, humus formation, and the various nitrogen changes; but more especially to nitrogen fixation by legume bacteria. The technique of soil inoculation is also emphasized. Other phases of purely agricultural bacteriology are also considered.

Prerequisite: Bacteriology 101.

Elective; senior year; first semester; 3 credits; 1 recitation or lecture; 2 laboratory periods.

502. AGRICULTURAL BACTERIOLOGY. A continuation of course 501, dealing with consideration of special soil changes, such as ammonification, denitrification, non-symbiotic nitrogen fixation, sulphur combinations, and the effects of various methods of tilth on bacterial soil activities.

Prerequisites: Bacteriology 101, 501.

Elective; senior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

600. WATER AND SEWAGE BACTERIOLOGY. Especially adapted to the needs of civil engineers; and devoted to the bacteriology of water supplies, sewage, and sewage disposal, according to the standards and methods of the American Public Health Association.

Elective; seniors in Civil Engineering, or of equivalent preparation; 2 credits; 1 lecture; 2 laboratory periods.

701. POULTRY DISEASE BACTERIOLOGY. This course is intended to deal with the bacterial consideration of the more common diseases of poultry; and in it will be considered chicken tuberculosis, chicken typhoid, white diarrhoea, roup, and avian diphtheria; soil contamination, and other methods of disease transportation.

Prerequisites: Bacteriology 101, 102, or equivalent.

Junior or senior year; second semester; 2 credits; 2 laboratory periods.

BOTANY AND PLANT PATHOLOGY

PROFESSOR JACKSON
ASSISTANT PROFESSOR BARSS
MR. LAWRENCE
MR. BAILEY
MR. WALLS
MR. OWENS
MR. ATWOOD
MR. GODFREY
MR. POSEY
MR. SCHERER
MR. CORSAUT

The courses offered in the department of Botany and Plant Pathology aim not only to give the student a broad knowledge of plants, their structure, activities, and relationships; but to show wherein the science of Botany is related to the problems of everyday life and the home, and to the practice of Agriculture, Pharmacy, Forestry, and Home Economics.

In the arrangement of work in the courses offered, the point of view of several groups of students is kept constantly in mind, and the work adapted to their needs. In order to make this possible in courses taken by students pursuing different lines of work, separate sections are provided.

The work of the department is carried on by means of recitations, lectures, and laboratory work. Text and reference books are used mainly as an aid in correlating the facts brought out in the study of the plants in the laboratory. Living plants are used wherever possible. Drawing is made an important feature of the laboratory work; because the student, in order to draw accurately, must have observed closely.

Particular attention is given to students desiring to take their major work in this department. Exceptional opportunities are offered, not only to those students who wish to prepare themselves for teaching Economic Biology and Botany in the public schools, but to those who wish to specialize in Botany and Plant Pathology preparatory to teaching or to investigational work in agricultural colleges and experiment stations, or in Government work.

The following courses are offered:

20. **PRINCIPLES OF BOTANY.** This course aims to present in a broad laboratory course the fundamental principles of Botany. The higher plants are first traced in their development from the seed to flower, special effort being made to correlate the study of morphology, histology, and physiology of the various parts. The morphology, evolution, and classification of plants will then be traced from lower to higher forms. Finally, the relation of plants to their environment, and their use in nature and to man will be studied. Throughout the course the economic relations of botanical study will be emphasized.

The course in Home Economics; freshman year; first or second semester; 3 credits; 2 recitations; 3 laboratory periods.

30. **FOREST BOTANY.** This course is provided for the purpose of giving Forestry students a general course in Botany, together with special training in those branches of Botany concerning which the forester needs special knowledge. Particular attention will be given to microscopic structure of wood, and to the morphology of gymnosperms and angiosperms.

The course in Forestry; freshman year; first semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

31. **FOREST BOTANY.** A continuation of course 30.

The course in Forestry; freshman year; second semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

35. **FOREST PATHOLOGY AND TAXONOMY.** A continuation of courses 30 and 31, which are prerequisite. The first half of the term will be devoted to an elementary study of Forest Pathology, consisting of a study of fungi in their relation to diseases of forest trees. During the spring the time will be devoted to practice in the identification of the plants making up the forest flora. This will include not only the taxonomic study of trees, but also of plants making up the forest floor; native forage plants of importance on the forest ranges will also receive attention.

The course in Forestry; sophomore year; second semester; 4 credits; 2 lectures; 3 laboratory periods.

41. **AGRICULTURAL BOTANY.** The fundamental principles of botany as related to agriculture. The general plan of the course

will be as outlined in course 20, special effort being made to bring out the fundamental botanical principles underlying agricultural practice.

The course in Agriculture; freshman year; first semester; 3 credits; 2 lectures; 2 laboratory periods.

42. AGRICULTURAL BOTANY. A continuation of course 41. During the latter part of the term the time will be devoted largely to a systematic study of agricultural plants. Students will also be instructed in the use of keys and methods for the identification of plants.

The course in Agriculture; freshman year; second semester; 3 credits; 1 lecture; 3 laboratory periods.

45. TAXONOMIC STUDY OF FARM WEEDS AND GRASSES. This course aims to familiarize the students with the structure and classification of farm weeds and grasses. Practice will also be given in the identification of other plants of economic importance. A detailed study will be made of well-selected types. The student will make a collection and identify as many specimens as time will permit.

Elective; junior or senior year; second semester; 2 credits; 2 laboratory periods.

50. PLANT PHYSIOLOGY. An introductory course in experimental Plant Physiology; that is, essentially a study of the life processes of the plant, covering a survey of the nutritional processes, and the growth and the adjustment of the plant to its environment. In this work such subjects will be studied as the general properties of the living cell; principles underlying the intake of the plant from the soil; transportation of materials through the plant; the water losses of the plant; the manufacture of foods, their transformations, digestion and assimilation; and respiration. Throughout the course the importance of a knowledge of the life processes of the plant as a basis for intelligent horticultural and agricultural practice will be emphasized.

The course in Pomology; junior year; elective in the course in Agriculture; junior or senior year; second semester; 3 credits; 2 lectures; 2 laboratory periods.

51. **PLANT PHYSIOLOGY.** A more advanced course, requiring as a prerequisite Botany 50. Further studies in the nutritional processes of plants, and the relationship of plants to the influence of environmental factors.

Elective; senior year; first semester; 3 credits; 1 or 2 lectures; 2 or 3 laboratory periods.

62. **SPECIAL MORPHOLOGY.** An advanced course in the principles of plant morphology. It is designed to familiarize the student with the present information concerning the evolution of form, structure, and methods of reproduction for all groups of plants, except the fungi, and its bearing on the origin of seed plants. The students will also be given an introduction to the principles of taxonomic classification in each group.

Elective; junior or senior year; first semester; 3 credits; 2 lectures; 2 laboratory periods.

64. **PLANT ANATOMY.** This course is designed to present a more advanced study of plant structure than is possible in introductory courses. Various types of plant tissues and their origin will be studied, together with modifications due to environmental conditions. A study of the cell, its methods of division, cell inclusions, etc., will receive attention. In connection with this work the student will be instructed in the various methods of preparing tissues for microscopic study, including fixation, dehydration, infiltration and sectioning, staining, etc. Required of students specializing in Botany.

Elective; junior or senior year; first semester; 3 credits; 1 lecture; 3 laboratory periods.

66. **RANGE BOTANY.** A course dealing with the botanical problems of the range. It aims to familiarize the student with the forage and poisonous plants found on grazing lands. Special emphasis will be placed on the identification of the native grasses. The ecological distribution of these plants will be studied in relation to the depletion, renewal, and maintenance of pastures and ranges.

Elective; junior or senior year; first semester; 2 credits; 1 lecture; 2 laboratory periods.

70. **PHARMACEUTICAL BOTANY.** This course is designed to meet the needs of pharmacy students. The course is so arranged

as to give the general principles of botany, together with a special application to the need of pharmacy students. Particular attention will be given to the study of the cell, cell contents, and types of tissues. Some attention will be given to training in the microscopic identification of drugs and drug adulterants. In the spring, practice will be given in the identification of pharmaceutical plants.

The course in Pharmacy; freshman year; first semester; 3 credits; 1 lecture; 1 recitation; 2 laboratory periods.

71. PHARMACEUTICAL BOTANY. A continuation of course 70.

The course in Pharmacy; freshman year; second semester; 4 credits; 1 lecture; 1 recitation; 3 laboratory periods.

80. SEMINAR. Required of all graduate students in Botany and Plant Pathology. The work will consist of reports on advanced studies, and abstracts of articles appearing in experiment station literature, scientific journals, or the agricultural press.

Elective; junior or senior year; first semester; 1 credit will be allowed undergraduate students who attend meetings regularly, and who make satisfactory reports.

81. SEMINAR. A continuation of course 80.

Elective; junior or senior year; second semester; 1 credit as above.

82. RESEARCH AND THESIS. Opportunity will be given students who desire to specialize in Botany and Plant Pathology to take up work not given in the regular courses, or to take up the investigation of special problems.

Elective; senior year; first semester; 1 to 5 credits.

83. RESEARCH AND THESIS. A continuation of course 82.

Elective; senior year; second semester; 1 to 5 credits.

101. PRINCIPLES OF PLANT PATHOLOGY. This course is designed to present the fundamental principles underlying the study of plant pathology. Following are some of the topics to which attention will be given in the course; causes and symptoms of disease in plants; methods of dissemination and distribution of plant diseases; legislation and quarantine; principles of plant disease control; fungicides and their use; disease resistance in plants, etc.

In the laboratory, study will be made of representative plant disease-producing organisms, using these as an introduction to the classification of parasitic fungi.

The course in Pomology; senior year; Plant pathology; junior year; elective in other courses in Agriculture; junior or senior year; first semester; 2 credits; 1 lecture; 2 laboratory periods.

This course is preparatory for, and required as a prerequisite to, all the following courses in Plant Pathology:

102. DISEASES OF ORCHARD AND SMALL FRUITS. A detailed study will be made of the cause and control of all the important fungous, bacterial, and physiological diseases of orchard and small fruits. Particular attention will be given to the diseases of those orchard trees and small fruit crops of importance in the Northwest. The laboratory work will include a careful study of the gross appearance, and the effect on the host of various diseases, as well as a microscopic study of the organisms causing the trouble and their relation to the tissues of the host. Frequent field excursions will be made for observations on the symptoms of important diseases.

Required in the course in Pomology; senior year; second semester; 2 credits; 2 lectures; 1 laboratory period.

104. DISEASES OF VEGETABLE CROPS. Similar, in general, to Botany 102, but deals with diseases of vegetable crops.

Elective; junior or senior year; second semester; 2 credits; 2 lectures; 1 laboratory period.

105. DISEASES OF FIELD CROPS. This course is designed for Agronomy students, to be taken in connection with Botany 101. Students will not be allowed to register in this course who do not also register in 101. The course is similar, in general, to Botany 107, but deals especially with diseases of field crops.

Elective; junior or senior year; first semester; 1 credit; 1 laboratory period.

111. LABORATORY METHODS IN PLANT PATHOLOGY. A training course in the methods of investigation in plant pathology, including methods of keeping records, care of collections, culture work, inoculation, photographic work, etc.

The course in Plant Pathology; junior year; second semester; 2 credits; 1 lecture; 2 laboratory periods.

113. METHODS OF CONTROL OF PLANT DISEASES. Designed to meet the needs of advanced students for a course in special methods employed in the practical control of plant diseases.

The course in Plant Pathology; senior year; elective in the course in Agriculture; junior or senior year; second semester; 1 credit; 1 lecture.

115. TAXONOMY OF PARASITIC FUNGI. In this course, work more advanced than is given in Botany 101 will be taken up, on the taxonomy and phylogeny of plant disease-producing organisms. Practice in the identification of unknown forms will be given. A collection properly prepared for an herbarium will be required.

The course in Plant Pathology; senior year; first semester; 5 credits; 2 lectures; 3 laboratory periods.

116. ADVANCED PLANT PATHOLOGY. Special diseases will be selected and studied thoroughly, both in the field and in the laboratory. Designed to give students training and experience in the original investigation of plant pathological problems; opportunity will be taken to study certain of the more important diseases in a more thorough manner than is possible in the introductory courses.

The course in Plant Pathology; senior year; second semester; 5 credits; 1 lecture; 4 laboratory periods.

Opportunity will be given students to elect work in Economic Botany or Plant Pathology not offered in the above mentioned courses by registering in Botany 82 or 83, either as a major or minor subject. Students who elect Botany as a major study must have completed the work, or equivalent, required in the freshman year of the Agricultural course.

NOTE.—Any of the courses outlined above except 20, 41, 42, 70 and 71, may be taken as a minor elective by junior or senior students in any course upon consultation with the head of the department, provided the course to be elected is not regularly required in the course of study in which the student is registered.

ZOOLOGY

PROFESSOR SYKES

MISS EDWARDS

MR. BLAKE

MR. CHANDLER

MR. HYLAND

The interests of human life are so intimately bound up in the facts of animal life that today, at least, a general knowledge of the science of Zoology is considered a personal asset few students

can afford to omit from their college course. The instruction in this department, therefore, is designed not only to awaken interest in the study of native birds, insects, and other animals to afford a basic knowledge of the structure and functions of the animal body, but particularly to develop the faculty for determining the dynamic value of an animal, or a group of animals, in the solution of the problems of everyday life.

By means of lectures, laboratory work, and field observations, the student becomes familiar with the form and habits of various representatives of the animal kingdom, learning something of the mechanism of living things, of their importance as active forces in nature, and of the biological laws according to which their development is regulated. The work is adapted, so far as is possible, to the particular needs of students in Agriculture, Forestry, Pharmacy, and Home Economics.

Opportunity is offered, moreover, to those who desire it, to receive training for teaching zoology, physiology, or nature study in the public schools; for development of the game and food resources of the State; or for the pursuance of studies in the field of research. In connection with the course in Pharmacy, the required work forms a valuable pre-medical course.

The following courses are offered:

101. GENERAL ZOOLOGY. A general study of animals, both vertebrate and invertebrate, running throughout the year, and introductory to advanced courses in the department; it is also designed for students who, without intending to pursue the subject further, desire a general view of zoological work and its problems. The work consists of lectures and laboratory work, supplemented by *investigations* in the field, and by collateral reading. The aim is to give the student a general knowledge of the different animal forms, their distribution and habits, with special reference to mechanism and functions of the body.

The course in Pharmacy; freshman year; elective for other courses; first semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

102. ZOOLOGY. A continuation of course 101. The course aims furthermore to give an introduction to laboratory methods of dis-

section and experiment; and to present an outline of the more important biological theories, such as selection, adaptation, and heredity.

The course in Pharmacy; freshman year; elective for others; second semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

103. **FUNCTIONAL ZOOLOGY.** A brief course designed to give students in the School of Home Economics some conception of the structure and physiological activities of animals, as a basis for the work in Physiology. The work consists of a general survey of the forms and activities of living organisms, with general reference to the human organism.

The course in Home Economics; freshman year; first or second semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

104. **EMBRYOLOGY AND HISTOLOGY.** A consideration of the origin and development of the individual body; the elementary structure of the adult organs and tissues. The work consists of the study of such typical vertebrates as the chick and the pig, with reference to other domestic animals and to man. It involves practice in micro-technique, such as killing, fixing, imbedding, sectioning, and reconstruction from serial sections, and it is adapted to the requirements of general students, as well as those intending to study veterinary science or medicine.

Prerequisites: Zoology 101, 102; or 108, 109; or equivalent.

For students in Agriculture or Pharmacy, and others; junior or senior year; first semester; 3 credits; 1 lecture; 2 laboratory periods of three hours each.

105. **EMBRYOLOGY AND HISTOLOGY.** A continuation of course 104.

Prerequisites: Zoology 101, 102; or 108, 109; or equivalent.

For students in Agriculture or Pharmacy, and others; second semester; 3 credits; 1 lecture; 2 laboratory periods of three hours each.

106. **GAME PROPAGATION.** A laboratory and reading course, supplemented by field work in the propagation of food animals of the field, forest, and stream; the breeding and protection of game birds and mammals; methods of conducting game reservations; and a comparative study of game laws.

Elective for students in Agriculture and Forestry; first semester; 1 credit; 1 lecture; 1 laboratory period; hours to be arranged.

107. **ORNITHOLOGY.** A lecture course and field study of the common birds of Oregon; the course aims to develop an interest in the native birds, their habits, and haunts, with particular reference to their usefulness.

Elective; second semester; 1 credit; 1 lecture; 1 laboratory period; hours to be arranged.

108. **PRINCIPLES OF ECONOMIC ZOOLOGY.** A course which deals extensively with the facts and conditions which render animal life an important factor in the economic problems of life. Like 101, however, it aims to give the student a general knowledge of the different animal forms, their distribution and habits, and the more important physiological functions of the animal body; but it lays particular stress upon the dynamic interpretation of life. The course is designed to meet the particular needs both of students in Agriculture and in Forestry. The work will consist of lectures and laboratory exercises, supplemented by a considerable amount of collateral reading.

Required of Agricultural and Forestry sophomores; first semester; 3 credits, 2 lectures; 1 laboratory period of three hours.

109. **PRINCIPLES OF ECONOMIC ZOOLOGY.** Continuation of course 108, which aims to bring the student in contact with the more vital economic problems to be met in the various fields of interest—agricultural or sylvan. An outline of the different biological theories will be presented with a view to enabling the student to come into possession of certain fundamental principles, the knowledge of which may afford him an insight into the more far-reaching significance of the problems of everyday life.

Required of Agricultural and Forestry sophomores; second semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

110. **ANIMAL PARASITES.** An advanced course for the study of such parasitic forms as flukes, tapeworms, nematodes, fish "lice," cattle ticks, etc., that affect the health of man, domestic, and food animals; the study will be primarily ecological, the object being to obtain a more exact knowledge of the conditions which produce

parasitism, to the end that by intelligent control, diseases and economic losses may be rendered less liable, and preventive measures made productive of more permanent results.

Prerequisite: Zoology 101, 102; or 108, 109; and 104, 105; or the equivalent.

Elective to students in Agriculture, Forestry, and Pharmacy; junior or senior year; first semester; 2 credits; hours to be arranged.

111. PROTOZOOLOGY. An advanced course for the study of microscopic animals with a view to their relation, beneficially or injuriously, to man, particular attention being paid to such pathogenic forms as blood spores and enteric parasites, with some reference to soil protozoans.

Prerequisites: Zoology 101, 102; or 108, 109; and 201, 202; or the equivalent.

Elective for students in Agriculture and Pharmacy; junior or senior year; second semester; 2 credits; hours to be arranged.

112. RESEARCH AND THESIS. Opportunity will be given students who desire to specialize in Zoology and Physiology to take up work not given in the regular courses, or to undertake the investigation of special problems. Work for the master's degree, either as a major or as a minor in this department, may be selected. It is the policy of the department to allow the student to develop his own initiative in the selection of a problem, and in outlining and conducting his investigations, but with the cooperation of the head; or other member, of the department.

Elective for seniors and graduates; first semester; credits to be arranged.

113. RESEARCH AND THESIS. A continuation of course 112.

Elective for seniors and graduates; credits to be arranged.

114. AQUACULTURE. Lecture, laboratory, and field course dealing with the problems and methods of sea-farming and fish culture; that is, the hatching and rearing of fish and other aquatic food animals, the planting and care of oyster and clam beds, and a study of the various methods of production and preparation for market.

Elective for Agriculture and Forestry students; first semester; credits to be determined; hours to be arranged; not offered in 1914.

116. **TAXIDERMY.** Lecture, laboratory and field course in the methods involved in the preparation of skins, the preservation of museum specimens, and a study and practice of the methods involved in field survey work.

Elective for Agriculture and Forestry students; second semester; credits to be determined; hours to be arranged.

120. **GENETICS.** A lecture course dealing with the general principles of heredity, and the factors involved in variation and inheritance, the object being to afford students specializing in dairy husbandry, etc., a general knowledge of the fundamental principles of breeding. The course will be prefaced by lectures on the phenomena of reproduction; and will be followed by an explanation of the mechanism of heredity, involving a discussion of problems of inheritance of acquired characters, segregation, dominance, and sex determination, with respect to their application both to the human and to the domestic forms. The lectures are to be accompanied by frequent demonstrations, and supplemented by a considerable amount of collateral reading. Experimental problems may be outlined for practical investigation for those who may desire to carry on such work.

Elective for juniors in Agriculture, and others; first semester; 3 credits; 3 lectures.

201. **PHYSIOLOGY AND ANATOMY.** This course is intended not only for the general student, but also for those students particularly interested in this branch of Zoology, and for those who expect to study medicine. It includes a study of the structure, significance, and function of the human body, with reference to the animal body in general. As a foundation for the study of function, the laboratory course includes some work upon the gross anatomy and the histology of the various tissues and organs of a typical mammal. It also includes experiments and demonstrations with foods, the study of blood, nerve-muscle, reactions, etc.

Prerequisites: Zoology 101, 102, or the equivalent.

The course in Pharmacy; sophomore year; elective for other students; first semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

202. **PHYSIOLOGY AND ANATOMY.** A continuation of course 201, especially valuable to those who expect to teach Physiology in the

public schools. In connection with the work in Pharmacy it forms a valuable pre-medical course. Required course for Pharmacy sophomores.

Prerequisites: Zoology 101, 102, 201.

The course in Pharmacy; sophomore year; elective for other students; second semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

204. **PHYSIOLOGY AND HYGIENE.** A general course designed primarily to give Commerce students a practical knowledge of the functions and care of the human body in everyday life. The laboratory will be of such a nature as to furnish demonstration of the physiological principles.

Elective to Commerce in conjunction with Bacteriology 101; second semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

205. **NUTRITIONAL PHYSIOLOGY.** An advanced course dealing particularly with the processes of digestion, absorption, nutrition, secretion, and excretion.

Prerequisites: 101, 102, 207, 208; or the equivalent.

Elective for students in Home Economics; senior year; first semester; credits to be determined.

207. **PHYSIOLOGY.** The object of this course is to give to the Home Economics student that knowledge of life processes and anatomical relationships which will be most useful in maintaining the highest efficiency of the human mechanism. The chief functions of the human body and the laws of health falling naturally within the province of the physiologist, will be studied. The laboratory course will supplement the lectures and recitations, and include such experimental, histological, and anatomical work as will best serve the object of the course.

Home Economics; junior year; first semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

208. **PHYSIOLOGY.** A continuation of 207.

Home Economics; junior year; second semester; 3 credits; 2 lectures; 1 laboratory period of three hours.

209. **PSYCHOLOGICAL PHYSIOLOGY AND ANATOMY.** An advanced course designed to furnish a better mental equipment for students specializing in pedagogical psychology.

Prerequisites: 101, 102; 201, 202; or the equivalent.

Elective for seniors in Industrial Pedagogy, and others. Hours to be arranged; credits to be determined.

ENTOMOLOGY

PROFESSOR WILSON

ASSISTANT PROFESSOR LOVETT

MR. CHILDS

MR. MOZNETTE

MR. CHAMBERLAIN

MR. GENTNER

The courses in Entomology are planned to give the student sufficient knowledge of the subject to understand the proper relation of Entomology to the different phases of Agriculture; to meet the needs of the student specializing in Entomology; and to serve the needs of students from other departments in which certain special courses are required. Students who wish to elect Entomology as a major may, if they desire, specialize in one or more branches by choosing their research problems in definitely grouped subjects. These groups include General Entomology, Agricultural Entomology, Civic Entomology, Entomology for Horticultural Inspectors, and Forest Entomology.

The courses in General and Economic Entomology are intended to provide the student with sufficient training to enable him to identify the common insect pests, understand their habits and life history, and to apply the most approved methods for their control.

Forest Entomology includes the practical investigation of certain areas of timber to determine the kind and extent of insect infestation, methods of making out correct reports on forest insect infestation, and an investigation of the principles underlying control methods.

Advanced students in Entomology are provided with excellent opportunities for special instruction and research work. The library facilities are unusually good; the insect fauna of the western part of the State is distinctive, offering many new and interesting features for investigation.

Scheduled courses in this department will not be given to a class of less than five students.

The following courses are offered:

301. **INTRODUCTORY ENTOMOLOGY.** An introduction to the study of insects by lectures, laboratory, and field exercises. Sufficient field work in collecting, and laboratory work in properly mounting and classifying insects, is provided to make the student familiar with the principal orders of insects. In this and succeeding courses in Entomology, the rearing of economic and other forms of insects, is carried on parallel with other work, to gain familiarity with the development and habits of insects. Each student is required to familiarize himself with the life-history, habits, and means of controlling some insect of economic importance.

Prerequisites: Zoology 101, 102, and a collection of insects consisting of at least 250 specimens.

Required in the courses in Horticulture, Plant Pathology, and Entomology; elective in other courses; junior year; first semester; 2 credits; 1 recitation; 1 lecture; 1 laboratory period.

302. **ENTOMOLOGY OF ORCHARD AND SMALL FRUITS.** An intensive study of the more important insect enemies of the apple, pear, prune, cherry, plum, currant, gooseberry, bramble fruits, and strawberry, and the critical examination of the methods to be employed in combating them. Each important pest will be studied in the field and laboratory, with a view to becoming thoroughly familiar with the appearance of the insect and its work in all its stages of development.

Prerequisite: Entomology 301.

Required in the courses in Pomology, Plant Pathology and Entomology; elective in other courses; junior year; second semester; 2 credits; 1 recitation; 1 lecture; 1 laboratory period.

303. **ENTOMOLOGY OF TRUCK AND FIELD CROPS.** A course similar to 302, with special emphasis put on the intensive study of the insect enemies of celery, onion, beet, cabbage, kale, clover, vetch, potato, hop, corn, wheat and oats.

Prerequisite: Entomology 301.

Required in the course in Vegetable Gardening; junior or senior year; elective for students in other courses; second semester; 2 credits; 1 recitation; 1 lecture; 1 laboratory period.

304. **FOREST ENTOMOLOGY.** A study of insect injuries to forest trees and forest products, factors influencing their occurrence, and the general principles of forest insect control work.

The course in Forestry; junior year; second semester; 3 credits; hours to be arranged.

305. FOREST ENTOMOLOGY. A continuation of course 304.

Prerequisite: Entomology 304.

The course in Forestry; senior year; first semester; 2 credits; hours to be arranged.

306. ADVANCED ENTOMOLOGY. This course is designed for those who desire to specialize in Entomology. The instruction includes lectures and reference reading upon the biology of the principal families of insects, supplemented by laboratory studies of typical life-histories. Considerable time is devoted to studying the habits of insects, particularly injurious species in the field; to collecting, rearing, mounting, and classifying them; and to becoming familiar with entomological methods and literature.

Required in the course in Entomology; elective in other courses in Agriculture; junior year; second semester; 3 credits; 2 lectures; 2 laboratory periods.

307. ADVANCED ENTOMOLOGY. A continuation of course 306.

Required in the course in Entomology; elective in other courses in Agriculture; senior year; first semester; 5 credits; 2 lectures; 3 laboratory periods.

308. ADVANCED ENTOMOLOGY. A continuation of courses 306 and 307.

Required in the course in Entomology; elective in other courses in Agriculture; senior year; second semester; 5 credits; 2 lectures; 3 laboratory periods.

In connection with courses 306, 307, and 308, the student will be required to present a thesis, giving in detail the results of a systematic study of some restricted group of insects, or of the biology of some particular species or group of species.

317. HOUSEHOLD ENTOMOLOGY. A study of insects in their relation to pharmacy and to the household. The history and development of insects in medicine, insects in relation to disease, and insect pests of dwellings and stores. Control methods will be taken up in detail. This course is intended to prepare students in Pharmacy and Home Economics intelligently to understand the relation of in-

sects to the household and the community, and the principles underlying methods of control. Primarily for Pharmacy students; open to students in Home Economics and to others by special permission.

Two credits; 2 lecture periods.

309. BEE KEEPING. A course in the theory and practice of keeping bees for profit, and in relation to fertilization of orchard trees. The College has an apiary in which students will be able to become fully acquainted with modern apicultural methods.

Elective in the courses in Agriculture, and Home Economics; second semester; 1 credit; 1 laboratory period.

310. SEMINAR. Senior and graduate students in Entomology. Reading, discussing, and abstracting the leading articles on Entomology as they appear in the scientific journals, horticultural press, current magazines, and experiment station literature.

Senior year; first semester; one credit.

311. SEMINAR. A continuation of course 310.

Senior year; second semester; 1 credit.

312. PROBLEMS IN FOREST ENTOMOLOGY. This course will include the study and application of methods of forest insect investigations. Each student will be assigned a practical problem in Forest Entomology to work out under direction.

Credits to be arranged.

313. PROBLEMS IN FOREST ENTOMOLOGY. A continuation of course 312.

Prerequisite: Entomology 312.

Credits to be arranged.

SCHOOL OF FORESTRY

PROFESSOR PEAVY

ASSISTANT PROFESSOR NEWINS

MR. CONOVER

MR. ———

NON-RESIDENT LECTURERS

J. P. VanOrsdel, Portland Lumber Company.

E. T. Allen, Western Forestry and Conservation Association.

J. D. Young, Inman-Poulsen Lumber Company.

E. O. Siecke, Deputy State Forester.

T. Munger, Federal Forest Service.

J. C. O'Gorman, Wisconsin Logging Company.

Geo. M. Cornwall, Editor "The Timberman".

A. **FOREST PROTECTION.** Causes of forest fires; the methods of controlling forest fires; the proper organization of fire patrol over definite areas; fire fighting devices; lookout stations, telephone lines, roads, and trails, with reference to fire control; different methods, applicable to different regions.

Forester's short course; first semester; 3 credits.

B. **FOREST PROTECTION.** A continuation of course A.

Forester's short course; second semester; 3 credits.

C. **FOREST MEASUREMENTS.** The fundamental principles involved in computing the solid contents of logs and trees; methods of constructing scale rules; height measures; forest service methods of cruising timber; other methods; discounts for defects; volume tables. Practical demonstrations in the woods.

Forester's short course; first semester; 3 credits.

D. **FOREST MEASUREMENTS.** A continuation of course C.

Forester's short course; second semester; 3 credits.

E. **FOREST SURVEYING AND MAPPING.** A study of the United States system of land surveys. Retracing surveyed lines; methods employed in marking surveyed lines; the use of the compass; the surveyor's chain; plane table, Abney hand level; practical field work in surveying; the use of the aneroid barometer in topographic surveying. The details of map making; conventional signs used in mapping.

Forester's short course; first semester; 3 credits.

F. FOREST SURVEYING AND MAPPING. A continuation of course E.

Forester's short course; second semester; 3 credits.

G. FOREST IMPROVEMENTS. The construction of roads, trails, telephone lines, lookout stations, bridges, cabins, etc. Costs.

Forester's short course; first semester; 3 credits.

H. FOREST IMPROVEMENTS. A continuation of course G.

Second semester; 3 credits.

K. FOREST ADMINISTRATION. The organization of the Federal Forest Service; the district office; the national forest. The State Forester's office; organization of the State work. Forms used in the transaction of forest business; the preparation of reports.

Forester's short course; first semester; 1 credit.

L. FOREST ADMINISTRATION.

A continuation of course K.

Forester's short course; second semester; 1 credit.

101. GENERAL FORESTRY. A brief study of those economic conditions pointing to the necessity of conserving our natural resources. The forest regions of the United States. Forest ownership, private, state, and national. The elements of state and national forest policy. The economic importance of the forests to the United States, and to Oregon in particular.

Freshman year; first semester; 4 credits; 4 recitations.

103. FOREST HISTORY AND ECONOMICS. The development of European forestry. Progress of American forestry. The economic importance of forest products. Transportation as affecting the lumber industry.

Junior year; second semester; 3 credits.

201. SILVICULTURE. The art of establishing, developing, and reproducing trees, including their life-history, influences, modification and growth; the soil, climate, and other factors of site; types, theoretical silvicultural systems of management; the application of the clear cutting, selection, shelter wood, coppice, group, and strip systems, to American conditions.

Sophomore year; first semester; 3 credits; 3 hours field work; 2 hours lecture.

202. SILVICULTURE. The improvement of woodlands; cleanings; thinnings; protection of forests as related to Silviculture, laying emphasis upon methods of fire protection in the Northwest; arti-

ficial and natural regeneration; tree seeds, their structure, form, distribution; seed collection; seed testing; seed storage; generation periods; nursery practice; forest planting; planting plans; cost of planting. Silvical studies.

Sophomore year; second semester; 3 credits; 3 hours field work; 2 hours lecture.

203. **ADVANCED SILVICULTURE.** In this course the forest regions of the United States are subdivided into silvicultural divisions. In each subdivided unit a study is made of forest physiography, prevailing forest types, silvicultural management, problems of protection, market relations, and a review of the silvical habits of trees important from the standpoint of management. The study of the divisions in the West embraces all the national forests of the six federal districts, and their location.

Junior year; first semester; 3 credits; 2 laboratory periods.

204. **ADVANCED SILVICULTURE.** Silvical literature. Each student will be required to make a detailed silvical study of some definite forest tract, and present a thesis covering the work. Investigation of special silvical problems. The working out of problems of management under special conditions.

Junior year; second semester; 2 credits; 1 recitation; 1 laboratory period.

301. **MENSURATION.** The methods of determining the contents of logs in cubic feet and in board feet; log rules; methods employed in cruising timber. Instruments used in timber; volume tables; yield tables. Field work at the mills, and in the woods. Each student is required to cruise, describe, and map, a given piece of timber.

Junior year; first semester; 4 credits.

302. **MENSURATION.** A continuation of course 301.

Junior year; second semester; 4 credits.

303. **FOREST SURVEYING AND MAPPING.** Topographic and plane surveys of rough timbered areas. The use of the Abney hand level, aneroid barometer, plane table, cavalry sketching board, and hand compasses. Mapping field data; drill in the detail of map making.

Junior year; first semester; 2 credits.

401. **FOREST MANAGEMENT.** The business of administering the forest; policies with reference to National, State and private forests. The value of land for forest production; the value of young growth. The preparation of a detailed working plan for a given forest, a

valuation survey, including volume and yield tables, maps and complete forest description. The organization of the administrative force of the forest.

Senior year; first semester; 5 credits.

402. **MANAGEMENT.** A continuation of course 401.

Senior year; second semester; 4 credits.

404. **LUMBERING.** The history of the lumber industry, including a study of the methods used in different regions; special attention to lumbering operations in the Northwest; the transportation of logs from the woods to the mill; the use of steam machinery in skidding and hauling; driving; the methods of milling; seasoning and grading; the cost of logging and milling with reference to some definite operation. During the course, each student will be required to prepare a thesis from data collected by personal study of some extensive logging and milling business.

Senior year; second semester; 5 credits; 2 recitations; 3 laboratory periods.

405. **FOREST ADMINISTRATION AND IMPROVEMENT.** A study of the methods of administering the Federal forests; the organization of the administrative force of the forest; fire patrol; timber sales; grazing; the forest homestead law; permanent improvements, roads, trails, fire lanes, telephone lines, bridges, cabins.

Senior year; first semester; 3 credits.

406. **FIELD WORK.** This course is based upon practical work, performed by the student between the sophomore and junior years, or between the junior and senior years. The work must be done on some modern logging operation, or in connection with some technical forestry work carried on by the State or by the Forest Service. A report based upon an approved outline must be submitted.

From 1 to 5 credits.

408. **SEMINAR.** Preparation and discussion of reports on special subjects. Current forestry and lumbering literature. Each student is required to prepare a thesis on some assigned subject.

Senior year; first semester; 3 credits.

409. **SEMINAR.** Continuation of course 408.

Senior year; second semester; 2 credits.

501. **DENDROLOGY.** Classification and identification of all forest trees, including a study of forest ecology and taxonomy; the sil-

vical characteristics of commercial species; forest regions of the United States; relative importance of timber species; life-history and requirements of trees.

Senior year; first semester; 5 credits.

502. **TIMBER TECHNOLOGY.** The studies in timber technology include both microscopic and macroscopic characteristics by which wood may be identified; cell structure from a taxonomic standpoint; defects due to knots, decay, checks; structural changes due to seasoning; relation between moisture content and strength; chemical properties. The course includes the subjects of Forest Utilization and Wood Preservation. In Utilization the adaptation of woods to the various minor industries is considered in detail, such industries as the following being discussed: pulp, cooperage stock, veneer, matches, charcoal, etc. In wood preservation the factors of decay and preservative methods are studied. Open tank and pressure methods of applying preservatives, and the relative value of different preservatives.

Senior year; second semester; 4 credits.

* 504. **DENDROLOGY.** The course in Dendrology for Logging Engineers is designed to suit the needs of the engineer without requiring the silvical studies which are considered in the forestry course. Species of commercial importance in the Pacific Northwest are studied in particular, and their taxonomic relations to all other species are clearly defined.

Junior year; second semester; 3 credits.

505. **FOREST PROTECTION.** Protection from fire, insects, and fungi; and methods of control. The course deals mostly with protection from fire, laying emphasis upon preventive measures, such as the construction of lookouts, telephones, trails, roads, and fire lines. State and federal fire laws. Patrol associations; organizations of a patrol system, costs; fire fighting; equipment; and ration lists. Field demonstrations in transportation of supplies, and the use of the various hitches used in "packing."

Sophomore year; second semester; 3 credits.

506. **COMMERCIAL WOODS.** The course is designed primarily to meet the requirements of the woodworker in choosing the species of wood best adapted to his needs, and in identifying the woods com-

* 503 - Dendrology - Continuation of
501 - 3 credits; 2 Lec.; 1 Lab. Period.

monly used; macroscopic and microscopic identification of different species; dendrology and its significance in wood technology; taxonomy, showing how trees are classified.

First semester; 2 credits; 1 hour lecture; 3 hours laboratory or field.

601. LOGGING RAILROADS. The special problems connected with the construction of logging railroads, such as grades, curves; cuts, fills, switch-backs. Lectures and discussion, followed by field study on some extensive logging operation.

Junior year; first semester; 3 credits.

602. LOGGING ENGINES. A study of the construction and operation of engines used in logging operations. Laboratory and field work.

Senior year; first semester; 4 credits; 2 recitations; 2 laboratory periods.

603. BRIDGE CONSTRUCTION. This course deals with the construction of the peculiar types of bridges used in logging operations. Factor of safety. Costs. Preliminary laboratory exercises, followed by studies on logging operations.

Senior year; second semester; 3 credits.

407. LOGGING MANAGEMENT. The business problems connected with logging; organization of the working crews; cost of operations; cost keeping systems; improved methods. Experts in logging will deal with special phases of the subject.

Senior year; second semester; 3 credits; 3 recitations.

604. LOGGING DEVICES AND EQUIPMENT. Bridge, flume and chute construction; methods of slinging rigging; types of cars; skidding and loading devices; electrical machines used in logging; detailed investigation of costs and makes of equipment. Special reports accompanied by photographs, maps and drawings, will be required. At least three weeks of each semester must be devoted to the study of some up-to-date logging operation.

Senior year; first semester; 5 credits; 2 recitations; 3 laboratory periods.

605. LOGGING DEVICES AND EQUIPMENT. A continuation of course 604.

Senior year; second semester; 4 credits; 2 recitations; 2 laboratory periods.

OREGON AGRICULTURAL COLLEGE

SCHOOL OF HOME ECONOMICS

DOMESTIC SCIENCE

PROFESSOR CALVIN
ASSISTANT PROFESSOR MILAM
MRS. DOLMAN
MISS LEWIS
MISS SMITH
MISS DAVIS
MISS MOORE

The following courses are offered:

E. LAUNDERING. The principles of laundering through practical application, together with a study of cleansing materials; choice of starch, bluing, and soap; and the treatment of hard water. The cleansing process for all types of materials, methods of removing stains, folding and care of clothing.

Home makers' course; second year; second semester; 1 credit; 1 laboratory period.

H. FOOD PREPARATION. Three lectures and twelve laboratory hours per week throughout the year. Food, its sources, its economical purchase, storage, and use. The effect of heat and microorganisms on food, and the changes undergone by food material in the body. Careful instruction in the preparation of menus and the selection of food, that it may be properly adapted to the age and need of the consumer. Laboratory work in the preparation of vegetables, meats, breads, and fruits.

Home makers' course; first semester; 6 credits; 3 recitations; 4 laboratory periods.

I. FOOD PREPARATION. A continuation of course H. The greatest attention is paid to the preparation and service of meals, and to the purchase and preservation of food.

Home makers' course; second semester; 6 credits; 3 recitations; 4 laboratory periods.

J. CARE OF CHILDREN. Lectures relating to the physical, mental, and moral development of the child; the bathing and feeding of infants.

Home makers' course; second semester; 1 credit; 2 lectures.

K. SANITATION AND CARE OF THE HOME. Lectures and laboratory hours relating to the study of the home. The choice of site for a dwelling. General construction, lighting, heating, plumbing, disposal of waste, and general care of the dwelling house. The laboratory time is devoted to the study of the modern labor-saving devices of the household and the best cleaning agents, the care of floors and woodwork, and the common laundry operations. This course is optional with that of English.

Home makers' course; first semester; 3 credits; 2 lectures; 1 laboratory period.

L. PERSONAL HYGIENE. Discussions relating to the care of the skin, eyes, ears, and respiratory tract; the relation of clothing and posture to health and the necessity of exercise and fresh air. Such elementary physiology as is essential to the understanding of this course is given in connection with these lectures.

Home makers' course; first semester; 2 credits; 3 lectures.

M. HOME NURSING AND INVALID COOKERY. Lectures on the care of the sick room, the observation of symptoms, the administration of medicine, first-aid to the injured, and disinfection and management of contagious diseases. The laboratory consists of preparation of food for the sick, proper food combinations, and manner of service. This course is optional with that of English.

Home makers' course; second semester; 2 credits; 2 lectures; 1 laboratory period.

101. FOOD PREPARATION. An introduction to the subject of foods in their scientific and economic aspect. Laboratory work in the preparation of food, with a study of the changes brought about by the applications of heat, experiments being made to illustrate the principles involved. The classes prepare all of the common foods in many ways, serve simple meals, and study suitable food combinations.

Sophomore year; first semester; 3 credits; 2 recitations; 1 laboratory period.

102. FOOD PREPARATION. A continuation of course 101.

Sophomore year; second semester; 3 credits; 2 recitations; 1 laboratory period.

103. FOOD PREPARATION. A survey course of 101 and 102 for graduates of secondary schools with training in Domestic Science.

Sophomore year; first semester; 3 credits; 2 recitations; 1 laboratory period.

104. **FOOD PREPARATION.** This course elaborates the principles taught in Food Preparation 101 and 102, and introduces more advanced work. An application of the knowledge of the sciences is made by canning, preserving fruits, and making jellies. Bread, cake, other flour mixtures, and the preparation of vegetables and meats are also studied until the student has mastered the subject. The lectures are devoted to questions of nutrition and the economic purchase and use of food.

Junior year; first semester; 3 credits; 1 recitation; 2 laboratory periods.

105. **FOOD PREPARATION.** A continuation of course 104. The preparation and service of meals is the chief laboratory work of the second semester.

Junior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

110. **EXPERIMENTAL COOKERY.** The various methods and temperatures used in cooking are tested as to results. Wood, alcohol, oil, gasoline, and electricity are all used to produce the required heat and their comparative cost and effectiveness are studied. Labor-saving cooking devices are experimented with and the results recorded.

Elective; senior year; second semester; 1 credit; 1 three-hour laboratory period.

120. **METHODS IN DEMONSTRATION.** A course in which students are prepared to give public demonstrations in food preparation. Lectures are given on the results to be attained from demonstrations, equipment required, organization of plans, and general methods of procedure. Demonstrations are given by various teachers before the students, followed by student demonstrations.

Elective; senior year; second semester; 1 credit; 1 three-hour laboratory period.

180. **FOOD PREPARATION.** For women desiring knowledge of home cookery. A study of typical foods and their preparation in attractive forms, with the planning and serving of meals.

One evening lesson per week. A term of twelve lessons.

Either semester; hours to be arranged.

190. **CAMP COOKERY.** Instruction in various ways of combining into palatable and nutritious products such food materials as are available for use in camps. The making of different kinds of breads, as well as mulligans, griddle-cakes, and other camp dishes; practice during the latter part of the course in preparing food out of doors by means of Dutch ovens; reflectors, and improvised cooking utensils.

Elective; junior or senior year in Forestry course; second semester; 1 credit; 1 laboratory period.

201. **DIETETICS.** A scientific study of food materials in their relation to the daily dietary of families under various conditions of health and environment; a study of the dietary standards and the metabolism of carbohydrates, fats and proteins. A comparison of the nutritive values of the common foods, made by computing, preparing, and serving dietaries of specific costs, furnishing specific nutrients.

Elective; senior year; first semester; 4 credits; 2 recitations, 2 laboratory periods.

202. **DIETETICS.** A continuation of course 201. During the second semester, special stress on invalid diets, and diseases as affected by food.

Senior year; second semester; 2 credits; 1 recitation; 1 laboratory period.

210. **CATERING.** Designed to prepare the students for positions in large institutions, and also enable them to establish and maintain tea rooms and lunch rooms, and to act as caterers for private entertainments. The students assist in the purchase, preparation, and service of foods in the cafeteria, and are expected to devote the equivalent of eighteen hours per week to the course.

Elective; senior year; either semester; 6 credits; 6 laboratory periods of three hours each.

301. **HOUSE SANITATION.** The house as a factor in health. Situation, surroundings, ventilation, heating, drainage, plumbing, lighting, and furnishing of the house. Investigation will be made of general sanitary conditions from a practical and scientific standpoint with special reference to the needs of the community, the household, and the school.

Junior year; first semester; 2 credits; 3 recitations.

501. HOUSEHOLD ADMINISTRATION. The order and administration of the house, the proper division of the income and labor; the maintenance of suitable standards of health and efficiency; and a study of the domestic service problem.

Senior year; second semester; 3 credits; 3 recitations.

504. INSTITUTIONAL MANAGEMENT. The purchase of food and equipment in large quantities; methods of record keeping; and the general methods of sanitation and care of buildings wherein many are housed and cared for.

Senior year; either semester; 3 credits; 3 laboratory periods of three hours each.

510. HOUSEWIFERY. Practical lessons in the care of the house, including such matters as the treatment of floors, walls, and woodwork; the removal of stains; the cleaning of rugs and carpets; and the laundering of household linen and clothing.

Junior year; either semester; 2 credits; 1 recitation; 2 laboratory periods.

511. HOME NURSING. The scientific care of the patient under home conditions, including the furnishings, temperature, and ventilation of the room; bathing, dressing, and administering food and medicine to the patient; and also a study of the other duties of the home nurse in aiding the physician intelligently to add to the comfort of the sick. This means the ability to recognize and correctly report symptoms; to relieve pain; to disinfect, and to treat wounds, burns, and sprains; as well as to meet successfully emergencies that may arise in the home.

Sophomore year; either semester; 3 credits; 3 recitations.

550. MODERN PROBLEMS IN HOUSEHOLD ADMINISTRATION. The topics assigned for research will be chemical, physiological, bacteriological, economical, or sociological, according to the preferences and training of the individual students.

Graduate year; first semester; credits to be arranged.

551. MODERN PROBLEMS IN HOUSEHOLD ADMINISTRATION. A continuation of the research work commenced in course 550.

Graduate year; second semester; credits to be arranged.

701. SPECIAL RESEARCH IN COOKERY. In assigning research problems for graduate students, both the previous training and the

560. Social Ethics. - 2 credits

students' preferences are considered. Assignment of problems to be worked upon during the year is made by the professor in charge.

Graduate year; first semester; credits to be arranged.

702. SPECIAL RESEARCH IN COOKERY. Continuation of research work commenced in course 701.

Graduate year; second semester; credits to be arranged.

DOMESTIC ART

PROFESSOR BROOKS

ASSISTANT PROFESSOR ROBINSON

MISS HITCHCOCK

MISS PEER

MRS. SCHILLING

MISS KEATLEY

The following courses are offered:

K. HAND SEWING AND GARMENT MAKING. Lectures relating to textiles, their production, and manufacture, given for the purpose of assisting the home maker in her selection and use of the fabrics used in the home. Emphasis upon the care and storage of household linens. The laboratory work is planned so as to give the student the practical experience in the making of all needlework problems that are to be met in the home.

Home Makers' course; first semester; 5 credits; 3 recitations; 3 laboratory periods.

L. DRESSMAKING. Follows Course K. The lectures relating to the manufacture of cloth, its adulterations, economical purchasing, and use. Laboratory work giving the student experience in the making of wash dresses, childrens' dresses, woolen dresses, and the renovating and making of one woolen dress. Draughting of patterns, as well as the use of commercial patterns.

Home Makers' course; second semester; 5 credits; 3 lectures; 3 laboratory periods.

N. HOUSE FURNISHING. A practical course in the decorating and furnishing of the entire house. The problems of economic and artistic furnishing will be considered. Visits to house furnishing stores for the purpose of selecting materials will be a feature of this course.

Home Makers' course; second semester; 2 credits; 2 lectures; 1 laboratory period.

101. SEWING. The fundamental principles of hand and machine sewing applied to household linens and undergarments. Darning, patching, and care of clothing are considered.

The study of the development of the textile industries will give a deep appreciation for fabrics, and the responsibility for thoughtful purchasing.

Freshman year; first semester; 3 credits; 1 recitation; 3 laboratory periods.

102. GARMENT MAKING. Continuation of course 101 in which draughting and making of undergarments will be presented. Simple embroidery stitches will be taught where such are applicable. The study of cotton will give an added value to the garments being made.

Prerequisite: Domestic Art 101.

Freshman year; second semester; 3 credits; 1 recitation; 3 laboratory periods.

103. GARMENT MAKING. A course designed for graduates of approved high schools with Domestic Art training.

Freshman year; second semester; 3 credits; 1 recitation; 3 laboratory periods.

201. DRESSMAKING. The fundamental principles of dressmaking; the draughting, making, and adjusting of patterns to measurements; the making of shirt waists, tailored skirts, and a simple cotton dress.

The textile work will be a study of linen.

Prerequisites: Domestic Art 101, 102.

Junior year; first semester; 3 credits; 1 recitation; 3 laboratory periods.

202. DRESSMAKING. Continuation of course 201.

The textile work will be a study of silk and wool.

Prerequisite: Domestic Art 201.

Junior year; second semester; 3 credits; 1 recitation; 3 laboratory periods.

203. TAILORING. This course has for its problem the making of a cloth jacket suit. Careful draughting of the patterns and excellence of construction and finish will be required.

Prerequisites: Domestic Art 202 and 204.

Senior year; first semester; 3 credits; 1 recitation; 3 laboratory periods.

204. **ADVANCED DRESSMAKING.** Draughting and making of elaborate gowns. Emphasis on color combinations, technique, suitability of design for material used, and for purpose intended.

Prerequisite: Domestic Art 202.

Senior year; second semester; 3 credits; 1 recitation; 3 laboratory periods.

301. **MILLINERY.** Designing and constructing buckram and wire frames. Making and placing of trimmings, renovation of materials, straw sewing, bow making, and the construction of a hat from foundation to completion.

Senior year; second semester; 2 credits; 2 laboratory periods.

401. **BASKETRY.** A form of decorative art which involves careful consideration of form, color, and design; these principles will be considered in the making of rugs, reed baskets, stools, and raffia baskets.

Elective; senior year; first semester; 2 credits; 3 laboratory periods.

404. **HANDWORK AND WEAVING.** The study of advanced handwork, knitting, weaving, embroidery stitches and design as applied to costume, embroidery, and decorative design for household purposes.

Elective; senior year; second semester; 2 credits; 3 laboratory periods.

501. **HOUSE CONSTRUCTION AND DECORATION.** Two lectures and two laboratory periods each week to the study of house construction and furnishings. The laboratory hours are devoted to the making of plans for medium-sized residences; the best utilization of space, the most economical placing of equipment, and the decoration and furnishing of a house in the most economical, sanitary, and artistic manner. The lectures relate to the development of house building and the reasons for the selections. Every phase of house furnishing will be studied—floor coverings, furniture, linens needed, curtain hangings, china, silver, pictures—in such a manner as to give a full grasp of a problem likely to be met by every student.

Senior year; first semester; 3 credits; 2 recitations; 2 laboratory periods.

601. **ADVANCED TEXTILES.** The identification of textile materials, their names, kinds, prices, and widths; variation in weave

in regard to beauty and strength; the use and value of cotton, silk, wool, and linen for clothing and household furnishings. The identification of fibers and substitute material by means of the microscope; the chemical examination of fibers, including tests to determine content of cloth and adulteration; and proper use of materials in relation to cleansing and laundering.

Elective; senior year; second semester; 2 credits; 1 recitation; 2 laboratory periods.

701. COSTUME DESIGN. Study of the figure; sketching of garments, hats, and gowns; draughting of patterns; designing and modeling in material; study of design for embroidery and dress decoration.

Elective; senior year; first semester; 2 credits; 1 recitation; 2 laboratory periods.

SCHOOL OF ENGINEERING AND MECHANIC ARTS

CIVIL AND HIGHWAY ENGINEERING

PROFESSOR SKELTON

ASSISTANT PROFESSOR EDGECOMB

MR. DOLAN

MR. SMITH

The following courses are offered:

105. **MECHANICAL DRAWING.** The use of instruments and the elementary principles of mechanical drawing are taught by a graded series of plates, including simple practice sheets, geometric constructions, principles of orthographic projection, shading, and finally, the complete development of a working blue print of some simple device from sketches. Particular attention is given to free-hand lettering, general neatness, and accuracy.

Highway, Irrigation, and Mining Engineering; first semester; 4 credits; 4 laboratory periods.

111. **ENGINEERING DRAWING.** A continuation and extension of the previous work in drawing, with special reference to application in Highway and Irrigation Engineering. Practice in tracing and in blue and black line process printing will be given.

Prerequisite: C. E. 105.

Freshman year; second semester; 3 credits; 3 laboratory periods.

222. **PLANE SURVEYING.** This course includes recitations, lectures, field and office work in the theory and practice of plane surveying. The theory and construction of the different surveying instruments are studied, and practice will be given in making their tests and adjustments. The United States public land surveys and land laws are studied. Forms of field notes, methods of balancing and plotting surveys, computing areas and like work, will have due consideration. Proper emphasis will be placed upon chain surveying. Surveys will be made of assigned plats, and descriptions prepared. Resurveys will be made where more than ordinary difficulty is encountered in the interpretation of descriptions and existing evidence.

Prerequisites: Math. 11 and C. E. 105.

The course in Highway and Irrigation Engineering and Landscape Gardening; freshman year; second semester; 5 credits; 2 recitations; 3 laboratory periods.

223. TOPOGRAPHIC SURVEYING. This course will include the execution of a complete topographic survey of an assigned tract, including the base line measurement, transit, stadia, and plane table work, platting, and finishing the map.

Prerequisites: C. E. 222 and 105.

The courses in Highway Engineering, Irrigation Engineering, and Landscape Gardening; sophomore year; first semester; 5 credits; 2 recitations; 3 laboratory periods.

225. CITY SURVEYING (Elective). A study of the necessary precision; a survey of a portion of the city; also a new addition, including the preparation of plats, establishment of grades, etc.; survey and office work for preparation of plans for street improvement; preparation of estimates, etc.

Senior year; first semester; 3 credits; 1 recitation; 2 laboratory periods.

232. PLANE SURVEYING. In this course substantially the same ground will be covered as in course 222, except that there will be but two thirds as much field practice.

Prerequisites: Math. 11, 21, 31, and Mechanical Drawing.

The courses in Mining, Forestry, and Logging Engineering; freshman year; second semester; 4 credits; 2 recitations; 2 laboratory periods.

233. TOPOGRAPHIC SURVEYING. A condensation of course 223, and in addition requires a rough topographic survey of a forested section.

Prerequisite: C. E. 232 or 222.

The courses in Forestry and Logging Engineering; sophomore year; first semester; 4 credits; 2 recitations; 2 laboratory periods.

242. FARM SURVEYING AND LEVELING. This course is designed for Agricultural students, and consists of problems in chaining, elementary transit work, and in leveling. Most emphasis will be put upon leveling and its application to drainage and general irrigation work. Problems will be given in profile and contour work as applied to farm drainage, road construction, and irrigation.

Agricultural course; sophomore year; second semester; 2 laboratory periods with assigned lectures.

243. TOPOGRAPHIC SURVEYING. This course is designed especially for those taking the Irrigation Farming course, and is an enlargement on C. E. 242. A complete topographic survey and map of an assigned area will be made. Special emphasis will be put on the study of the relation of surface topography to methods of water distribution, drainage, etc., as illustrated by the assigned survey and map. Methods of locating ditches and of making estimates on grading for the same will be studied from the contour map.

Prerequisite: C. E. 242.

Irrigation Farming course; junior year; first semester; 2 credits; 2 laboratory periods with assigned lectures where required.

251. PLANE SURVEYING. This is a condensation of course 222, and is designed to meet the needs of Mechanical and Electrical students who have not time for the longer course.

Elective; second semester; 3 credits; 2 laboratory periods; 1 lecture or recitation.

252. PRECISE SURVEYING AND GEODESY. A study of the precise methods of surveying and leveling, base line measurements, precise triangulation, determination of true meridian and latitude.

Prerequisites: C. E. 222, 223, 272.

Elective; senior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

272. RAILROAD AND CANAL SURVEYING. This course will include a study of the simple, compound, and vertical curves, and of earthwork. Students will solve many problems both in the class room and in the field, and will make a survey of a canal, highway, or railroad, including a reconnoissance, preliminary survey, location survey, and estimates of earthwork. Emphasis will be placed on yardage estimates, cross-sectioning and earthwork computations, and details of construction.

Prerequisites: C. E. 222 and 223.

Highway and Irrigation Engineering and Landscape Gardening; sophomore year; second semester; 5 credits; 2 recitations; 3 laboratory periods.

274. RAILROAD SURVEYING. This course is designed especially for the Logging Engineering course, and takes up the survey of a railroad line through rough wooded country, including the reconnoissance, preliminary, and location surveys of such a line. A com-

plete estimate of the yardage, and also of the cost of the line is made. The course also includes the study of the simple, compound, vertical, and transition curves.

Prerequisites: C. E. 232 and 233.

Course in Logging Engineering; sophomore year; second semester; 4 credits; 2 recitations; 2 laboratory periods of three hours each.

281. RAILWAY ENGINEERING. Study of the methods of railway construction and maintenance, standard structures, trestles, tunnels, culverts, minor bridges, ballast, rails and rail supports and fastenings, yards and terminals. This course will be preceded by a brief review of the simple and compound curve and the railway spiral.

Prerequisite: C. E. 272.

Senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

282. RAILWAY ENGINEERING. Continuation of course 281.

Senior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

301. SANITARY ENGINEERING. Drainage systems of populous districts, including chemical and bacterial purification of sewage; collection and disposal of garbage; street cleaning; separate and combined water carriage systems; surveys, plans, and specifications; law of flow and determination of size and capacity; brick, terracotta, cement, and concrete sewers.

Prerequisite: I. E. 102.

Senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

405. ROADS AND PAVEMENTS. A study of the fundamental principles of location, construction, and maintenance of roads, as well as a thorough study of the materials used in road and street building. Asphalt, brick, wood block, stone, concrete, and other forms of street pavements are carefully studied. This course is given in connection with a laboratory course, Exp. E. 131.

The courses in Highway Engineering, Irrigation Engineering, and Landscape Gardening; junior year; first semester; 3 credits; 3 recitations.

407. HIGHWAY ENGINEERING. Economic grades and proper location for different soils and surfacing materials. Surface and

sub-surface drainage. Culvert design and construction. Construction and maintenance of earth, sand clay, oiled earth, gravel, macadam, concrete, brick, and other types of roads. Dust preventives and road binders. Preliminary surveys and estimates. Specifications.

Senior year; first semester; 4 credits; 3 lectures; 1 laboratory period.

408. HIGHWAY ENGINEERING. Continuation of course 407.

Senior year; second semester; 4 credits; 2 lectures; 2 laboratory periods.

410. ECONOMICS OF HIGHWAY CONSTRUCTION. Economic and social advantages of improved roads. The traffic census. Local and centralized systems of control. Highway laws of different states. Organization of construction and engineering forces. Cost data. Methods of handling work. Forms of contract—lump sum, unit price, percentage and cost plus fixed sum.

Senior year; second semester; 2 credits; 2 recitations.

511. GRAPHIC STATICS. The study of the graphic methods of the solution of stresses in cranes, derricks, and roof and bridge trusses, and such similar problems. The course is a draughting room course and is made up of a series of problems to be solved graphically and checked analytically.

The courses in Highway, Irrigation, and Mechanical Engineering; junior year; first semester; 2 credits; 2 laboratory periods of three hours each.

513. HIGHWAY BRIDGES. Design of wood and steel highway bridges and trusses of the ordinary Pratt or Howe truss type, including the complete design, stress diagram, and detail drawings of the same. Both analytical and graphical methods will be applied to the determination of stresses in trusses under static and wind loads, and under static, moving, concentrated, and distributed loads.

Prerequisites: M. E. 251, 252.

Senior year; first semester; 4 credits; 2 recitations; 2 laboratory periods of three hours each.

514. HIGHWAY BRIDGES. A continuation of course 513. Advanced work in highway bridge design is taken up, including draw, cantilever, suspension, and arch bridges.

Senior year; second semester; 4 credits; 2 recitations; 2 laboratory periods.

515. **STRUCTURAL ENGINEERING.** This course will include the original design, with the stress sheets, plans, and working drawings for a roof truss, plate girder, pin-connected bridge and steel arch.

Senior year; first semester; 3 credits; 3 laboratory periods.

516. **STRUCTURAL ENGINEERING.** Continuation of course 515.

Senior year; second semester; 2 credits; 2 laboratory periods.

552. **MASONRY AND FOUNDATIONS.** A study of the properties of stone, brick, lime, cement, and concrete as building materials, and of their uses in foundations, retaining walls, piers, and dams; the theory of the masonry arch, retaining wall and dam. Recitations, lectures, and work in draughting and computing room.

The courses in Highway Engineering and Irrigation Engineering; junior year; second semester; 3 credits; 3 recitations.

553. **REINFORCED CONCRETE.** A study of the fundamental principles of reinforced concrete design as applied to beams, girders, and columns. Designs are made of beam, girder, slab, and arch reinforced concrete highway bridges, and also of reinforced concrete retaining walls and irrigation structures. A detailed drawing is prepared of one reinforced concrete highway bridge.

The courses in Highway and Irrigation Engineering; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

555. **DESIGN OF HIGHWAY STRUCTURES.** A draughting room course in the design of different kinds of structures required in highway work. It includes the design of short span reinforced concrete slab bridges, short span I-beam bridges, culverts, tunnels, retaining walls for side hill roads, etc. A study will be made also of the effect of drainage of roads and drainage areas upon the design of bridges.

Highway Engineering course; elective; senior year; 2 credits; 2 laboratory periods.

605. **ENGINEERING SEMINAR.** The members of the senior class in the courses in Highway and Irrigation Engineering, and the professors and instructors, constitute the Engineering Seminar, which meets once a week. The purpose of this seminar is to bring the student in touch with engineering literature and practice. To

this end, a number of journal reviews and papers on engineering subjects will be presented and freely criticised each week. The work will follow a previously arranged program.

Senior year; first semester; 1 credit.

606. ENGINEERING SEMINAR. See course 605.

Senior year; second semester; 1 credit.

607. CONTRACTS AND SPECIFICATIONS. A study of the general principles and laws of contracts as applied to engineering, including the preparation and study of specifications and contracts based upon engineering structures designed by the individual student.

Senior year; second semester; 2 credits; 2 recitations.

ELECTRICAL ENGINEERING

PROFESSOR DEARBORN

PROFESSOR HILLEBRAND

ASSISTANT PROFESSOR SHEPARD

MR. WOOSTER

The following courses are offered:

101. PRINCIPLES OF APPLIED ELECTRICITY. Study of the sine wave and periodic alternating quantity; harmonic analysis; laws governing the flow of current and energy; the magnetic and electrostatic circuit, production of rotating field by means of polyphase alternating currents in a distributed winding; losses in electric circuits; elementary theory of transmission lines.

Open only to juniors in Electrical Engineering. Course 101 must be taken concurrently with 201, and 102 concurrently with 202.

Junior year; first semester; 5 credits; 5 recitations.

102. PRINCIPLES OF APPLIED ELECTRICITY. Continuation of course 101.

Junior year; second semester; 3 credits; 3 recitations.

103. ALTERNATING CURRENT MACHINERY. Theory of commutation; the alternator; synchronous motor and converter; transformer; induction motor; series and repulsion motors; polarity in alternating current circuits.

Course 103 may only be taken concurrently with laboratory course 203.

Prerequisites: Courses 101, 102, 201, 202.

Senior year; first semester; 3 credits; 3 recitations.

105. PROBLEMS IN DESIGN. Stress is laid upon methods of calculating dimensions of predetermining characteristics. Study of the choke coil, electro magnet, static transformer, one rotating machine. Problems on the synchronous and induction motor, transmission and distribution of energy. Parallels course 103.

Prerequisites: Courses 101, 102, 201, 202.

Senior year; first semester; 2 credits; 2 laboratary periods.

106. PROBLEMS IN DESIGN. Continuation of course 105.

Senior year; second semester; 2 credits; 2 laboratory periods.

108. POWER PLANTS, TRANSMISSION AND DISTRIBUTING SYSTEMS. A study of the equipment of power plants, transmission lines, and distributing systems, and of the technical and economic problems connected with the generation, transmission, and distribution of electrical energy.

In connection with this course inspection trips are made to the neighboring properties of the Oregon Power Company and of the Portland Railway, Light & Power Company. The expense of these trips will approximate twenty dollars, and should be anticipated by every Electrical Engineering student in his senior year.

Prerequisite: Course 103.

Senior year; second semester; 3 credits; 3 recitations.

110. ELECTRICAL CONTRACTING. Study of appliances handled by electrical supply dealers, the National Electrical Code, plans and specifications for interior wiring, systems of cost keeping, and economic features of the supply business.

Prerequisite: Course 103.

Elective only to seniors in Electrical Engineering who plan to engage in the electrical supply business, who may take it in lieu of course 108.

Senior year; second semester; 3 credits; 3 recitations.

201. ELECTRICAL ENGINEERING LABORATORY. Open only to juniors in Electrical Engineering and must be taken concurrently with 101, which it parallels. Study of electrical instruments; wave form and polarity of alternating currents; current, electromotive force and power relations in circuits involving resistance, inductance, and capacity; principles of operation of direct current dynamos and motors.

Consists of one laboratory period a week. Student is required to submit a preliminary report before performing experiment, and a final report upon its completion.

Junior year; first semester; 3 credits; 1 laboratory period.

202. ELECTRICAL ENGINEERING LABORATORY. Continuation of course 201. Must be taken concurrently with course 102. Study of hysteresis and eddy current losses in magnetic circuits, electromotive force and energy losses in electrical circuits; the separation of losses in direct current machinery; efficiency and loading tests of direct current machinery; properties of insulating materials.

Junior year; second semester; 3 credits; 1 laboratory period.

308. ELECTRIC RAILWAYS. A general study of the application of electricity to street and interurban railways, covering traffic conditions, speed, time, curves, and rolling stock.

Prerequisite: E. E. 101, 120, 201, 212, or E. E. 402.

Required of seniors specializing in railway electrical engineering.

Senior year; first semester; 2 credits; 2 recitations.

309. ELECTRIC RAILWAYS. Continuation of course 308. A study of conditions governing the electrification of trunk lines; systems of electrification and transportation economics.

Prerequisite: E. E. 308.

Required of seniors specializing in railway electrical engineering.

Senior year; second semester; 3 credits; 3 recitations.

312. RAILWAY SIGNALLING. A course in block signalling, interlocking air brakes, and appliances.

Prerequisite: E. E. 309.

Required of seniors specializing in railway electrical engineering.

Senior year; second semester 2 credits 2 recitations.

* 203. ELECTRICAL ENGINEERING LABORATORY. Characteristic performance of alternating current machinery, including alternator, synchronous and induction motor, synchronous converter and static transformer with parallel operation and pump back tests.

Preliminary and final reports are required.

Prerequisites: Courses 101, 102, 201, 202.

Senior year; first semester; 3 credits; 1 laboratory period.

301. STUDY OF CURRENT PERIODICAL LITERATURE. Presentation of abstracts and discussion of current articles in electrical periodicals. Special emphasis will be laid upon English, address, and manner of presentation.

* 204 - E. E. Lab. — 3 cred.

* 314 - Telephones — 2 cred.

Elective to seniors in Electrical Engineering.

Senior year; first semester; 1 credit; 1 recitation.

This course will not be given unless elected by at least four students.

304. STORAGE BATTERIES. Theory and operation of commercial types of storage battery; engineering application as a power plant auxiliary.

Elective to seniors in Electrical Engineering.

Senior year; second semester; 1 credit; 1 lecture.

306. THESIS. Elective, by permission, to seniors in Electrical Engineering. Only those whose past record indicates ability successfully to complete a satisfactory thesis, will be permitted to make this election.

Senior year; second semester; 2 or 3 credits.

402. STUDY OF ELECTRICAL MACHINERY. Open to non-electrical students in the School of Engineering. A practical course designed to meet the needs of Civil, Mechanical, and Mining Engineers. Class room and laboratory study of electrical instruments, current, electromotive force and power relations; the operation, care, and management of familiar types of dynamos, motors, both alternating and direct current, and transformers.

Required of seniors in Mechanical and Mining Engineering and of certain groups in Civil Engineering.

Prerequisites: Elementary Chemistry, Physics, Calculus, Mechanics.

Junior or senior year; second semester; 4 credits; 2 recitations; 1 laboratory period.

MECHANICAL ENGINEERING

PROFESSOR COVELL

ASSOCIATE PROFESSOR PHILLIPS

ASSISTANT PROFESSOR ROSENCRANTS

MR. YODER

The following courses are offered:

151 MECHANICAL DRAWING. The use of instruments and the elementary principles of mechanical drawing are taught by a graded series of plates, including simple practice sheets, geometric constructions, principles of orthographic projection, shading, the

helix with its application to screw-threads, and finally the complete development of a working blue print of some simple device from sketches. Particular attention is given to free-hand lettering, general neatness, and accuracy.

The courses in Electrical, Mechanical, and Logging Engineering; freshman year; first semester; 2 credits; 2 laboratory periods.

152. **DESCRIPTIVE GEOMETRY.** This work consists in the graphical solution of problems involving the projection of lines, surfaces, and solids.

All courses in Engineering; freshman year; first or second semester; 3 credits; 2 recitations; 2 laboratory periods.

153. **MECHANICAL DRAWING.** A continuation of course 151, including mechanical lettering, line shading, isometric and oblique projection, gear curves and their application to spur, bevel, and worm gearing. Following this is the preparation of a typical set of working drawings, tracings, and blue prints of a complete machine. Rapid and business-like execution of work is insisted upon at all times.

The courses in Electrical and Mechanical Engineering; sophomore year; first semester; 3 credits; 3 laboratory periods.

156. **DRAWING.** A course in elementary mechanical drawing, taught by a series of practice sheets in geometric construction, orthographic projection, of simple parts of machines, and finally, complete working drawings and blue prints of simple apparatus or machines.

The course in Industrial Arts; sophomore year; second semester; 3 credits; 2 laboratory periods.

204. **MECHANISM.** A study of mechanical movements, including velocity ratios; transmission of motion by linkwork, gearing, cams, and belting.

The courses in Electrical and Mechanical Engineering; sophomore year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

The course in Logging Engineering; junior year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

205. **MACHINE DESIGN.** This course consists largely in applying the principles discussed in mechanism and in mechanics to the design of machine parts. The work includes among other things

the study of screws, fastenings, shafting, belting, fly wheels, wheels, gearing, and machine frames.

Senior year; first semester; 4 credits; 4 recitations.

206. **MACHINE DESIGN.** This course supplements and is directly dependent upon the recitation work of course 125.

The work is taken up from a practical point of view and applies such theory as is consistent with the approved methods of design. Designs and complete working drawings are made of machines.

Senior year; second semester; 3 credits; 3 laboratory periods.

251. **STATICS AND DYNAMICS.** This is essentially a course in theoretical and applied mechanics. Force systems are analyzed and their effects upon rigid bodies, both at rest and in motion, are carefully studied. Methods of finding centers of gravity and moments of inertia are investigated, and their practical application brought to the student's attention by solving a number of problems. The principles of work, energy, friction, and impact, are all studied with reference to their importance in the field of engineering.

Prerequisites: Differential and Integral Calculus, Math. 51, 52.

All courses in Engineering; junior year; first semester; 5 credits; 5 recitations.

252 **STRENGTH OF MATERIALS.** In this course the general principles of mechanics are applied to the elements of engineering structures to determine their strength and fitness.

Some of the features are tensile and crushing strength of different engineering materials; strength and stiffness of beams or girders under different systems of loading, and various methods of support; supporting power of posts or columns; the application of torsion to shafts as a means of transmitting power.

The work throughout is exemplified by numerous problems which the student is required to solve.

Prerequisite: Statics and Dynamics, M. E. 251.

All courses in Engineering; junior year; second semester; 3 credits; 3 recitations.

302. **ROAD MACHINERY.** This course is designed to familiarize the student with the purpose, care, and manipulation of the different forms of power driven road machinery, both steam and gas, as exemplified in modern road construction.

The course in Highway Engineering; senior year; first semester; 1 credit; 1 laboratory period.

303. **ELEMENTARY STEAM ENGINEERING.** This course deals with the principles of steam engineering in a very elementary manner. Its purpose is to familiarize the student with the type of steam machinery largely used in the logging industry, such as donkey engines and logging locomotives.

A portion of the time will be spent in the class room studying the principles of steam formation and power development. A part of the time will be devoted to laboratory work, involving the care and management of the engines and boilers, as well as the use of the steam engine indicator in valve setting and power measurement.

The course in Logging Engineering; junior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

305. **THEORY AND PRACTICE OF STEAM ENGINEERING.** This course includes a study of the elementary thermodynamic laws of gases and vapors with reference to their application to engineering practice, and aims to fulfill the essential thermodynamic requirements of the gas and steam engineer. The work will be supplemented throughout with problems.

Prerequisites: Differential and Integral Calculus, Math. 51, 52.

The courses in Mechanical and Electrical Engineering; junior year; both semesters; 3 credits; 3 recitations.

306. **ADVANCED STEAM ENGINEERING.** A continuation of course 305, in which more time is spent on the application of the principles of thermodynamics to power plant machinery and to a study of the interrelation of power plant apparatus, including steam prime movers and boilers and their auxiliaries.

The courses in Mechanical and Electrical Engineering; senior year; both semesters; 3 credits; 3 recitations.

309. **STEAM BOILERS.** A study of the construction and operation of steam boilers, superheaters, economizers, heaters, boiler feeding devices, oil burning devices, and chimneys. It is the aim of this course to familiarize the student with modern methods and apparatus involved in the economic generation of steam.

Prerequisite: Course 305.

The course in Mechanical Engineering; senior year; first semester; 2 credits; 2 recitations.

312. **STEAM TURBINES.** The steam turbine has taken its place as one of the important factors in transforming energy into work. Hence the principles involved in its construction and operation should be well understood by engineering students. This course considers the flow of steam through pipes and nozzles and its action on turbine buckets. The effects of superheating are noted and some attention is given to steam turbine design.

Senior year; second semester; 2 credits; 2 recitations.

316. **STEAM POWER PLANT DESIGN.** The work in this course includes the design and working drawings of steam power plant problems. Among other things considered, are the location of plants; the selection of engines, boilers, pumps, and heaters; the general arrangement of parts, including the connections, piping, and auxiliaries.

The course in Mechanical Engineering; senior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

325. **COMPRESSED AIR AND REFRIGERATION.** A course devoted to the theory, design, and operation of air compressors, fans, and blowers, the first part of the semester, and to the study of the theory and operation of commercial refrigeration systems the latter part.

Prerequisite: Course 305.

Elective in the senior year of the Mechanical and Electrical Engineering courses; first semester; 2 credits; 2 recitations.

331. **HEATING AND VENTILATING.** Study of modern methods for the heating and ventilating of buildings. An outline of the work includes a study of several approved systems of heating by means of steam, hot water, or air; methods of computing radiating surface; effective methods of ventilation; general design, construction, and operation of plant.

The course in Mechanical Engineering; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

346. **INTERNAL COMBUSTION MOTORS.** In this course the application of thermodynamics to the internal combustion engine cycles, is studied with reference to the economy of operation. The theory of the combustion of gases and of the gasification of the liquid and solid fuels commonly met with in internal combustion engine practice, is discussed. The remainder of the time is devoted to a study of details, auxiliaries, and operation.

Prerequisites: Courses 305, 306.

Course in Mechanical Engineering; senior year; second semester; 2 credits; 2 recitations.

351. SEMINAR. The seminar meets once each week to study progress and development in the field of mechanical engineering. Technical literature will be reviewed; assignments will be made in advance, covering new or special features of engineering work. Students are required to submit carefully prepared reports, criticisms, or comments.

The course in Mechanical Engineering; senior year; first semester; 1 credit; 1 recitation.

352. SEMINAR. A continuation of course 351.

The course in Mechanical Engineering; senior year; second semester; 1 credit; 1 recitation.

EXPERIMENTAL ENGINEERING

PROFESSOR GRAF

MR. KNOPF

MR. BOALS

The courses in engineering laboratory practice are designed to familiarize the student with processes of investigation; to afford experience in conducting and reporting experimental engineering work; to secure data which shall verify and supplement theoretical instruction; and, to some extent at least, to give a practical knowledge of construction and management of machinery and apparatus.

Appropriate divisions of this work are taken by students in all branches of Engineering, Forestry, and Industrial Arts, and in that sense the Experimental Engineering laboratories constitute a service department. Special courses are offered, as listed in what follows, to meet the needs of the students in the different lines of work. An earnest effort is made, not so much to impart a mass of detail, as to develop in the student his powers of observation and his capacity for independent thought.

Reports are required of all experiments, and are regarded as a most important part of the work. They are carefully read and criticised as to form, neatness, conciseness, accuracy of expression and spelling, as well as accuracy of technical data and calculations. With this training, when the student completes the work, he should

know how to prepare an acceptable engineering report, or how to arrange data for publication.

201. **APPLIED MECHANICS LABORATORY.** A study of experimental investigation, reduction of data, mechanical calculating devices, and the preparation of neat, concise, and accurate reports. The calibration of various measuring instruments such as gauges, pyrometers, transmission dynamometers, etc., is then taken up. After this follow exercises in the measurement of power, including a test of the transmitting capacity and slip of belting. Transverse, tensile, compressive, torsion, and other standard tests of the common materials of construction are made; the heating value of a sample of coal is determined; the course being then concluded by two exercises on the properties of an assigned lubricating oil.

Prerequisites: Phys. 101 and 102, and Math. 51 and 52. Statics & Dynamics, (M. E. 251), and Theory and Practice of Steam Engineering, (M. E. 305), must also be taken in conjunction with this course.

Course in Mechanical Engineering; junior year; first semester; 3 credits apportioned as follows: preparation, $\frac{1}{2}$ credit; laboratory, 1 credit; report, $1\frac{1}{2}$ credits.

202. **POWER AND HYDRAULIC LABORATORY.** A continuation of course 201, beginning with the use and calibration of the indicator and planimeter. Tests are then made on steam and gas engines, a boiler, an impulse water wheel, pumps, an air compressor, and other power equipment. Exercises are given in the setting of Corliss and slide valves, and the course is concluded with an economy test of a steam turbine operating condensing.

This work is covered in fifteen laboratory exercises, one each week, and a careful report of each experiment is required.

Prerequisite: Course 201. Advanced Steam Engineering, (M. E. 306), must be taken in conjunction with this course.

Course in Mechanical Engineering; junior year; second semester; 3 credits, apportioned as for course 201.

203. **ADVANCED MECHANICS LABORATORY.** A rather general course in experimental mechanics dealing with more advanced studies of materials, fuels, lubricants, bearing metals, belting, etc., with special reference to the application of the results to the requirements of the mechanical engineer in actual practice. Reports required.

Prerequisites: Courses 201 and 202.

Course in Mechanical Engineering; senior year; first semester; 3 credits, apportioned as for courses 201 and 202.

204. **ADVANCED POWER LABORATORY.** A course similar in nature to the preceding, but dealing with power and hydraulic machinery. Various tests and studies are made on the following: a triplex pump, an air compressor, a centrifugal blower, a steam turbine, a compound engine, and finally, a complete test of a simple condensing Corliss engine, including the heat balance and a verification of Clayton's analysis. Complete reports required.

Prerequisite: Course 203.

Course in Mechanical Engineering; senior year; second semester; 3 credits; apportioned as for the preceding.

205. **APPLIED MECHANICS LABORATORY.** Fifteen experiments consisting of exercises selected from courses 201 and 203. A course designed especially for the seniors in Electrical Engineering.

Prerequisites: All of the Mechanical Engineering courses required of Electrical Engineering juniors. Advanced Steam Engineering (M. E. 306), should be taken in conjunction.

Course in Electrical Engineering; senior year; first semester; 3 credits, distributed as for course 201.

206. **POWER AND HYDRAULIC LABORATORY.** Similar in grade and purpose to the preceding. Consists of exercises selected from courses 202 and 204.

Prerequisite: Course 205.

Course in Electrical Engineering; senior year; second semester; 3 credits, apportioned as in the preceding.

207. **APPLIED MECHANICS LABORATORY.** This course is similar in range of equipment studied to course 201, but since it is intended for students in the Industrial Arts course who do not have some of the theoretical work in power engineering, the work must necessarily be taken up in a more general and elementary manner. Some time is taken to explain the necessary principles, and the students are taught to prepare neat and accurate reports of their work.

Prerequisites: Math. 11, and Phys. 1 and 2.

Course in Industrial Arts; senior year; first semester; 2 credits, apportioned as follows: laboratory, 1 credit; report and preparation, 1 credit.

208. **POWER AND HYDRAULIC LABORATORY.** A course similar in grade to the preceding, designed for seniors in the Ceramic Engineering and Industrial Arts courses. The work consists of ten laboratory exercises selected from course 202. The usual reports are required.

Prerequisite: Course 207 for Industrial Arts, and Course 237 for Ceramics.

Required in Ceramics and Industrial Arts; senior year; second semester; 2 credits, apportioned as for course 207.

210. **GENERAL ENGINEERING LABORATORY.** A course designed for seniors in Mining Engineering, or for others who desire a brief, comprehensive course in mechanical laboratory practice. The work consists of ten exercises selected from courses 201 and 202, and embraces tests on materials, hydraulic machinery, and steam and gas engines. Reports are required as in the preceding.

Prerequisites: Phys. 101 and 102. and Math. 51 and 52.

Course in Mining Engineering; senior year; first semester; 2 credits, apportioned as for course 207.

231. **CEMENT AND HIGHWAY LABORATORY.** An experimental study of Portland cement; standard A. S. C. E. methods of cement testing; examination of sands, grading of aggregates, determination of voids, etc., abrasion, hardness, toughness, cementing value, and other tests on macadam rock; tests of paving brick; standard tests on bituminous compounds.

This course is of broad scope, but is still sufficiently detailed to give the student a good working basis for the intelligent interpretation and preparation of specifications for the materials treated.

Prerequisites: Phys. 101 and 102 and Math. 51 and 52. Roads and Pavements, (C. E. 405) should be taken in conjunction with this course.

Courses in Highway Engineering and Irrigation Engineering; junior year; first semester; 2 credits, apportioned as follows: laboratory, $\frac{2}{3}$ credit; preparation and report, $1\frac{1}{3}$ credits.

232. **STRUCTURAL MATERIALS LABORATORY.** Standard tests of timber, iron, steel, brick, stone, etc., with special reference to the methods and specifications adopted by the American Society for Testing Materials, and other national engineering organizations. Following the general tests, some time is devoted to work on plain and reinforced concrete.

Prerequisites: Phys. 101 and 102, and Math. 51 and 52. This course should be preceded by course 231, and Strength of Materials (M. E. 252), should be taken in conjunction with it.

Courses in Highway and Irrigation Engineering; junior year; second semester; 3 credits, apportioned as follows: laboratory, 1 credit; preparation and report 2 credits.

233. **ADVANCED HIGHWAY LABORATORY.** Following course 231, and designed particularly for those specializing in Highway Engineering. Different road and paving materials and binders are tested and their relative values determined. Sheet asphalt mixtures and bituminous mortars are studied, to determine the effects of various changes in the grading of the aggregates. Finally, samples of various types of roads and pavements are analyzed for density, composition, and grading, with special reference to their conformity with specifications under which built.

Prerequisites: Course 231, and C. E. 405.

Course in Highway Engineering; senior year; first semester; 2 credits; apportioned 1 to laboratory work and 1 to report.

235. **ADVANCED MATERIALS LABORATORY.** An advanced course offered as an elective to students who have completed course 232, and who desire additional laboratory work on materials. In the past, tests have been made on reinforcing steel, reinforced beams, hooped columns, water-proofing of concrete, thermal conductivity of concrete, etc., but the course is varied according to the special interests and desires of the students electing the work.

The course on Reinforced Concrete (C. E. 553), must either precede this course or be taken at the same time. The course cannot be given unless elected by at least five students.

Either semester as desired by majority; 2 credits: laboratory, 1 credit; report, 1 credit.

237. **MATERIALS TESTING LABORATORY.** A course planned for students in Ceramics. The work begins with the standard tests on Portland cement, and the examination of sand and concrete aggregates. Some time is then devoted to tests on brick, drain tile, and other clay products, after which bending, tension, and compression tests are made on some of the general materials of construction such as wood, iron, steel, etc. The course comprises ten laboratory exercises for each of which a neat, concise report is required.

Prerequisites: Phys. 101 and 102, and Math. 51 and 52.

The course in Ceramics; senior year; first semester; 2 credits: laboratory, 1 credit; preparation and report, 1 credit.

238. **TIMBER TESTING.** A special course designed to meet the requirements of the students in Forestry. The work is covered in eight laboratory exercises, embracing cross-bending, compression, shearing, cleavage, and other standard tests of timber; a study of the effect of moisture content on strength; and a study of impact loads. The formulas for the reduction of data from tests are explained; and the students are taught the preparation of neat, accurate reports, such being required on all tests. In general, the methods and bulletins of the U. S. Forest Service will be used as a guide in the work.

Prerequisites: Phys. 1 and 2.

Course in Forestry; senior year; second semester; 1 credit.

NOTE: The work is covered in one three-hour laboratory period per week during the first half of the semester, for which one-half credit is allowed. The other half credit is given for the reports.

240. **LOGGING MATERIALS.** A course for students in Logging Engineering, identical for the first half of the semester with course 238. During the second half of the semester studies and tests are made on the materials of particular interest to the logging engineer, as for example, bending tests on full size timbers, tension tests on cable, rope, and on wrought iron tie rods, etc. In all these experiments time is taken to explain the principles involved, and to point out their practical applications.

Prerequisites: Phys. 101 and 102.

Course in Logging Engineering; senior year; second semester; 2 credits: laboratory, 1 credit; reports, 1 credit.

262. **HYDRAULIC LABORATORY.** Study of methods of measuring water, calibration of weirs, orifices, water meters, etc. Determination of friction and loss of head in pipe lines and fittings. Study of water hammer, and test of hydraulic ram. Tests on water wheel, centrifugal, triplex, and other pumps. The work is covered in fifteen three-hour laboratory exercises, and a report of each test is required.

Prerequisites: Math. 51 and 52, and I. E. 102.

Course in Irrigation Engineering; senior year; second semester; 2 credits: laboratory, 1 credit; reports, 1 credit.

272. **GAS ENGINE LABORATORY.** Study of mechanical details of engines, battery and magneto ignition systems, carburetors, and methods of governing. Analysis of gas engine cycles from indicator diagrams. Mechanical efficiency, regulation, and fuel economy tests. Economy, power, and tractive effort of automobiles.

The work is covered in fifteen laboratory exercises, and a report is required for each.

Prerequisite: The course on Internal Combustion Motors (M. E. 346), must either precede the course, or be taken in conjunction with it.

Course in Mechanical Engineering; senior year; second semester; 2 credits: laboratory, 1 credit; reports, 1 credit.

291. **EXPERIMENTAL RESEARCH PROBLEMS.** An opportunity is given for advanced and suitably prepared students who are interested in engineering research, to work out original problems. These may be either of their own choosing, or suggested by the department, and may cover any subject within the scope of the department laboratories.

Prerequisites: Must be approved in each case, as they would vary with the work proposed.

Elective to seniors and graduate students; first semester; 2 credits.

292. **EXPERIMENTAL RESEARCH PROBLEMS.** A continuation of course 291.

Elective to seniors and graduate students; second semester; 2 credits.

IRRIGATION ENGINEERING

PROFESSOR TEETER.

The following courses are offered:

101. **HYDRAULICS.** A practical application of the principles of hydraulics to irrigation farming, arranged especially for agricultural students. It includes a study of the laws of water pressure in tanks, pipes, and flumes; the measurement of water by weirs, orifices, and current meters; the study of losses of head in pipes and the consequent effect on the discharge.

Elective for seniors in Agriculture; senior year; first semester; 3 credits; 2 lectures; 1 three-hour laboratory period.

102. **HYDRAULICS.** A technical course dealing with the elementary laws of liquids in motion and at rest; the weight and pressure of water on gates and dams; velocity and discharge through orifices, tubes, pipes, and flumes; fluid friction, losses of head, and time of emptying reservoirs.

Prerequisite: M. E. 251.

Required of juniors in Highway, Irrigation, Electrical and Mining Engineering; junior year; second semester; 3 credits; 3 lecture periods.

103. **HYDRAULICS.** A course similar to I. E. 102, including the dynamic action of jets and streams, elements of turbines, and water hammer.

Prerequisite: M. E. 251.

Required of seniors in Mechanical Engineering; senior year; first semester; 3 credits; 3 lecture periods.

202. **HYDRAULIC PUMPS AND MOTORS.** The application of the principles of hydraulics to the design, construction, and operation of pumps and water wheels; the various forms of wheels and pumps, their adaptability, and efficiency.

Prerequisite: Hydraulics, I. E. 102.

Required of seniors in Irrigation Engineering; senior year; second semester; 2 credits; 2 lecture periods.

204. **WATER POWER.** A general study of the development of water power on streams; the effect of pondage, storage, and load factor on the capacity and efficiency of the plant and equipment; a detailed study of the characteristics of modern water turbines, together with an investigation of the speed regulation and manner of governing large plants. Extensive numerical problems will be required of the students in this course.

Prerequisite: Water Supply Engineering, I. E. 301.

Elective for seniors or graduates in Irrigation Engineering; senior year; second semester; 3 credits; 3 lecture periods.

301. **WATER SUPPLY ENGINEERING.** This course consists of preliminary investigations for determining the available supply of water for irrigation and domestic purposes; a study of general hydrology, steam gauging, the use of the mass diagram in the study of storage; ground water resources the sources of water supplies; manner of conveying and storing water; requirements for

fire protection; the economics of pumping and the proper installation of pumping plants. The solution of extensive numerical problems is required of the student.

Prerequisites: C. E. 511, I. E. 102.

Required of seniors in Irrigation Engineering; senior year; first semester; 4 credits; 3 recitations; 1 laboratory period of three hours.

401. IRRIGATION ENGINEERING. Precipitation, run-off, underground flow, sedimentation, fluctuation of stream flow, methods of determining losses due to evaporation and seepage; the phenomena of water logging alkali deposits and drainage; the duty of water in all its phases; irrigation by pumps; the location of irrigation systems; diversion weirs, headgates, flumes and drops—these are the principal features dealt with in this course. A study is made of the methods practiced in other countries.

Prerequisite: I. E. 102.

Required of seniors in Irrigation Engineering; senior year; first semester; 2 credits; 2 lecture periods.

402. DESIGN OF IRRIGATION STRUCTURES. This course deals with the storage and conveyance of water; the design of headworks and flumes; the selection of dam sites; investigations of the stability of dams in use; the design of a dam by Wegman's method; the design of pipe lines, earthen dams, and reservoirs; the design of flash boards and movable dams, hollow dams, and their application to storage and pondage. This course consists entirely of numerical problems with occasional lectures on the solution of the same.

Prerequisites: C. E. 511, I. E. 401, and I. E. 102.

Required of seniors in Irrigation Engineering; senior year; second semester; 2 credits; 2 three-hour laboratory periods.

501. DRAINAGE ENGINEERING. This course deals with the design of large drainage systems, open ditch construction, dredging and cleaning of large drainage channels, the drainage of alkali lands, etc.

Prerequisite: I. E. 102.

Elective for seniors in Highway and Irrigation Engineering; senior year; 2 credits; 2 lecture periods to be arranged.

602. **WATER LAW.** A study of the development of the water laws of Oregon with reference to the appropriation of water for large power and irrigation projects; the basis of the right of appropriation, patentees, and appropriator; waters subject to appropriation, and the transfer of rights.

Prerequisites: I. E. 401 and I. E. 301.

Required of seniors in Irrigation Engineering; senior year; second semester; 1 credit; 1 lecture period.

INDUSTRIAL ARTS

PROFESSOR BRANDON

MR. PORTER

MR. RIDENOUR

MR. MCCOMB

MR. WILTSHIRE

MR. THAYER

MR. MADDISON

MR. ———

A-1. **VOCATIONAL DRAWING.** In each of the vocational courses the student spends six hours per week in drawing, closely related to the major work which he is pursuing. The beginning work is devoted to learning the elements of drawing, general use of the drawing instruments, lettering, general constructions, methods of representation, and free-hand sketching. An attempt is made to correlate closely the work in drawing with the work in the shops. In plumbing, the work consists in making details of lead joints, fittings, and connections of sinks, closets, lavatories; preparations of floor plans and cross sections of buildings, showing plumbing installations. In patternmaking the drawing consists in making detail sketches of simple patterns, such as flanges, plates, brackets, hand wheels, stands, supports, and pieces of machinery such as are being built in the College shops. For students in the Electrical course, the drawing of details of dynamo electrical machine parts, such as pole pieces, commutators, switches, general switch board and power house layouts, is required. In the machinist's course, the work is along the line of details of machine parts, bolts, nuts, screws, and screw threads, assembled drawings of simple machines and machinery tools, steam and gas engine parts, and other machinery. In carpentry, details of furniture construction, of build-

ings, bridges, etc., form a prominent part of the course. For students of forging and foundry practice, drawing similar to that given to machinists and patternmakers respectively, is required.

Vocational course; Mechanic Arts; first year; first semester; 2 credits; 3 laboratory periods per week.

B-1. VOCATIONAL DRAWING. Continuation of A-1; first year; second semester; 2 credits; 3 laboratory periods per week.

A-2. VOCATIONAL DRAWING. Continuation of B-1; second year; first semester; 2 credits; 3 laboratory periods per week.

B-2. VOCATIONAL DRAWING. Continuation of A-2; second year; second semester; 2 credits; 3 laboratory periods per week.

A-3. VOCATIONAL DRAWING. Continuation of B-2; third year; first semester; 2 credits; 3 laboratory periods per week.

B-3. VOCATIONAL DRAWING. Continuation of A-3; third year; second semester; 2 credits; 3 laboratory periods per week.

C-1. CARPENTRY AND CABINETMAKING. The purpose of this course is to teach the pupil the elements of joinery as applied in cabinetmaking and the building trades. The beginning work is devoted to the principles of joining and to tool operations as involved in furniture making and interior finish, including design and construction, the proper use of tools, growth and strength of woods, shrinkage, warpage and seasoning of timber, staining and polishing. Considerable attention is given to the making of working drawings of simple pieces of furniture which are built in the shops. A study of the steel square and its uses is taken up the second and the third years, and the practical uses of the square are given in brace and detailed roof construction. This work will be developed through the construction of parts of houses, barns, roofs and bridges. In like manner, the construction of cornices, gutters, brackets, columns, window frames, and stairways is attempted. The erection of buildings in reduced scale and full sized sections of buildings is a strong feature of the course.

Supplementary lectures will be given upon the proper care of edged tools; the various woods used in building construction, their proper selection and treatment; the measurement of lumber, glues, nails, screws, bolts, nuts, pins, straps, and other fastenings. Roof trusses, spans, and braces and method of calculating their proper sizes; stair building, woodworking machinery, paints, shel-

lacs, and varnishes; estimates and practice in working problems that are taken from the students' work, from trade journals and from actual plans and specifications of houses. These are some of the prominent features of the work.

Vocational Course; Mechanic Arts; first year; first semester; 4 credits; 6 laboratory periods per week.

D-1. CARPENTRY AND CABINETMAKING. Continuation of C-1; first year; second semester; 4 credits; 6 laboratory periods per week.

C-2. CARPENTRY AND CABINETMAKING. Continuation of D-1; second year; first semester; 4 credits; 6 laboratory periods per week.

D-2. CARPENTRY AND CABINETMAKING. Continuation of C-2; second year; second semester; 4 credits; 6 laboratory periods per week.

C-3. CARPENTRY AND CABINETMAKING. Continuation of D-2; third year; first semester; 4 credits; 6 laboratory periods per week.

D-3. CARPENTRY AND CABINETMAKING. Continuation of C-3; third year; second semester; 4 credits; 6 laboratory periods per week.

E-1. PATTERNMAKING. The purpose of this course is to teach the elements of machine patternmaking. The student begins his course with exercises involving the use of bench tools, and the reading of working drawings. These exercises emphasize the necessity of draught, core prints, core boxes, of allowance for shrinkage of iron and other metals, and its effect on different shapes and thicknesses of castings. The student is taught how to join timber to prevent warpage and distortion of patterns by using segments, staves, ribs, etc. He is taught the meaning of trade names, such as boss, fillet, flanges, ribs, etc.; how to operate power machinery; to keep in repair belts and line shafting; to sharpen planer, shaper, and jointer, knives, band saws; and how to select materials, such as glue, lumber, shellac, and fasteners.

Much of the constructive work is upon parts of machines that are being built in the College shops, such as pulleys, pipes, fittings, valves, gear wheels, dynamo frames, lathes, emery grinders, gas engines, and other machinery.

More advanced work includes the calculation, laying out, and construction of globe valves; spur, bevel, and worm gearing propeller blades and cams.

Vocational course; Mechanic Arts; first year; first semester; 4 credits; 6 laboratory periods per week.

F-1. PATTERNMAKING. Continuation of E-1.

First year; second semester; 4 credits; 6 laboratory periods per week.

E-2. PATTERNMAKING. Continuation of F-1.

Second year; first semester; 4 credits; 6 laboratory periods per week.

F-2. PATTERNMAKING. Continuation of E-2.

Second year; second semester; 4 credits; 6 laboratory periods per week.

E-3. PATTERNMAKING. Continuation of F-2.

Third year; first semester; 4 credits; 6 laboratory periods per week.

F-3. PATTERNMAKING. Continuation of E-3.

Third year; second semester; 4 credits; 6 laboratory periods per week.

G. WOODWORKING. This is a course in woodworking, including instruction in the care and use of bench tools. The student becomes an adept in the use of the steel square by exercises in brace and rafter cutting and roof framing, followed by lectures on various types of barn constructions. The practical work involves the construction of models of roofs, trusses, buildings, and parts of buildings reduced in scale.

Vocational course in Agriculture; first year; first semester; 2 credits; 3 laboratory periods.

J-1. COURSE IN FORGING. The purpose of this course is to teach the principles of forging as applied in the average jobbing shop. It deals with the method of building of fires so as to obtain best results in heating; care and operation of fires and forges; the use of tools in the working out of nuts, bolts, bending of eyes, forging staples, gate hooks; bending and welding of rings and links; making of hooks, clevises, and the parts of wagons and farm machinery; the forging of tools of high carbon steel and high speed

steel such as chipping chisels, lathes, shapers, planers, and mill tools; blacksmith's and mechanic's hammers; knives, hatchets, draw knives, and other tools.

Special attention is given to the composition of iron and the various low and high speed carbon steels; and the treatment especially adapted for each grade, to annealing, tempering, and case hardening, with some lectures on the history and production of iron.

The student will have opportunity to get practical repair work on machinery brought in from the College farm—such work as plow sharpening, wagon and machine repairing. In fact, he will come in contact with most of the work that is done in an average jobbing shop.

Vocational course; Mechanic Arts; first year; first semester; 4 credits; 6 laboratory periods.

K-1. COURSE IN FORGING. Continuation of J-1.; first year; second semester; 4 credits; 6 laboratory periods.

J-2. COURSE IN FORGING. Continuation of K-1; second year; first semester; 4 credits; 6 laboratory periods.

K-2. COURSE IN FORGING. Continuation of J-2; second year; second semester; 4 credits; 6 laboratory periods.

J-3. COURSE IN FORGING. Continuation of K-2; third year; first semester; 4 credits; 6 laboratory periods.

K-3. COURSE IN FORGING. Continuation of J-3; third year; second semester; 4 credits; 6 laboratory periods.

L. BLACKSMITHING. The student enters upon work having direct application to farming, such as the making and mending of farm implements, chains, clevises, and hooks; the ironing of whiffletrees and neck yokes; the repairing and sharpening of plows and other farm machinery. Short talks and demonstrations are given on the method of building fires so as to obtain the best results in heating, descriptions of fans and forges, the uses of tools for various forgings, and a study of the proper means of heating and treating materials to be used.

Vocational course in Agriculture; first year; second semester; 2 credits; 3 laboratory periods.

M-1. COURSE IN PLUMBING. The purpose of this course is to teach the students those things that will meet the needs of the average plumber. The work consists of instruction and practice

in the care and handling of tools; in working with fittings, traps, valves, faucets, etc.; in working with sewer, soil, waste, water, and gas lines; in cutting and threading water pipe to measurements, using different fittings; in making fine and wiping solder, and in wiping upright joints; in laying out and constructing plumbing for buildings of two or more stories, including apartments and offices; in making range boiler and other hot-water connections; and in the practical uses of the soldering iron. The following subjects secure attention: joint wiping under varying conditions, sewer pipe laying, farm plumbing with the use of septic tanks, water supply systems, plumbing without the use of lead, sheet lead working, and estimating of plumbing construction.

Vocational course; Mechanic Arts; first year; first semester; 4 credits; 6 laboratory periods.

N-1. COURSE IN PLUMBING. Continuation of M-1.

First year; second semester; 4 credits; 6 laboratory periods.

M-2. COURSE IN PLUMBING. Continuation of N-1.

Second year; first semester; 4 credits; 6 laboratory periods.

N-2. COURSE IN PLUMBING. Continuation of M-2.

Second year; second semester; 4 credits; 6 laboratory periods.

M-3. COURSE IN PLUMBING. Continuation of N-2.

Third year; first semester; 4 credits; 6 laboratory periods.

N-3. COURSE IN PLUMBING. Continuation of M-3.

Third year; second semester; 4 credits; 6 laboratory periods.

P-1. FOUNDRY. In the foundry course, the importance of foundry practice in the industrial trades is fully recognized. Modern practices and methods, as carried out in the best commercial foundries, are closely followed. The work is varied and is such as to keep students alive with interest and to tax their ability enough to make them think. The course comprises the following: definition and names of tools, characteristics of molding sands, use and care of tools and flasks. The first exercises are intended to familiarize the student with the proper molding condition of the sand and the correct use of the hammer and other tools. A variety of forms add interest to the work. Patterns, in general, are those from which castings are made for use in the Machine shop. Parts of machinery are also constructed in the College shops, such as joints, parting lines, boards and match plates, gates for molds,

common gates, pouring basins, skim gates, horn gates, and shrinkage gates. The student is told when and how to use the various devices which he makes. Among other things, he is given such work as is germane to supporting copes, uses of gagers, and the use of solders and how to set them; facings such as sea coal, plumbago, talc, charcoal, and the preparation of facing mixtures; molding with good patterns broken castings, skeleton patterns; sweeps; molding of sheaves, pulleys, manhole covers, and rings; brackets; gas engine cylinders; lathe beds, in open sand and pit work, are emphasized. In core making are given materials of core making, core mixtures, uses of core boxes, sweeps and skeleton core arbors, and core rods, provisions for setting large cores by hand and with crane, methods of venting, core baking, and the polishing of cores.

In cupola management the student becomes proficient in preparing the cupola, in charging and pouring off.

The work also includes practice in making castings in brass, bronze, and aluminum, and the making of alloys. Additional lectures are given on malleable castings, loam molding, steel founding, mixing and melting of iron, machine molding, and foundry appliances. The student is taught to keep account of the supplies and labor and be in a position to tell the cost of any article produced in the foundry, also the value of such articles as turned out of commercial shops.

Vocational course; Mechanical Arts; first year; first semester; 4 credits; 6 laboratory periods.

Q-1. FOUNDRY. Continuation of P-1.

First year; second semester; 4 credits; 6 laboratory periods.

P-2. FOUNDRY. Continuation of Q-1.

Second year; first semester; 4 credits; 6 laboratory periods.

Q-2. FOUNDRY. Continuation of P-2.

Second year; second semester; 4 credits; 6 laboratory periods.

P-3. FOUNDRY. Continuation of Q-2.

Third year; first semester; 4 credits; 6 laboratory periods.

Q-3. FOUNDRY. Continuation of P-3.

Third year; second semester; 4 credits; 6 laboratory periods.

T-1. MACHINE SHOP PRACTICE. For students who specialize in machine shop practice, there is work in chipping and filing straight and plane surfaces, filing two pieces to fit, and instruction in laying

off and boring, followed by turning of various kinds of materials at different speeds and estimating of time and cost of work done by using different methods such as with and without gauges, gigs, etc., straight and taper turning, right and left hand thread cutting, single, double, square, and cutting of rack spur bevel and worm gears. There is instruction in the use and classification of gauges, micrometers, and calipers. The advantages of the uses of taps and dies, gigs, and special tools, are taken up; as are also the methods of center squaring, straight and taper turning and fitting, outside and inside screw cutting, chucking and reaming, finishing and polishing, drill tap and mandrel grinding, tap boring, uses of melting machine; tool making, such as taps, reamers, mill cutters, and gauges.

Practical experience is acquired through the construction of machinery, such as lathes, gas engines, steam engines, emery grinders, and through general repair work of the College.

Time cards and stock of material are kept of all work, so that the matter of cost of production is given careful consideration.

Vocational course; Mechanic Arts; first year; first semester; 4 credits; 6 laboratory periods.

U-1. MACHINE SHOP PRACTICE. Continuation of T-1.

First year; second semester; 4 credits; 6 laboratory periods.

T-2. MACHINE SHOP PRACTICE. Continuation of U-1.

Second year; first semester; 4 credits; 6 laboratory periods.

U-2. MACHINE SHOP PRACTICE. Continuation of T-2.

Second year; second semester; 4 credits; 6 laboratory periods.

T-3. MACHINE SHOP PRACTICE. Continuation of U-2.

Third year; first semester; 4 credits; 6 laboratory periods.

U-3. MACHINE SHOP PRACTICE. Continuation of T-3.

Third year; second semester; 4 credits; 6 laboratory periods.

V-1. ELECTRICAL CONSTRUCTION AND OPERATION. The purpose of this course is to give the student such theoretical and practical experience as necessary to make him an all round electrical worker.

The theoretical work, consisting of lectures, recitations, and laboratory work, covers the subjects of magnets and magnetism; electromagnetism; application of Ohm's Law, volt, ampere, Ohm, etc.; series and parallel circuits and measurements of resistance; a

study of the underwriters rules; wiring systems; the telephone and telegraph circuits; power, measurements of power; heat loss; mil, circular mil; wire calculations; the applications of the wattmeter; the motor and dynamo, both direct and alternating; wiring, repairing, and construction; tests of motors and generators; care of storage batteries; transformers; single- and multiple-phase circuits; and high tension transmission work. The shop work consists of making the different kinds of joints and splices; soldering; battery connections; telephone wiring, elementary and intercommunicating system; house wiring, exposed surface work, concealed, knob and cleat; flexible tubing, and conduit wiring. Wiring and installing of fixtures; repair of motors and dynamos; ignition, starting, and lighting systems on gas engines and automobiles; line work, armature winding, and commutator construction; transformer and switch board operation. The testing of alternating current generators, transformers, and alternating current machinery, both single- and polyphase, will form a part of this course.

Throughout the course, time cards and lists of material will be kept; and considerable attention will be devoted to the subject of buying of materials and to the financial side of the work.

Vocational course; Mechanic Arts; first year; first semester; 4 credits; 6 laboratory periods.

W-1. ELECTRICAL CONSTRUCTION AND OPERATION. Continuation of V-1; first year; second semester; 4 credits; 6 laboratory periods.

V-2. ELECTRICAL CONSTRUCTION AND OPERATION. Continuation of W-1; second year; first semester; 4 credits; 6 laboratory periods.

W-2. ELECTRICAL CONSTRUCTION AND OPERATION. Continuation of V-2; second year; second semester; 4 credits; 6 laboratory periods.

V-3. ELECTRICAL CONSTRUCTION AND OPERATION. Continuation of W-2; third year; first semester; 4 credits; 6 laboratory periods.

W-3. ELECTRICAL CONSTRUCTION AND OPERATION. Continuation of V-3; third year; second semester; 4 credits; 6 laboratory periods.

103. MANUAL TRAINING. Designed to meet the needs of those students who desire to teach manual training in the sixth, seventh, eighth, and ninth grades of the public schools. A course in wood construction and design, including theory and practice in the

proper use of tools; a study of the growth and structure of woods; shrinkage, warpage, and seasoning of timber; staining and finishing. Considerable attention is given to a study of shop methods equipment, courses of study, and proper methods of conducting class work.

Course in Industrial Arts; freshman year; first semester; 3 credits; 4½ laboratory periods.

104. **MANUAL TRAINING.** Continuation of 103; freshman year; second semester; 3 credits; 4½ laboratory periods.

105. **WOODWORK.** This course, which is designed for Mining Engineering and Logging Engineering students, consists primarily of a series of constructive exercises in carpentry and joinery, accompanied by one lecture a week dealing with the care and use of bench tools; the use of the steel square in framing and laying out work.

After completing the first constructive exercises which teach the use of the various hand tools, as well as the forms of joints and ties used by good engineering practice in truss and bridge framing, the mining engineering students will take up mine timbering truss and bridge construction relating to the mine; while the logging engineering students will take up the practical use of the steel square.

Mining and Logging Engineering courses; freshman year; first semester; 2 credits; 3 laboratory periods.

106. **WOODWORK.** The purpose of this course is to give instruction in the care and use of modern woodwork benches and their equipment. Six lectures will be given in this course, each lecture followed by a practical application. Skill in the manipulation of tools cannot be obtained in this short time, but instruction and practice will be given in sharpening chisels, planes, and other edge tools; in jointing, setting, and filing handsaws.

The principal feature of this course will be the instruction and practice in the use of the steel square in brace work and rafter construction.

The course in Agriculture; freshman year; first or second semester; 1 credit; 1½ laboratory periods.

111. **WOODWORK.** A continuation of course 105 for logging engineering students. This course will take up the construction of camp buildings; for example, bunk houses, cook camps, stables, etc.

Bridge construction of various kinds will be made a strong feature of the course.

In this, as in all other woodwork courses, the filling out of material bills and estimates of cost of material and labor will be required upon receiving or completing the design of the article to be built before the student is supplied with the required material.

Logging Engineering course; freshman year; second semester; 2 credits; 3 laboratory periods.

112. WOODWORK. This course is designed for the architectural students and consists of a series of exercises in planing, sawing, and chiseling, preceded by a lecture, explaining each step in advance.

After a satisfactory working knowledge of the use of the carpenter tools has been accomplished, the practical use of the steel square in brace and detailed roof construction will be taken up.

This work to be developed through the construction of miniature frames of houses, barns, and roofs.

So far as possible, drawings furnished by the architectural department will be used in this work.

Architectural course; freshman year; first semester; 2 credits; 3 laboratory periods.

113. WOODWORK. A continuation of course 112. Correct use of the steel square in laying out practical carpenter work; *e. g.*, windowsills and doorsills, bay and circular windows, steps, stairs, etc. Detailed construction of the window and door frames, sills, caps, weights, and fastenings in relation to the rough framework and the exterior and interior finish of the building.

In like manner, the construction of cornices, gutters, brackets, columns, and newel posts will be taken up.

As soon as the students become familiar with the detailed construction of the above, they will be assigned problems involving original design and construction.

Practice in reading plans, filling out material bills, and estimating the cost of material and labor, will be a strong feature of the course.

So far as possible, drawings furnished by the architectural department will be used in this work.

Elective; freshman year; second semester; 2 credits; 3 laboratory periods.

114. **WOODWORK.** This course is designed as an elective and may be taken upon the completion of course 106 or its equivalent.

The object of this course is to make a study of labor-saving devices and utensils about the farm, their design, construction, and location; a detailed study of the parts, their construction and improvement.

115. **CABINETWORK.** This course will be divided into two parts: (a) Mechanical drawing and design, bringing into practice the proper use of drawing instruments in connection with practical, original, and inventive design. (b) The construction of useful articles about the farm or home; *e. g.*, gates, ladders, hayracks, woodracks, movable fences, singletrees, doubletrees, drags, sleds, rollers, farm bridges, chicken houses, and the frame and truss work for machinery sheds, horse barns, dairy barns, and house construction.

Elective; course in Agriculture; sophomore year; first or second semester; 2 credits; 2 laboratory periods.

115. **CABINETWORK.** This course will be divided into three parts, carried on simultaneously: (a) A lecture course on methods and materials used in cabinetwork; various tools and their proper uses, and finishing materials and their application. Equivalent to one hour per week. (b) One hour per week will be devoted to drawing, original design, and studying of plans, etc. (c) A course giving the correct application of woodwork tools.

Upon acquiring satisfactory skill in the use of bench tools through practical joinery, primary construction work will be taken up. In this work the application of the joints will be shown in the construction of finished products. All of the operations must be methodically and accurately performed and the finished product must have a neat and workmanlike appearance.

The character of the work will be more or less individual and advanced as the student's ability develops.

Elective; freshman year; first semester; 2 credits; 3 laboratory periods.

116. **CABINETWORK.** Continuation of course 115. This course consists of the designing and construction of furniture according to the ability of the individual student. Mixing of stains, fillers, and various finishes, with their application, will be a strong feature of the course.

The character of the work will be a study of the design and construction of drawers and panel work, and primary upholstery.

Elective; freshman year; second semester; 2 credits; 2 laboratory periods.

131. **PATTERNMAKING.** This course consists of a series of exercises in planing and chiseling to familiarize the student with the proper use of tools; of practical exercises emphasizing the necessity of draught, core prints, core boxes; of exercises showing the necessary allowance for shrinkage of iron and other metals, and its effect on different shapes and thickness of castings. Exercises in woodturning are given in conjunction with lectures on the lathe, its care and management, and the care and use of turning tools. From the simple exercise the student soon advances to the construction of patterns of parts of machinery and other structures, such as pulleys, pipe fittings, valves, gear wheels, dynamo frames, gas and steam engines, lathes, emery grinders, and other pieces of machinery.

The lectures explain the correct methods of constructing the more complicated work, the principles of molding directly related to patternmaking, shrinkage of metals, kinds of lumber best suited for patternmaking, the working and twisting of woods, glue and metal fastenings, making cores and core boxes, methods of marking and storing patterns, estimating the weight of metal castings.

Courses in Electrical and Mechanical Engineering; freshman year; first or second semester; 2 credits; 3 laboratory periods.

132. **PATTERNMAKING.** This course and the following are a continuation of Patternmaking and are intended for engineering students who desire to devote further time to the subject, or for those who are engaged in the preparation of these, or construction work.

The work will consist largely in making patterns for steam and gas engines and other complicated machines.

Elective; first or second semester; 2 credits; 3 laboratory periods.

134. **PATTERNMAKING.** Continuation of course 132.

Elective; second semester; 2 credits; 3 laboratory periods.

135. **WOOD TURNING AND PATTERNMAKING.** The principles of wood turning are taken up with reference to their application to the useful arts. This leads to patternmaking, which forms the

greater part of the semester's work. One hour per week of the time will be used for shop lectures and recitations upon topics of vital importance to the work, such as selection of material, fastenings and joints, shrinkage of wood, allowance for shrinkage of metal, etc.

The course in Industrial Arts; sophomore year; second semester; 3 credits; 4½ laboratory periods.

136. PATTERNMAKING. This is a continuation of course 135, and is intended for those who desire to obtain a more detailed knowledge of the subject. The student will have opportunity to enter more fully into constructive work in patternmaking, by making patterns and core boxes for parts of machines to be built in the College shops.

Elective; junior or senior year; first or second semester; 3 credits; 4½ laboratory periods.

151. BLACKSMITHING. The student is taught to make and manage the forge fire; to shape iron by bending, upsetting, drawing, and welding. Many useful articles are made, consisting of hooks, staples, rings, clevises, and chains.

Sophomore year; first semester; 2 credits; 3 laboratory periods.

152. TOOLMAKING AND TEMPERING. This course is devoted to the study of the heat treatment of steel as exemplified in making and tempering tools, springs, and other articles of steel.

Prerequisite: Course 151.

The course in Mechanical Engineering; sophomore year; second semester; 1 credit; 1½ laboratory periods.

The course in Logging Engineering, sophomore year; second semester; 1 credit; 1 laboratory period.

The course in Mining Engineering; freshman year; second semester; 1 credit; 1 laboratory period.

153. BLACKSMITHING. A course for students in Agriculture. After completing the first exercise, the student enters upon work having direct application to farming, such as the mending of farm implements, making and mending of chains, clevises, and hooks; ironing of whiffletrees and neck yokes; sharpening of tools.

Elective; sophomore year; first semester; 1 credit; 1½ laboratory periods.

154. **BLACKSMITHING.** A continuation of course 152, for students wishing to take an entire year of blacksmithing.

Elective; sophomore year; second semester; 2 credits; 3 laboratory periods.

155. **FORGING.** This course deals with the equipment of the blacksmith shop, and includes exercises in bending, shaping, upsetting, and welding iron. Some instruction is given also in hardening and tempering steel, and in brazing. The course is accompanied with lectures on the management of the fire, methods of construction, and shop equipment.

The course in Industrial Arts; junior year; first semester; 2 credits; 3 laboratory periods.

156. **HAMMERED METAL WORK.** This course consists of hand wrought metal and enamel work, including hard and soft soldering, the formation of bowls, trays, boxes, lamp shades. The design and construction of furniture fittings.

The course in Industrial Arts; junior year; second semester; 2 credits; 3 laboratory periods.

171. **FOUNDRY PRACTICE.** This course includes a study of the foundry equipment; care and management of cupolas; mixing and melting of iron; moulding in green and dry sand; preparation of cores; casting in iron and brass.

The course in Mechanical Engineering; freshman year; first semester; 2 credits; 3 laboratory periods.

173. **FOUNDRY PRACTICE.** A course in all respects equivalent to course 171.

The course in Electrical Engineering; freshman year; first or second semester; 2 credits; 3 laboratory periods.

175. **ADVANCED FOUNDRY PRACTICE.** Continuation of 171 and 173. Elective; 2 credits; 3 laboratory periods.

202. **MACHINE SHOP.** The work in the machine shop includes both bench and machine work. Upon first entering the shop the student is taught the principles of chipping, filing, and hand finishing. This occupies the first half of the semester. Machine work is then taken up through a series of exercises on lathe, shaper, planer, drill press, and milling machine. As soon as accuracy and proficiency are shown on the part of the student, he is assigned to construction work upon engines, dynamos, motors, or machine

tools. One hour of the student's time will be required each week in the class room to attend lectures, work problems, or prepare other work assigned by the instructor.

The course in Mechanical Engineering; sophomore year; second semester; 1 credit; 1½ laboratory periods.

203. MACHINE SHOP. A continuation of course 202 devoted to machine construction and milling machine work. Special attention is paid to economical shop methods of doing work.

The course in Mechanical Engineering; junior year; first semester; 2 credits; 3 laboratory periods.

204. MACHINE SHOP. This and the following courses are a continuation of 203.

Mechanical Engineering course; second semester; 2 credits; 3 laboratory periods.

206. MACHINE SHOP. A course similar to course 202, designed to meet the requirements of students in Electrical Engineering.

The course in Electrical Engineering; sophomore year; second semester; 2 credits; 3 laboratory periods.

207. MACHINE SHOP. Continuation of 206.

Elective; Electrical Engineering students; junior year; first semester; 2 credits; 3 laboratory periods.

208. MACHINE SHOP. This course begins with the hand processes of chiseling, filing, and polishing, which are followed by a detailed study of the lathe, drill press, planer, and shaper, taught by means of carefully planned exercises. The course includes one hour per week of lecture or recitation work to supplement the instruction given in the shop.

The course in Industrial Arts; senior year; first semester; 2 credits; 3 laboratory periods.

209. MACHINE SHOP. A continuation of course 208 in which the student becomes familiar with the more complicated machines such as turret lathes, and milling machines. Shop methods are studied with reference to economical production. The student, as far as possible, enters upon construction of machinery and apparatus for College equipment.

The course in Industrial Arts; senior year; second semester; 2 credits; 3 laboratory periods.

230. DAIRY MECHANICS. This course is arranged for the students of Dairy Manufactures. An attempt is made to give in a brief way through lectures and laboratory work, a knowledge of the elements of machine mechanics, plumbing, operation of motors, dynamos, gas and steam engines, electric wiring, setting of line shafting, and the operation and repair of machinery. This work is given by instructors in the plumbing and machine shops, and in the electrical materials and mechanical engineering laboratories.

Dairy Manufactures; senior or junior year; second semester; 2 credits; 2 laboratory periods.

231. MANUAL TRAINING FOR ELEMENTARY GRADES. This course deals with the design and construction of cardboard work, weaving, basket, and mat work, stencil cutting, bookbinding, and other industrial subjects such as are taught in the first six grammar grades.

Prerequisite or parallel: Course 171 Industrial Pedagogy.

Course in Industrial Arts; senior year; first semester; 2 credits; 3 laboratory periods.

232. MANUAL TRAINING FOR ELEMENTARY GRADES. Continuation of 231.

Second semester; 2 credits; 3 laboratory periods.

301. SHOP DRAWING. This course is intended for those students who are specializing in Industrial Arts. In the beginning the work is devoted to the learning of the elements of drawing, the general use of the drawing instruments, lettering general constructions, methods of representation and free-hand sketching. Considerable attention will be given to drawings of pieces of furniture and constructions in wood that may be worked out in the shops.

Industrial Arts course; first semester; 2 credits; 3 laboratory periods.

302. SHOP DRAWING. Continuation of 301.

Second semester; 2 credits; 3 laboratory periods.

SCHOOL OF MINES

PROFESSOR PARKS
PROFESSOR WILLIAMS
ASSOCIATE PROFESSOR BUTLER
MR. SWARTLEY
MR. FRENCH
MR. GOODSPEED

The School of Mines occupies a new, commodious, three-story and basement building especially designed for housing the lecture rooms and laboratories devoted to mining, metallurgy, ore dressing, geology, ceramics, chemical engineering, and closely allied subjects.

Four-year courses leading to the degrees of Bachelor of Science in Mining Engineering, Ceramics, and Chemical Engineering are offered; and the advanced degrees of Mining, Ceramic, and Chemical Engineer are conferred, upon the completion of the requisite amount of graduate work, as prescribed elsewhere in this catalogue.

Instruction is given by means of lectures and textbooks, supplemented by recitations, and by a great deal of work in the laboratories and field. While the more theoretical studies are not neglected, a determined effort is made to emphasize the practical application and value of all the subjects taught. For this reason, nearly fifty per cent of a student's time is spent in laboratory courses.

The first two years in all three departments are identical, and are intended to give the student a thorough comprehension of those studies basic to all branches of engineering; namely, Mathematics, Physics, Chemistry, Mechanical Drawing, Plane Surveying, and Shop Work. To these fundamental subjects are added courses in Dynamical and Structural Geology, Crystallography and Blowpipe Analysis, and Determinative Mineralogy.

In the last two years, the student takes up the technical studies distinctive of the course pursued. This leads to considerable variation in the work of the different departments, as is indicated in the outline of courses. Statics and Dynamics, Strength of Materials, Hydraulics, and Electrical Machinery are required, however, in all of them.

At least two months employment in industrial lines closely allied to the course pursued, is a prerequisite to entrance upon the senior year.

The work in the School of Mines is so broad in nature that it should equip a student for general engineering operations of many kinds, but particular emphasis is placed, naturally, upon preparation for those fields of activity that are concerned with the discovery, mining or quarrying, and preparation for market, of the mineral wealth with which the Northwest is so richly endowed.

GEOLOGY

The following courses are offered:

111. CRYSTALLOGRAPHY AND BLOWPIPE ANALYSIS. This course is intended to prepare a student for the work in Determinative Mineralogy; and only those portions of the included subjects are emphasized, which are essential for the proper understanding and determination of minerals. A very thorough drill is given in these. Instruction is imparted by lectures, textbook, and laboratory work, and individual oral quizzes. In the laboratory work in Crystallography, a student is required to become thoroughly familiar with the crystal systems and forms by studying a large number of wooden crystal models; later, he determines the forms on several hundred natural crystals by means of a pocket lens and contact goniometer. Blowpipe Analysis is a rapid and useful method of ascertaining all, or a part, of the elements present in minerals. The course offered in this subject includes practice in the use of the blowpipe and the operations ordinarily included under the term Blowpipe Analysis, experimental work upon known substances until facility in the recognition of the various tests is attained, and the analysis of a score or more of unknown substances.

Prerequisites: Chem. 100 and 101.

Sophomore year; first semester; 3 credits; 2 recitations; 3 laboratory periods.

112. DETERMINATIVE MINERALOGY. In this course, about one hundred and sixty important mineral species, and scores of varieties of these, are studied. Emphasis is placed throughout the course upon methods of classification of minerals involving a knowledge of the physical characteristics as shown by a visual examination and by the use of a pocketknife. Chemical and blowpipe methods are

employed only to corroborate the inferences drawn from such observations. The end sought is the instantaneous recognition, in the field, of those minerals likely to be encountered in mining operations, rather than the classification of any mineral after a long series of tests in the laboratory. The methods of instruction used in the course include lectures, textbook, and laboratory work, and individual oral quizzes. Each student is expected to determine approximately two thousand individual specimens.

Prerequisite: Geol. 111.

Sophomore year; second semester; 3 credits; 2 recitations; 3 laboratory periods.

131. **PETROLOGY.** The object of this course is to familiarize a student with the characteristics of the commoner rocks in such a way as to make it possible to identify them with reasonable accuracy in the field. The methods employed are solely those applicable to hand specimens without the use of microscopic thin sections. The same methods of instruction are used as in Determinative Mineralogy, a portion of the scheduled laboratory periods being used for lecture purposes. Each student is expected to determine approximately seven hundred and fifty individual specimens.

Prerequisite: Geol. 112.

Junior year; second semester; 2 credits; 3 laboratory periods.

132. **PETROGRAPHY.** This course deals with the optical properties of rock-forming minerals and the classification of rocks by the use of thin sections and the petrographic microscope. It is an elective course and is limited to such graduate or advanced students as are especially qualified to take it.

Prerequisite: Geol. 131.

140. **GENERAL GEOLOGY.** An elementary course dealing with the composition, structure, and history of the earth, and the forces or agents that have been, and still are, instrumental in producing or changing its surface configuration and internal arrangement. Several excursions may be made to places of geological interest for the purpose of illustrating points discussed in the class room.

Optional in any course; either the first or the second semester; 3 credits; 4 recitations; 1 laboratory period.

153. **DYNAMICAL AND STRUCTURAL GEOLOGY.** A lecture course on geological courses and agents and their effects. Those structural

features likely to be encountered in mining operations are emphasized and the laws governing them are given. The lectures are supplemented by numerous problems of a very practical nature, and by several field trips to neighboring points of geological interest.

Freshman year; first semester; 2 credits; 4 recitations.

155. HISTORICAL GEOLOGY. A course of lectures on the origin and history of the earth and the plants and animals that have lived thereon. An outline of invertebrate paleontology is presented, and the student is taught how to determine the age of fossiliferous rocks by means of "faunal groups" rather than by the recognition of characteristic species. A part of the scheduled recitation periods are utilized for laboratory work.

Prerequisite: Geol. 153.

Junior year; first semester; 1½ credits; 4 recitations.

161. FOREST GEOLOGY. In this course, a student is taught how to recognize the commoner ore and gangue minerals and rocks at sight. This is followed by the study of the more important structural features occurring in earth materials and the criteria of the various types of ore deposits.

Prerequisites: Chem. 100 and 101.

Required in the Forestry course; optional in all others; sophomore year; first semester; 3 credits; 2 recitations; 1 laboratory period.

171. AGRICULTURAL GEOLOGY. This course deals with the origin and nature of soils from a geological standpoint, entirely. A study is first made of the commoner rocks, which a student is taught to classify at sight. This is followed by work on rock weathering and decay.

Prerequisites: Chem. 100 and 101.

Elective in the Agricultural course; junior or senior year; first semester; 3 credits; 2 lectures; 1 laboratory period.

181. MINING GEOLOGY (Principles of Economic Geology). A lecture course dealing with the theories of ore deposition, types of ore deposits, and the criteria governing the recognition of each; data bearing on the possible impoverishment or change in the character of ore at depth; ore shoots; following ore deposits or searching for ore shoots underground; irregularities produced by faulting, folding, and intrusion; and the recovery of lost ore bodies. The

work is made as practical and definite as the nature of the subjects treated will permit, and many problems and illustrations derived from actual mining operations are presented and discussed.

Prerequisites: Geol. 153 or 161 or 171.

Senior year; first semester; 3 credits; 5 recitations.

182. **ECONOMIC GEOLOGY.** This course deals with the origin, manner of occurrence, geological relations, and the geographical distribution of, and the factors governing the market for, all economically important metallic and non-metallic minerals and rocks. Many important mining areas are studied in detail and attempts are frequently made to apply the principles presented in Mining Geology.

Prerequisite: Geol. 181.

Senior year; second semester; 3 credits; 5 recitations.

190. **FIELD WORK IN GEOLOGY AND MINING.** This is a six weeks' field course carried on during the summer in an area showing diversified geology and where mining operations are being actively conducted. A topographic map covering fifteen to twenty-five square miles is drawn by triangulation, traverse, stadia, and plane table methods; the various geological features are then mapped and interpreted, and geological sections drawn; all mines and prospects are carefully examined and mapped; and the economic resources are then examined in detail.

Prerequisites: The completed work of the junior year.

After the junior year, during the summer vacation. May be substituted for Practical Geology or Mining.

199. **PRACTICAL GEOLOGY.** All students in the School of Mines are required to do at least two months practical work in mines, smelters, on geological surveys, in cement mills, clay works, or other industrial plants, closely related to the course which the student is pursuing. This must be done before a student enters upon the senior year of his college work, and evidence of the nature, quality, and sufficiency of the same will be passed upon by the proper department before credit for the work is given. While the minimum requirement is two months, it is urged that the freshman, sophomore, and junior vacations be entirely devoted to industrial occupations along the student's chosen line. This is very im-

portant, as it not only increases a student's insight into the technical subjects later studied, but also teaches him to appreciate the value of such advanced work.

212. **MINE SURVEYING AND MINING LAW.** This course supplements that in Plane Surveying, taken in the freshman year. The methods used in underground surveying and mine mapping, in locating and patenting mineral claims, and in such geodetic and topographic surveying as a mining engineer is often called upon to do, are studied; facility in the practical application of these methods is imparted by actual work in the field. Considerable attention is given to the solution of the many problems involving surveying which arise in mining operations; and some time is devoted to the study of the laws regulating the location, possession, and operation of mineral deposits in the United States.

Prerequisite: C. E. 201.

Junior year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

221. **MINING METHODS.** This is a study of the various methods used in securing the mineral products. The subject includes methods of timbering, methods of mining, pumping, ventilation, transportation, hoisting, mine sampling and reporting, installation of machinery, and surface improvements. The subject is presented largely through lectures and directed reference work.

Prerequisite: Completion of freshman, sophomore, and junior work in Mining Engineering.

Senior year; second semester; 3 credits; 4 recitations.

222. **MINE ECONOMICS.** This course takes up in detail the cost of extracting from mines, under varying conditions, gold, silver, copper, iron, and other metal ores, as well as coal.

Prerequisite: Completion of freshman, sophomore, and junior work in Mining Engineering.

Senior year; second semester; 3 credits; 4 recitations.

223. **MINE EXAMINATION AND REPORTS.** This course covers the valuation of mines, of surface and underground equipment, and of development work; the sampling of ore bodies; the calculation of the amount of gross value of ore reserves; the valuation of ore bodies; sampling of placer deposits; sampling of coal seams; valuation of coal seams; sampling and valuation of other mineral bodies; percentage of ore recoverable; probable cost of converting

reserves into a source of revenue; economic factors in mine valuation; mine reports; and the practices of prominent mining engineers throughout the world.

Prerequisite: Completion of freshman, sophomore, and junior work in Mining Engineering.

Senior year; second semester; 1 credit; 2 recitations.

231. POWER EQUIPMENT. A discussion of the sources of power, water, hydro-electric, steam, gas, and compressed air, together with their practical application to mining operations.

Senior year; second semester; 3 credits; 4 recitations.

241. DESIGN OF MINE AND MILL STRUCTURES. This course covers the design of steel and wood mill and mine buildings, head-frames, ore bins, and aerial tramways. In connection therewith, the covering, lighting, and ventilating of such structures is considered.

Prerequisites: M. E. 200, 201.

Senior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

251. ORE DRESSING. A study of the principles and the various methods of ore concentration and the mechanical preparation of ores for metallurgical treatment. This includes crushing machinery, screens, stamp mills, classifiers, jigs, vanners, and tables. Processes such as amalgamation, magnetic separation, flotation, electrostatic concentration, etc., are also discussed.

Prerequisite: Geol. 112.

Junior year; first semester; 3 credits; 3 recitations; 1 laboratory period.

299. PRACTICAL WORK IN MINING. For a description of this course see Geol. 199, with which it is identical.

CERAMICS

The course of instruction in Ceramics is designed to prepare young men to make intelligent search for suitable raw materials, to test them properly, and to aid in their economic exploitation and development. At the outset, therefore, ceramic students are required to take substantial courses in the basic sciences, chemistry, mathematics, physics, geology, and the preliminary engineering subjects required of other students in the School of Mines.

Work in the subjects distinctive of the course is confined to the last two years, and includes lectures and laboratory instruction and practice in the processes and methods of manufacture of ceramic wares, including, besides the commoner clay products, pottery and porcelain, and the compounding and application of glazes, enamels, etc. Both the materials used and the finished articles will be studied and tested. The physical and chemical principles on which the production and value of ceramic products are based are thoroughly presented, and the student is shown that successful manufacture depends upon a thorough knowledge and constant application of these principles.

The following courses are offered:

301. CERAMIC CHEMISTRY. Analysis of clays, glasses, glazes, and silicate minerals. Chemical study of fire gases.

Prerequisites: Chemistry 301, 401.

Junior year; first semester; 3 credits; 3 laboratory periods.

303. CERAMIC RAW MATERIALS. The occurrence, properties, identification, and winning of clays and other ceramic materials.

Prerequisite: Completed work of the freshman and sophomore years.

Junior year; first semester; 3 credits; 3 recitations; 3 laboratory periods.

310. RAW MATERIALS TESTING. Continuation of the laboratory work of Ceramics 305. Lectures at intervals as required.

Prerequisites: Ceramics 303 and Chem. Eng. 471.

Junior year; second semester; 2 credits; 2 laboratory periods.

312. CERAMIC CALCULATIONS. Calculations involved in the blending of raw materials for pottery bodies, glazes, etc. Practical ceramic problems.

Prerequisites: Ceramics 303; Chem. Eng. 471.

Junior year; second semester; 1 credit; 1 recitation.

321. MANUFACTURE OF CLAY PRODUCTS. Principles of the manufacture of clay wares, and the machinery used in drying and burning.

Prerequisite: Completion of the first three years of the Ceramics course.

Senior year; first semester; 4 credits; 3 recitations, 2 laboratory periods.

322. CLAY PRODUCTS LABORATORY. Continuation of the laboratory work of Ceramics 321. Lectures at intervals as required.

Prerequisite: Ceramics 321.

Senior year; second semester; 3 credits; 3 laboratory periods.

323. GLASSES, GLAZES, AND ENAMELS. Classification, production, properties, and defects. Methods of application to ceramic wares.

Prerequisites: Ceramics 303 and 312; Chem. Eng. 471.

Senior year; first semester; 4 credits; 3 recitations; 2 laboratory periods.

324. CERAMIC LABORATORY. Continuation of the laboratory work of Ceramics 323. Lectures at intervals as required.

Prerequisite: Ceramics 323.

Senior year; second semester; 2 credits; 2 laboratory periods.

326. LIMES AND CEMENTS. Lime, cement, plaster, and other cementing materials, and sand-lime products. Production, properties, and uses.

Prerequisites: Chem. 301 and 401.

Senior year; second semester; 3 credits; 3 recitations.

328. FIELD WORK AND REPORT. Visits to cement, clay, and other related industrial plants; carefully written reports.

Prerequisites: Ceramics 322 and 326.

Senior year; second semester; 1 credit; 1 laboratory period.

330. THESIS. A careful study of some special ceramic problem.

Prerequisite: Completion of all ceramic courses offered before the second semester of the senior year.

Senior year; second semester; 2 credits; 2 laboratory periods.

399. PRACTICAL WORK IN CERAMICS. For a description of this course, see Geol. 199.

With the consent of the heads of the departments interested, students may be admitted to the ceramic courses from the other departments in the School of Mines, from the School of Engineering, and the department of Art and Architecture.

CHEMICAL ENGINEERING

This course is intended to provide the instruction and training required by young men who desire to engage in the manufacture of those substances involving chemical processes and manipulations in their production.

Industries of this nature are so numerous and various that it is impossible to familiarize a student with all of them. The course is accordingly so presented as to give in the first half of the course a thorough knowledge of all the fundamental engineering subjects and chemical processes, while the latter half of the course is largely elective. This enables a student to specialize along chosen branches of chemical activity.

Throughout the work in this department, special attention is given to those industries that already exist in Oregon, or that must be put into operation if the resources of the State are to be properly developed.

The following courses are offered:

401. **FIRE ASSAYING.** The work of this course includes the crushing and sampling of ores and their assay for gold, silver, and lead; also the assay of various metallurgical products such as bullion, matte, etc. Special attention is given to the principles of the subject, which is treated from a scientific and rational point of view, rather than by "rule of thumb." Each student is required to make a large number of assays upon previously sampled and assayed pulps, and to learn to check these within very close limits.

Prerequisites: Chem. 301, 401; Geol. 112.

Junior year of Mining Engineering course; first semester; 3 credits; 1 recitation; 2 half days in the laboratory.

411. **GENERAL METALLURGY.** A study of metallurgical principles and processes and of such industrial materials as fuels, refractories, slags, etc., from a quantitative physical and chemical standpoint. Different kinds of pyrometers and calorimeters are studied; various fuels are compared; furnace materials and designs are taken up in detail; and enough problems are given to enable a student to solve all ordinary metallurgical computations.

Prerequisites: Chem. 301 and 401; Physics 101 and 102.

Junior year of the Mining Engineering and Ceramics courses; first semester; 2½ credits; 5 recitations.

412. **METALLURGY OF LEAD AND COPPER.** This course comprises a detailed study of the furnaces, appliances, operations, and materials used in the extraction of these metals from their ores, and in refining them. Particular attention is given to the important principles underlying these processes.

Prerequisite: Chem. Eng. 411.

Senior year of Mining Engineering course; first semester, 3 credits; 5 recitations.

421. **CYANIDATION OF ORES.** This is a detailed study of the cyanide process of extracting gold and silver from ores. The chemical principles involved in solution and precipitation are first mastered; then the operations and many mechanical devices in use are studied. Catalogues of leading manufacturers are freely used to illustrate the latest appliances.

Prerequisites: Chem. — ; Chem. Eng. 401.

Senior year of Mining Engineering course; first semester; 3 credits; 5 recitations.

423. **METALLURGICAL LABORATORY.** Each student in this course determines by laboratory tests the fitness of a given ore for cyanide treatment; ascertains the percentage of extraction by various methods; and finally, studies costs and selects the process that should give the greatest net returns.

Prerequisite: Must be taken in conjunction with, or after the completion of Chem. Eng. 421.

Senior year of Mining Engineering course; first semester; 2 credits; 2 laboratory periods.

431. **CHEMICAL AND METALLURGICAL PROCESSES.** A course of lectures supplemented by laboratory study of the general operations common to many industries, such as crushing, grinding, lixivation, filtration, evaporation, distillation, crystallization, etc., as well as the details of the various types of apparatus used for carrying on these processes.

Prerequisites: Chem. 301, 401.

Junior year; first semester; 3 credits; 4 recitations; 1 laboratory period.

442. **ELECTRO-METALLURGY.** This is a laboratory and lecture course in which are studied the principles and processes involved

in those industries which require the use of the electric current in producing and refining metals.

Prerequisite: Chem. 406.

Senior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

452. THERMO-CHEMISTRY. A continuation of Physical Chemistry in which the influence of temperature upon chemical reaction is studied more specifically than in the earlier course.

Prerequisite: Chem. 410.

Junior year; second semester; 4 recitations; 1 laboratory period.

461. CHEMICAL TECHNOLOGY. A lecture and laboratory course in which the more important chemical industries are studied in detail. Various problems connected with such industries are worked out by the student in the laboratory.

Prerequisite: Chem. Eng. 431.

Senior year; first semester; 4 credits; 4 recitations; 2 laboratory periods.

462. CHEMICAL TECHNOLOGY. A continuation of Chem. Eng. 461.

Prerequisite: Chem. Eng. 461.

Senior year; second semester; 4 credits; 4 recitations; 2 laboratory periods.

499. PRACTICAL WORK IN CHEMICAL ENGINEERING. For a description of this course, see Geol. 199.

SCHOOL OF COMMERCE

PROFESSOR BEXELL
PROFESSOR MACPHERSON
PROFESSOR HORNER
PROFESSOR DUBACH
ASSISTANT PROFESSOR BROWN
ASSISTANT PROFESSOR BLANCHARD
MR. LEMON
MR. MAXEY
MR. BALDWIN
MR. HOWARD

The following courses are offered:

B. BOOKKEEPING. The aim of this course is to give the student a thorough foundation in the fundamental principles of bookkeeping. A comparison of single and double entry; the theory of debit and credit; changing from single to double entry bookkeeping; promissory notes, interest and discount; statements; closing a set of books; the journal, cashbook, sales book, purchase book, and bill book; drafts, bills of lading, and other legal forms receive much attention. Every phase of the work is illustrated by means of a large number of practical problems secured from various sources.

Two-year business course; first semester; 3 credits; 1 recitation; 4 laboratory periods.

C. BOOKKEEPING. Continuation of Course B. The subjects of partnership, shipments, and consignments are here introduced. Elementary problems of how to handle depreciation, reserves, and accruals; the preparation, analyzing, and checking of balance sheets and financial statements; the distinction between capital and revenue; the use of controlling accounts and columnar books are carefully treated. Throughout the entire course the work is supplemented by a large number of practical problems illustrating the various subjects treated.

Two-year business course; second semester; 3 credits; 1 recitation; 4 laboratory periods.

D. DAIRY ACCOUNTING. The same general course as E, except that in the last third of the course special attention will be given to the development of a system of accounts suited to the dairy business.

Dairy Vocational course; second semester; 3 credits; 2 recitations; 2 laboratory periods.

E. FARM ACCOUNTING AND BUSINESS METHODS. (a) *Book-keeping*: Students who are not acquainted with the elements of double entry bookkeeping will be required to work out several practice sets and master the theory of accounts before taking up farm accounting. (b) *Business Methods*: A thorough course in the essentials of business methods required on a well-managed farm. Financial accounts and statements, cost accounts and special records, business methods, business organization, business correspondence and forms; household and personal accounts.

The course in Agriculture; second semester; 3 credits; 2 recitations; 2 laboratory periods. This course may also be taken by correspondence.

F. SHOP ACCOUNTING. A course in the theory and practice of accounting especially adapted to the shop and factory. Sufficient time is devoted to the fundamental principles of bookkeeping to familiarize the student with the use of special columns and various labor-saving devices. A special set of books adapted to the shop is then studied and prepared, making the course exceptionally practical. Besides the course in the technique of bookkeeping, considerable time is devoted to the phases of business management, such as advertising, selling, and buying.

The course in Mechanic Arts; second semester; 2 credits; 1 recitation; 1 laboratory period.

U. PENMANSHIP. Students entering the first year are expected to have acquired a good hand in the grades, but considerable time is devoted during the first year to mastering the best form of business writing and lettering.

Two-year business course; first year; first semester; 2 credits; 2 library periods.

V. PENMANSHIP. A continuation of Course U.
Second semester; 2 credits; 2 laboratory periods.

W. ADVANCED PENMANSHIP. Special emphasis is laid on rapid business writing, correct forms of business papers, lettering, and designing.

Two-year business course; second year; first semester; 1 credit; 1 laboratory period.

X. ADVANCED PENMANSHIP. A continuation of Course W. Second semester; 1 credit; 1 practice period. Required of all commercial students; elective to others.

100. PRINCIPLES OF BUSINESS ACCOUNTING. Modern accounting as practiced in the best business establishments of the country, forms the basis of the work. The use of special columns, controlling accounts and their adaptations are carefully studied. The student becomes familiar with a great variety of labor-saving forms used in the modern business office. Labor-saving devices of all kinds are studied with a constant view to secure greater accuracy and to diminish work. A great deal of practice in retailing, wholesaling, and the preparation of financial statements is required. The practical work consists of various sets of practice books which the student prepares under the supervision of the instructor.

Prerequisite: Course C or equivalent.

Freshman year; first semester; 3 credits; 1 recitation; 4 laboratory periods.

101. PRACTICAL ACCOUNTING. (a) *Partnership Accounts*: A study of opening and closing entries; adjustment of profits and losses; consolidation of firms; changing from partnership to single proprietorship and *vice versa*, and the preparation of a set of books of a partnership business. (b) *Corporation Accounts*: A presentation of the theory of manufacturing bookkeeping. A set of books will be prepared illustrating corporation bookkeeping as applied to manufacturing business. (c) *Short-Accounting Systems*: A further study of the use of special column books and filing devices, with reference to the saving of time and labor in bookkeeping, as applied to modern business houses. The preparation of a set of books illustrating the principles involved is also required in this course.

Freshman year; second semester; 4 credits; 2 recitations; 4 laboratory periods.

102. ACCOUNTING AND BUSINESS PRACTICE. (a) *Bank Accounting*: A thorough course in modern bank accounting and business

practice. The organization of private, state, and national banks, trust companies, and other financial institutions. (b) *Business Practice*: The business practice course is designed to supplement all the theoretical courses and to develop initiative and originality. The offices are thoroughly equipped with modern labor-saving appliances, such as filing devices, loose-leaf books, adding machines, duplicating devices, etc.

Prerequisite: Course 101.

Sophomore year; first semester; 4 credits; 2 recitations; 3 laboratory periods.

103. ACCOUNTING AND BUSINESS PRACTICE. This course covers the broader economic phases of accounting. Emphasis is laid on accounts as a means of administrative control and economy of production.

(a) *Factory Costs*. A system of accounts and records especially adapted to a manufacturing business with a considerable pay-roll.

(b) *Farm Cost Accounts*. A system of cost accounts adapted to the farm or any productive enterprise.

(c) *Business Practice*. A continuation of Course 102.

Sophomore year; second semester; 4 credits; 2 recitations; 3 laboratory periods.

105. ACCOUNTING PROBLEMS. In the efficient administration of a business of some magnitude, the accounting department is of first importance. In it, difficult problems arise, which require not only accounting skill, but judgment and executive ability. This course covers a large variety of practical problems viewed from the standpoint of the manager rather than the accountant. The material is drawn from certified public accountancy examinations and other sources. The student does not follow any prescribed form of treatment or solution, but is expected to develop analytical initiative, resourcefulness, and originality.

Prerequisite: Course 104.

Elective; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

106. PUBLIC ACCOUNTING AND AUDITING. (a) *Public Accounting*: This course embraces a study of accountancy as a profession; the C. P. A. laws of the various states are studied and compared;

an analysis and interpretation of accounts and financial statements; terminology and procedure in public systems form an important part of this course.

(b) *Auditing*: The duties and responsibility of the auditor; his function in the executive staff; his relation to the accounting department; different classes of audits; investigation in the conduct of utility corporations, municipalities, and public institutions. Typical audits will be studied and compared.

Prerequisite: Course 105.

Elective to students in commerce; 3 credits; 2 recitations; 2 laboratory periods.

107. GENERAL ACCOUNTING. An abridgement of Course 100. Open to all students except those who take course 100.

Either semester; 2 credits; 1 recitation; 1 laboratory period.

108. SPECIAL ACCOUNTING. In this course the student is given an opportunity to apply the principles of accounting to his special needs, the course being designed primarily for engineering students. Cost accounting, and corporation accounts and statements receive special attention.

Prerequisite: Course 107 or equivalent. Course in Electrical Engineering (elective to others); freshman year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

109. FARM ACCOUNTING AND BUSINESS METHODS. (a) *Farm Accounting*: This part of the course consists of a thorough discussion of a system of accounts suited to the farm. Cost accounting is especially emphasized, with a view to determining the results of different enterprises. A knowledge of the principles of bookkeeping is required before entering upon cost accounting. Students who are not thus prepared will be required to devote extra time to make up the deficiency.

(b) *Business Methods*: The economics of business receive special attention in this part of the course. The farmer is becoming a factor in commerce and finance to be reckoned with. He often engages in business adventures outside of farming; if he aspires to success he must observe the same rules of business as a manufacturer, merchant, or banker. Business organization, principles of business management; labor efficiency; buying and selling; advertising and correct office methods receive special attention.

The course in Agriculture; sophomore year; first semester; 2 credits; 1 recitation; 1 laboratory period.

110. BUSINESS ORGANIZATION AND MANAGEMENT. (a) *Business Organization*: General nature of business organization; evolution and forms; structure and life history of typical corporations; the corporation and trust problem; public utility corporations; reorganization and receivership; blue sky laws and state control.

(b) *Parliamentary Practice*: A brief discussion of parliamentary practice and procedure as applied to corporate business.

(c) *Business Management*: This part of the course emphasizes internal organization for the purpose of securing efficiency; departmental organization and coordination; various systems of scientific management are studied and compared.

Junior year; first semester; 3 credits; 3 recitations.

111. THESIS. A research course and treatise on the organization and management of a business in which the student is especially interested. The subject of the thesis must be chosen at the time of registration, and a complete outline approved by the professor in charge not later than November 1. When the thesis is approved, a bound (either printed or typewritten) copy must be deposited in the College library.

Prerequisite: All College courses in Business Administration. Open only to seniors.

Both semesters; 1 credit each semester.

112. ADVERTISING AND SELLING. (a) *Advertising*: A study of the fundamental principles of modern advertising. Special emphasis is given to the peculiarities of composition in newspaper and circular advertising, proofreading, effectiveness of design, illustration and display, follow-up systems, etc.

(b) *General Principles of Salesmanship*: Business ethics; wholesaling and retailing; brokerage and commission; specialty selling; the sale of service; planning a selling campaign; special sales; prices; correct buying.

Junior year; second semester; 3 credits; 3 recitations.

122. HOME AND PRIVATE BUSINESS MANAGEMENT. (a) *Accounts and Business Methods*: The principles of accounts are rapidly reviewed with a view to laying a foundation for systems of private or household accounts and budgets; business correspondence and forms.

(b) *Fundamentals of Business Law*: The principles of the law of contracts, of negotiable paper, of master and servant, of real property, of wills or bequests, and of court procedure.

(c) *Finance*: Banking and credit, investments, mortgage loans, life insurance, and loan associations.

Home Economics course; freshman year; second semester; 2 credits; 1 recitation; 1 laboratory period.

124. **PHARMACY ACCOUNTING.** A course in the theory and practice of accounting, especially adapted to the drug business. Sufficient time is devoted to the fundamental principles of bookkeeping to familiarize the student with the use of special columns and various labor-saving devices. A special set of books adapted to the average drug establishment is then prepared, making the course exceptionally practical. Besides the course in the technique of bookkeeping, considerable time is devoted to other phases of business management, such as advertising, selling, and buying.

Course in Pharmacy; second semester; 2 credits; 1 recitation; 1 laboratory period.

130. **COOPERATIVE ACCOUNTING AND MANAGEMENT.** This course covers the business management of cooperative societies. It includes such subjects as the organization of the employees; structure of buildings; office arrangement and equipment; correspondence and filing; bookkeeping and cost accounting especially adapted to different types of cooperative associations in the United States, such as creamery associations, cow-testing associations; auditing, banking, and finance; purchasing, advertising, selling; depreciation of assets; conduct of membership meetings; annual reports and audits; statistical analysis of operations. The course is based on the system published by the Cooperative Union Limited of England, adapted to American conditions.

Course in Farm Management; senior year; first semester; 3 credits; 2 recitations; 1 laboratory period.

ECONOMICS

I. **BUSINESS AND SOCIAL ORGANIZATION.** This course embodies a discussion of the principles of better business and better living that should accompany the general improvement in farm methods, which it is the purpose of this school to promote. The general application of the economic laws of consumption, distribution, and

production to the business side of farming, and the social and economic results of agricultural organization will be studied by the aid of textbook, lectures, and assigned readings.

Vocational course in Agriculture; first semester; 3 credits; 3 recitations.

J. **ELEMENTARY INDUSTRIAL PROBLEMS.** This is a course especially designed for vocational students in industrial arts. It aims to give them some insight into the economic problems with which they will have to deal. A very condensed outline of the principal economic concepts will be followed by the discussion of industrial organization, labor problems, transportation, marketing, taxation, etc.

Vocational course in Mechanic Arts; third year; second semester; 3 credits; 3 recitations.

K. **ELEMENTARY INDUSTRIAL HISTORY.** The history of industrial methods and the progress of invention is taken up from earliest times down through the English industrial revolution. Then follows a more detailed treatment of the industrial and commercial history of the United States. The evolution of industrial organization through the domestic to the factory system, the influence of these industrial changes upon the relations between capital and labor, the rise of a labor class, the opposing organizations consolidating labor and capital, problems incident to the formation of large corporations, the abuses of the trust, anti-trust legislation, etc., will be taken up with the aid of a textbook in industrial history, supplemented by lectures and the study of present day problems as outlined in the press.

Vocational course in Mechanic Arts; second year; 2 credits each semester; 2 recitations.

200. **COMMERCIAL GEOGRAPHY.** In this course the fundamental conditions underlying all industry and all commerce are taken up in detail. First of all such basic elements as climate and topography are investigated as they mold transportation and commerce and the production of animal and vegetable products. Then the natural resources of the different countries of the world are treated with especial emphasis upon those of the United States.

Specimens from the Commercial Museum will be used by the students in making reports on the production and manufacture of the principal raw materials and their relation to the development

of the countries from which they come. The course presupposes a fair knowledge of physical and political geography and of general history.

Freshman year; first semester; 3 credits; 3 recitations.

202. **COMMERCIAL GEOGRAPHY.** This division of the work of Commercial Geography is especially adapted to students in the Engineering courses. Along with 212, it forms a year's work, aiming to give the student an economic training especially suited to his particular field of activity.

More stress will be laid upon geographic conditions as they determine the problems of transportation and commerce. Climatic conditions and the principal raw materials will be taken up as determining the progress and localization of population and industry. The importance of these raw materials of commerce, and the supplies available in our own and other countries will be treated in detail.

Textbooks, lectures, and reports.

Engineering students; sophomore year; first semester; 3 credits; 3 recitations. Credit not given except when followed by 212.

205. **HISTORY OF COMMERCE.** The beginnings of agriculture and the industrial arts in the great Asiatic river valleys of China, India, Mesopotamia, and Egypt are sketched. The origin of commerce, by which the products of these ancient civilizations were exchanged and made common property, is outlined. The commercial achievements of the Phoenicians, Greeks, and Romans, in relation to the westward progress of civilization, are taken up. The rise of modern commerce out of the chaos of medieval Europe; the Mohammedan occupation of Spain; the effects of the Crusades; the achievements of Portugal, Spain, Holland, and France, are considered. The main stress of the course will be laid upon the industrial development of Great Britain, as a basis for the study of the United States, in Course 206.

Freshman year and second year of two-year Business Course; second semester; 3 credits; 3 recitations.

206. **ECONOMIC HISTORY OF THE UNITED STATES.** This course follows and develops out of the previous work in Commercial Geography and the History of Commerce. On the basis of a knowledge of our natural resources and of the previous commercial and economic development of the world, we attempt to outline and

interpret the economic progress along many lines which has been made by the United States. The development of agriculture, the growth of manufacturing, the improvement of transportation, the history of labor organization and legislation, the evolution of our monetary and credit systems, changes in the protective tariff, etc., are traced from Colonial times onward.

Prerequisites: Commerce 200, 205.

Sophomore year; first semester; 3 credits; 3 recitations.

210. PRINCIPLES OF ECONOMICS. A general course covering the elementary problems of our industrial and commercial organization, including the nature of wealth, its production and consumption, and the different forms in which it is found; the conditions underlying its success in agriculture and manufacturing; the localization of industry and the relation of raw material to manufacturing; the law of diminishing returns; division of labor and efficiency in production; exchange and distribution and their dependence upon the price-making process; the factors determining prices, wages, interest and rent; the problems of taxation; public expenditures; protection and free trade; money and banking; labor problems and transportation.

Textbook, lectures, and reports on assigned readings.

Prerequisites: 200 and 206.

Sophomore year; second semester; 3 credits; 3 recitations.

211. PRINCIPLES OF ECONOMICS. A course especially adapted for students in Home Economics. Not open to Commerce students.

Textbook and lectures. Junior year; first semester; 2 credits; 3 recitations.

212. PRINCIPLES OF ECONOMICS. This course forms a continuous year's work with Commercial Geography 202. In this division the elementary principles will be covered in a brief outline and the student will then take up, by means of lectures and selected readings, such problems as are especially important from the viewpoint of engineering students. Such problems are the nature, organization, and claims of trades unionism; the special problems of labor management from the standpoint of the employer; the economic problems of transportation, and a discussion of the modern trust movement, with attempts at legislative control. Textbook, lectures, and reports. Not open to Commerce students; must be taken in connection with Commerce 202.

Engineering students; sophomore year; second semester; 3 credits; 3 recitations.

213. LABOR PROBLEMS. This course begins with a brief historical review of the rise of a labor class. The influence of occupation upon the laborer; and the different types of labor and the problems involved in the occupations represented by the several technical departments of the College, will be studied. Then follows the beginnings of organization; the structure, aims, methods of offence and defence, and achievements of associations of labor. The trade agreement, the strike, the boycott, the lockout, methods of conciliation and arbitration, the application of the injunction in labor disputes, the political activity of labor organizations, employers' liability, legislation, workingmen's insurance, profit sharing and cooperation in relation to labor problems, will be taken up with the aid of a textbook, lecture, and assigned readings. Studies will be made of typical, historical and current labor disputes and embodied in term papers and class discussion.

Prerequisite: Commerce 210.

Sophomore or junior year; second semester; 3 credits; 3 recitations.

219. AGRICULTURAL ECONOMICS. The fundamental principles of production, distribution, and consumption are taken up with especial reference to agriculture. The aim of the course is to acquaint the student with the laws of supply and demand and the influences determining them. A brief history of agricultural production is taken up, showing the growing complexity of the economic problems of taxation, transportation, marketing, etc., as the transition is made from self-sufficing, general farming to localized, commercial agriculture.

Textbooks and lectures; junior year; first semester; 3 credits; 3 recitations.

230. MONEY AND BANKING. (a) *Money*: The nature and functions of money, legal tender, Gresham's law, coinage; the factors affecting prices, and their relation to business conditions; a brief history of the various forms of paper currency; silver legislation; present problems and conditions.

(b) *Banking*: Procedure in organizing state and national banks; history of banking, including our National Banking System as modified by the Federal Reserve Bank Act of 1913; the functions

of banks; the preparation and analysis of bank statements; loans and the granting of credit, securities required; rediscount; duties of the various bank officers; legal principles of banking; the principles underlying foreign exchange; a comparison of our banking system with that of foreign countries. Textbook, lectures, assigned readings, and reports.

Prerequisite: Commerce 210.

Junior year; first semester; 3 credits; 3 recitations.

233. **PUBLIC FINANCE.** An examination will be made of public expenditures, local, state and national. For this purpose, typical financial budgets and reports will be analyzed. A history of reforms calculated to secure efficiency in these expenditures will be sketched. The various forms of taxes, customs, and fees whereby revenues are raised, will be taken up in detail and their apportionment studied in relation to the budgets previously analyzed. Present systems of land taxation will be studied in the light of proposed reforms. An attempt will be made to give the student some laboratory practice through the study of local systems of assessment and the resulting apportionment of taxes.

Senior year; first semester; 3 credits; 3 recitations.

235. **INSURANCE.** A course designed to cover, in a general way, the whole field of insurance. The nature and statistical basis of different kinds of insurance will be first treated. Then the application of the principles discovered to different forms of insurance, such as straight life, endowment, accident, industrial, old age, fire, live stock, hail, etc., will be taken up in detail. Text, lectures, and library work.

Elective; junior or senior year; second semester; 3 credits; 3 recitations.

240. **TRANSPORTATION.** The relation of transportation systems to industrial and commercial progress; a brief historical review of the development of systems of transportation; the organization and financing of different systems; the effects of competition in the railroad business; freight classification, and the making of rates and fares; the necessity of government control, and attempts at regulation by state and federal governments; government ownership in the light of European experience. Text, lectures, and assigned readings.

Senior year; second semester; 3 credits; 3 recitations.

250. **PRACTICAL SOCIOLOGY.** In this course, social theory will be subordinated to the study of practical social problems. The different social and political units, such as the family, school, church, club, city, state, and nation will be discussed in their relation to the general welfare. This will necessitate an examination of the organization, purpose, and methods of each of these functional groups, involving a discussion of the training of children, employment of women and children, marriage and divorce; the labor movement as a factor in the struggle for existence; overcrowding in city slums, and its amelioration; the causes of pauperism, immorality, and crime, with modern methods of their treatment, etc. A good general textbook will be studied and the whole field covered in class discussion and assigned readings.

Sophomore year; second semester; 3 credits; 3 recitations.

251. **PRACTICAL SOCIOLOGY.** Course 250 especially adapted for students in Home Economics. Not open to students of Commerce. Textbook and lectures.

Junior year; second semester; 2 credits; 3 recitations.

252. **RURAL SOCIOLOGY.** This course will deal with the special problems of the rural family, the rural school, the rural church, rural societies and associations, and the relation of the State to the general rural welfare. This will involve an inquiry into the prevailing ideals of the rural community regarding labor and leisure; art, literature, and music; and the necessity for recreation. Recent progress in adapting education to rural needs will be discussed. City over-crowding will be examined from the rural point of view, and the lessons which the rural community can learn from the progress made by cities in solving their problems, will be emphasized. The social and educational effects of the telephone, free mail delivery, rural press, and improved methods of agricultural production and exchange, will be discussed in detail. The best textbooks in the field will be carefully studied, and the whole ground covered in class discussion and assigned readings.

Elective for juniors and seniors in Agriculture and for such juniors and seniors in Domestic Science as may prefer this course to the one in Practical Sociology; second semester; 3 credits; 3 recitations.

254. **NATIONAL VITALITY.** A one credit course, covering the general field of national vitality, its importance, the conditions un-

derlying it and the means of maintaining such conditions. The economic and social waste due to disease, alcohol, and vice will be treated in a series of lectures by experts from different departments of the College. Outside specialists will also be secured to lecture upon particular phases of the subject. Besides taking notes on the lectures, each student will be required to make an abstract of not less than three hundred pages of assigned readings.

Elective for all students; first semester; 1 credit; 1 recitation.

260. COOPERATION. This course takes up the origin and development of the cooperative movement in Europe, and its introduction into the United States. It sets forth the general principles underlying the economic and social activities of cooperative associations. Then, following this, the different types of organization, the methods by which they are formed, their working plans in different enterprises, and the factors which determine their success or failure, will be studied in detail. The store, the factory, the dairy and cow-testing association, the credit organization, etc., will be taken up systematically, and the advantages and difficulties of cooperation will in each case receive careful analysis.

Elective for juniors and seniors who cannot take 264 and 265, and who have had considerable training in political economy; junior or senior year; second semester; 3 credits; 3 recitations.

264. THE ECONOMIC ORGANIZATION OF AGRICULTURE. This course, together with 265, is designed to give a more specialized training in the economic problems of agriculture than is possible in the general course outlined under 219.

In both courses, 264 and 265, economic problems are discussed from the standpoint of the efficiency to be attained through closer organization. Existing associations of farmers both in this country and in Europe will be carefully studied by means of sample constitutions and by-laws, and also by lantern-slide illustrations of the work actually being accomplished through cooperation in Europe and America. The aim is to turn out men trained to play their part in the revolution in agricultural business methods which is now sweeping over this country.

(a) *Economic Problems of Production and Marketing*: Old methods and their weakness are examined, and the possible savings through organized business are investigated.

(b) *The Purchase of Farm Supplies*: The purchasing end of the farm business is about as important as the selling of farm products. Present methods will be taken up in detail, and the possibility of eliminating waste and duplication thoroughly discussed and illustrated.

(c) *The Problems of Transportation as Affecting the Farmer*: The economic significance of the good roads movement will be dealt with; systems of rail and water transportation will be taken up, government control discussed, and the possibility of eliminating waste through precautions on the part of the shippers pointed out.

Open to all who have had 219 or its equivalent; junior year; first semester; 3 credits; 3 recitations.

265. RURAL FINANCE. (a) *Rural Credit*. The principles of money, credit, and banking will be sufficiently studied to lay the foundation for the examination of the credit needs of rural communities, and the most economical means of satisfying them. The reasons why farmers have been so poorly served by existing credit institutions will be investigated. The credit institutions of Europe will be compared with those of the United States; the development of cooperative credit in European countries will be carefully studied, and the present widespread movement to adapt cooperative credit institutions to American rural conditions will be closely followed.

(b) *Rural Insurance*. The basis of insurance of different kinds will be taken up, and applied to agricultural needs; old line, mutual, and fraternal organizations will be examined from the standpoints of efficiency and safety.

(c) *Rural Taxation*. The general principles of public finance will be taken up in so far as may be necessary to lay the foundation for an intelligent discussion of rural taxation; existing systems, as well as proposed reforms, will be examined.

Open to all who have had 219 or its equivalent; junior year; second semester; 3 credits; 3 recitations.

270. PROBLEM COURSE. Students especially interested in Applied Economics may select some problem within the scope of the work characteristic of the College, and under the direction of the instructor in charge prepare a thesis embodying the results of an investigation made during the senior year.

Senior year; both semesters; consultation by appointment; 1 credit each semester.

POLITICAL SCIENCE

K. CIVIL GOVERNMENT AND ADMINISTRATION. (a) *Civil Government*: Our European ancestors; origin of states and state institutions. English and American governments compared; federal and state constitutions; state and foreign service; the executive departments; federal and state power; political parties and issues.

(b) *Federal and State Administration*: A survey of the administrative activities of federal, state, and municipal governments; governments from the sociological point of view. The financial operations, preparation of budgets and reports, will be considered.

Two-year Business course; first year; second semester; 3 credits; 3 recitations.

L. COMMERCIAL LAW. Adapted to students of limited training. A course covering the general principles of contracts, and particular contracts including sales of goods, bailment, insurance, credits, and loans.

Two-year Business course second year; and Mechanical Arts third year; first semester; 2 credits; 2 recitations.

M. COMMERCIAL LAW. A continuation of Course L, including negotiable instruments, agency, partnership, corporations, and property.

Two-year Business course; second year; second semester; 2 credits; 2 recitations.

300. ADVANCED COMMERCIAL LAW. (a) *Contracts in General*: Formation of contracts, offer, acceptance, form, and consideration; competence of parties, consent, and legality of subject matter; operation of contracts, including limit of obligations and assignments; interpretation, rules of evidence, and construction; discharge of contracts; the agreement, performance, breach of contract, etc.

(b) *Negotiable Instruments*: Maker's, acceptor's, drawer's and indorser's contracts; proceedings before, upon, and after dishonor; proceedings in protesting; accommodation paper; grantor and surety; holder's position, defense, equities, agency, insurance, etc.

Sophomore year; first semester; 3 credits; 3 recitations.

301. **ADVANCED COMMERCIAL LAW.** (c) *Partnership Law:* Formation of partnerships, essentials, liabilities of members, capital, profits, good will, individual and firm property; agency for partners; dissolution winding up; priority of distribution, etc.

(d) *Corporation Law:* Kinds, formation, powers, liabilities, ownership, shares, subscription, calls, notice, transfers, management, officers, directors, contractual powers, dividends, dissolution, are discussed fully from the legal point of view.

(e) *Property:* Classes, method of acquiring and transferring titles, mortgages, lease, landlord and tenant, etc. The case method is used throughout the entire course. Lectures, reports, and discussions.

Sophomore year; second semester; 3 credits; 3 recitations.

302. **INTERNATIONAL RELATIONS.** Persons concerned, rights and duties of states; territorial jurisdiction; jurisdiction on the high seas; agents of the state treaties; settlements of disputes; war and its effects; military occupation; neutrality, contraband, blockades, etc. Lectures, reports, and discussions.

Senior year; first semester; 3 credits; 3 recitations.

306. **COMMERCIAL LAW.** A short course in the laws of business. Recitations and discussions.

Pharmacy and Farm Management students.

First semester; 3 credits; 3 recitations.

320. **NATIONAL GOVERNMENT.** (a) *National Government:* The Constitution; rise of the American Union; distribution and powers of the Government; powers of Congress; powers of the executive; the judicial departments; checks and balances of governments; governments of territories and colonies; admission of new states; amendments to the Constitution; civil rights and their guarantees; protection of persons accused of crimes; protection of contracts and property, etc. Lectures, readings, reports, and discussions.

(b) *American Politics:* Origin of political parties in the United States; changes, growth, and development; party platforms.

For juniors and seniors; first semester; 3 credits; 3 recitations.

322. **STATE AND MUNICIPAL GOVERNMENT.** A study of the functions of state government; the machinery of state government; po-

litical parties in state government; special study of the government of the State of Oregon; municipal government, including county, town, and city government.

Lectures, readings, reports, and discussions.

For juniors and seniors; second semester; 3 credits; 3 recitations.

325. COMPARATIVE GOVERNMENTS. A critical study of the governments of the principal countries of the world, with special emphasis on modern movements and features of government, that are problems in the United States at present.

Lectures, reports and discussions.

Senior year; second semester; 3 credits; 3 recitations.

STENOGRAPHY AND OFFICE TRAINING

The following courses are offered:

R. TYPEWRITING AND OFFICE TRAINING. (a) *Typewriting*: See description of course 400 (b). Open only to Commerce Vocational students.

(b) *Office Training*: See description of course 410 (b).

Commerce vocational course; first year; first semester; 2 credits; 1 lecture; 5 laboratory periods of one hour each.

S. TYPEWRITING AND OFFICE TRAINING. A continuation of course R.

Commerce vocational course; first year; second semester; 2 credits; 1 lecture; 5 laboratory periods of one hour each.

400. ELEMENTARY STENOGRAPHY AND TYPEWRITING. (a) *Gregg Shorthand*: Theory manual covered thoroughly. Shorthand penmanship given special attention. Dictating machines used in preparation of assignments for class work.

(b) *Rational Typewriting*: The theory and practice of touch typewriting, covering mastery of the alphabet, numerals, mechanical arrangement of business correspondence and legal forms, tabulating, and speed practice. Special attention is given to the mechanics of the typewriter.

Degree course sophomore year and Vocational course first year; 4 credits; 5 recitations; 5 laboratory periods of one hour each.

Students starting Stenography, having had previous training in typewriting, will not be excused from 400 (b); budgets of an advanced character will be assigned them. Credit will not be given for the first semester's work unless the full year is taken.

401. **ELEMENTARY STENOGRAPHY AND TYPEWRITING.** A continuation of course 400. Speed Practice finished through the principal series and phrase letters. Elementary office equipment studied and used.

Degree course sophomore year and Vocational course first year; second semester; 4 credits; 5 recitation periods; 5 laboratory periods.

402. **ADVANCED STENOGRAPHY AND TYPEWRITING.** Dictation covering vocabularies of representative businesses, such as real estate, law and collections, banking and financial, life and fraternal insurance, publishing, railway, manufacturing, civil service. The typewriting periods will be taken up with transcription of dictation.

Course 412 must be taken concurrently with this course by degree students.

Degree course junior year and Vocational course second year; first semester; 4 credits; 5 recitations; 5 laboratory periods of one hour each.

403. **ADVANCED STENOGRAPHY AND TYPEWRITING.** A continuation of course 402. Court and lecture reporting introduced. Course 413 must be taken concurrently with this course by degree students.

Degree course junior year and Vocational course second year; second semester; 4 credits; 5 recitations; 5 laboratory periods of one hour each.

404. **EXPERT SPEED COURSE.** Designed for those having finished course 403 and desiring to specialize in court or convention reporting. All students desiring to specialize in methods of teaching commerce enroll in course 180 Industrial Pedagogy, which will be given at the same hour as this course.

Elective; senior year; first semester; 2 credits; two lectures;

405. **EXPERT SPEED COURSE.** Continuation of course 404.

Elective; senior year; second semester; 2 credits; 2 lectures.

410. **GENERAL OFFICE TRAINING.** Designed especially for students not enrolling in Stenography, but who desire a knowledge of Typewriting and Office Appliances. (a) *Typewriting*: Covering the same ground as course 400 (b). 1 credit will be given for this part to Agricultural students. *Not open to Commerce students.*

(b) *General Office Methods.* Office records and systems, relation between employer and employee, office equipment and its efficient arrangement. Especial attention will be given to training students in office methods that apply to their particular branch of work.

Elective all courses but Commerce; first semester; 2 credits; 5 laboratory periods; 1 lecture period of one hour.

411. GENERAL OFFICE TRAINING. Continuation of 410. *Not open to Commerce students.*

Elective all courses but Commerce; second semester; 2 credits; 5 laboratory periods; 1 lecture period of one hour.

412. OFFICE TRAINING FOR STENOGRAPHERS. Designed to give such knowledge and training as is called by employers, "experience." This course is so arranged that it is an integral part of course 402, Advanced Stenography and Typewriting. Topics covered: Attractive arrangement of business letters; applying for a position; office routine; inclosures, remittances, and banking; filing systems; office appliances; shipping information; business ethics and bibliography; legal papers and transactions; telegraph and telephone; printing and proofreading; a day's work co-ordinated into an organized whole.

Junior year; first semester; 2 credits; 1 lecture; 3 laboratory periods of one hour each. Required of all taking course 402.

413. SECRETARIAL TRAINING FOR STENOGRAPHERS. Continuation of course 412. Actual service in the College administrative offices required. Office efficiency problems studied.

Junior year; second semester; 2 credits; 1 lecture; 3 laboratory periods of one hour each. Required of all taking course 403.

414. BIBLIOGRAPHY. Advanced library training for secretaries and others, in order that they may know where and how to find quickly all information regarding any important field of knowledge. Twelve lectures and problems will be given by experts in the various fields, covering the main principles, chief authorities, and the sources of material.

Dewey Decimal Classification: 3 lectures and problems by the College Librarian. Subject Headings: three lectures and problems, by College Cataloguer.

Elective; junior year; second semester; 1 credit; 1 lecture.

PHARMACY

The following courses are offered:

100. **NOMENCLATURE.** The Latin language is universally recognized as the language of science. The names of all plants and animals and of many natural objects in the material world are recorded in this language. These Latin names, in so far as they have connection with the profession of pharmacy, are made the subject of systematic study.

Sophomore year; first semester; 2 credits; 2 recitations.

101. **NOMENCLATURE.** This is a continuation of course 100. Sophomore year; second semester; 2 credits; 2 recitations.

102. **NOMENCLATURE.** A continuation of course 101.

Elective; sophomore or junior year; first semester; 2 credits; 2 recitations.

103. **NOMENCLATURE.** A continuation of course 102.

Elective; sophomore or junior year; second semester; 3 credits; 3 recitations.

110. **GENERAL PHARMACY.** This course is a general introduction to the subject of pharmacy, given by means of a series of lectures wherein the student is made familiar with the conditions which led to the origin of the practice of pharmacy as a profession separate and distinct from that of medicine. Attention is directed to the purposes of the profession, to the scientific principles underlying it, and to the proper means for comprehending these facts with a view to their intelligent application.

The drugs, chemicals, and prepared medicines of the U. S. Pharmacopoeia are made the subject of a series of recitations.

Junior year; first semester; 3 credits; 3 recitations.

111. **GENERAL PHARMACY.** A continuation of Pharmacy 110, to which is added the feature of laboratory practice. The student takes up the various classes of pharmaceutical preparations and becomes familiar with the correct manner of their manufacture.

Experience has demonstrated the value of the laboratory as a factor in technical and scientific education. For this reason the course in pharmacy as offered at this institution is one in which this feature is given unusual prominence.

All substances which find general use in medicine are here given attention. All are classified with respect to the action they have upon the human system. Crude drugs are grouped according to the plant constituents—alkaloids, glucosides, volatile oils, oleoresins, etc.—which they contain. Pharmaceutical preparations are studied with respect to composition and strength; chemicals according to solubility, medicinal activity, and incompatibility.

The student is drilled in the recognition of pharmaceutical preparations and of chemicals. The many common names, or synonyms, in use in connection with materia medica are memorized.

One hour a week is devoted to the consideration of Toxicology. The different classes of poisons—caustics, irritants, convulsants, paralyzants, narcotics, asphyxiants, etc.—are taken up and studied according to the characteristic symptoms they produce, the method of counteracting and preventing their harmful effects, and the antidote peculiar to each. This course is especially designed to meet the needs of the pharmacist. Provisions of the law regulating the sale of poisons within the State are explained in detail.

Senior year; first semester; 3 credits; 3 recitations.

141. MATERIA MEDICA AND TOXICOLOGY. A continuation of course 140.

Senior year; second semester; 3 credits; 3 recitations.

142. MATERIA MEDICA. A continuation of course 141. Advanced work for senior students who complete course 141 during their junior year.

Elective; senior year; first semester; 3 credits; 3 recitations.

143. MATERIA MEDICA. A continuation of course 142.

Elective; senior year; second semester; 3 credits; 3 recitations.

150. PRESCRIPTION PRACTICE. This work is sometimes spoken of as "extemporaneous pharmacy," and is justly regarded as the division of the profession belonging to the expert. The ability to compound properly intricate formulas at a moment's notice, is an art that can be acquired only by persistent study and painstaking practice. Opportunity for practice of this nature is here given. Prescriptions written by practicing physicians in various parts of the country have been collected. These afford the student practice in reading, itself often a matter of difficulty. Prescriptions pre-

senting various types of incompatibility are compounded, as are others which afford experience in overcoming manipulative difficulties.

Senior year; first semester; 3 credits; 3 recitations.

151. PRESCRIPTION PRACTICE. A continuation of course 150.

Senior year; second semester; 6 credits; 3 recitations; 3 laboratory periods.

160. COMMERCIAL PHARMACY. In this course various problems arising in the physical management of the store are considered. The selection of proper types of fixtures, correct methods of stock arrangement, and harmonious effects in show-window dressing are topics receiving attention. Instruction in the art of sign-card painting, including extensive practice with the air brush, is given. At various times during the year special lectures will be delivered by successful business men of the State.

Elective; senior year; first semester; 3 credits; 1 recitation; 2 laboratory periods.

161. A continuation of course 160.

Elective; senior year; second semester; 3 credits; 1 recitation; 2 laboratory periods.

INDUSTRIAL PEDAGOGY

PROFESSOR RESSLER
PROFESSOR BROOKS
PROFESSOR BRANDON
PROFESSOR GRIFFIN
ASSISTANT PROFESSOR MILAM
ASSISTANT PROFESSOR BLANCHARD

The department of Industrial Pedagogy offers courses for the preparation of teachers in the subjects of Agriculture, Home Economics, Commerce, and Manual Training. The importance of providing special instruction in the industries for the pupils of the public schools is fully recognized in this country. The material equipment in the way of laboratories, workshops, experimental fields, etc., is easily secured. Specially trained teachers cannot be prepared overnight. There is a real danger that the public will underestimate the scientific and educational significance of the new education. The industrial branches cannot be taught from textbooks nor by teachers without technical training.

There must also be special supervisors in each of the industrial branches for the larger schools, where instruction is given to a large number of pupils under both trained and untrained teachers. Supervisors who will do some regular teaching, are also required where a number of small town and country districts are grouped for industrial instruction. In time, we may expect the grade teachers to have secured through the high and normal schools the technical training that will enable them to teach the industrial branches under direction. Until that time, most of the teaching must be done by the special instructor.

The department of Industrial Pedagogy gives the professional training and advises with the students and deans of the various schools in the selection of the technical courses. In conjunction with the other departments concerned, tentative courses of study are prepared in each of the industrial branches, adapted to the age of the pupils and the social demands on the school. This department undertakes to assist teachers in the work of instruction, by general and special suggestions through college and other publica-

tions, and by correspondence and visitation where possible. Detailed lists of equipment and apparatus, with cost, suitable for small and large schools, will be furnished on request.

Students electing this course will be registered in the school in which their distinctive subject is given. Thus those who desire to prepare to teach and supervise Agriculture in the high school and grammar grades will be registered in the School of Agriculture and will receive their degrees in Agriculture on completion of the requirements.

In the same way students, desiring to prepare to teach Home Economics and Commerce will be registered in the schools of Home Economics and Commerce. A special degree course in Industrial Arts, described under that heading, has been organized for the preparation of teachers of Manual Training.

The following courses will be offered during 1914-15:

101. GENERAL PSYCHOLOGY. A study of general psychology by lectures, recitations, and reports; a description of the facts and laws of mental activities with applications to the ordinary affairs of life; demonstrations and experiments showing the relation of mental life to the nervous system; the significance of habit in conduct and character.

Junior or senior year; first semester; 3 credits; 3 recitations.

102. EDUCATIONAL PSYCHOLOGY. The application of the facts and principles of psychology to teaching; a study of the growth of the child mind and the relations of the various periods to educational organization; adaptation of courses of instruction, methods of teaching, discipline, and general school activities to the stages of the pupil's development; lectures, recitations, reports, and simple investigations.

Junior or senior year; second semester; 2 credits; 2 recitations.

120. HISTORY OF EDUCATION. A general review of the growth and development of education and its relation to the civilization of the times; particular attention given to the rise of industrial education of Europe and America, and its place in the social and political life of the country.

Sophomore or junior year; second semester; 3 credits; 3 recitations.

130. SCHOOL MANAGEMENT. A study of the organization of the school, including the relations and duties of pupils, teachers, super-

visors, and school board. The place of the special teacher in the system; questions of discipline; practical exercises in making programs, keeping records, filling out reports, and performing other duties required by the Oregon School Law.

Sophomore or junior year; first semester; 3 credits; 3 recitations.

140. **GENERAL METHOD.** The principles of teaching, including method of the recitation, preparation of lesson plans, and observations of model teaching; library references to periodicals and current literature relating to public school agriculture, domestic science and art, commerce, and manual training.

Junior or senior year; first or second semester; 3 credits; 3 recitations.

150. **SPECIAL METHOD IN AGRICULTURE.** A careful, detailed study of the public school course in Agriculture, in its various relations, including the other subjects in the curriculum, preparation for college, farming, community life, etc. Model courses for both elementary and secondary grades are construed with plans for all desired equipment for laboratory, library, field work, including cost. Lesson plans on typical subjects, observation and model lessons, practice teaching, and extension work with school children and adults, provide additional opportunities to enable the students to reduce theory to practice.

Required of Agricultural seniors majoring in Industrial Pedagogy; elective for all other seniors in Agriculture; senior year; second semester; 3 credits; 2 recitations; 1 library period.

151. **EXTENSION METHODS IN AGRICULTURE.** This is a special course designed to prepare the graduate for such duties as are incumbent upon County Agricultural Agents, members of the College Extension Staffs, and high school agriculturists. The work, which consists largely of lectures and reports upon assigned reading, deals with the social, economic, and educational phases of agriculture. Practical experience in extension work will be given members of the class so far as possible.

Required of Agricultural seniors majoring in Industrial Pedagogy; elective for all other seniors in Agriculture; senior year; second semester; 1 credit; 1 recitation.

160. **SPECIAL METHOD IN HOME ECONOMICS.** Same as course 150 applied to the public school course in Home Economics.

Senior year; first semester; 3 credits; 3 recitations.

161. SPECIAL METHOD IN HOME ECONOMICS. Continuation of course 160, applied to Domestic Science.

Senior year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

162. SPECIAL METHOD IN HOME ECONOMICS. Continuation of course 160, applied to Domestic Art.

Senior year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

170. SPECIAL METHOD IN MANUAL TRAINING. Same as course 150, applied to the public school course in Manual Training.

Senior year; second semester; 3 credits; 2 recitations; 1 laboratory period.

180. SPECIAL METHOD IN COMMERCE. Same as course 150, applied to the public school course in Commerce.

Senior year; first semester; 2 credits; 1 recitation; 2 laboratory periods.

181. SPECIAL METHOD IN COMMERCE. Continuation of Course 180.

Senior year; second semester; 2 credits; 1 recitation; 2 laboratory periods.

190. SCHOOL ADMINISTRATION. A discussion and analysis of the American system of education, with an interpretation of the purpose and spirit of each division; problems of administration and teaching in the public schools; the correlation of the industrial branches with the other subjects in the curriculum. Lectures, reading, reports, and studies on the Oregon schools.

Elective for advanced or graduate students; second semester; 2 credits; 2 recitations.

191. SCHOOL HYGIENE. A course in the health provisions requisite for the hygienic conduct of education. This includes a discussion of ventilation, heating, light, seating, physical exercise in the school room and on the playground, games, medical inspection, tests for physical defects, disinfection, quarantine, and other similar topics. Oregon laws relating to these matters will be studied, and the regulations of the State Board of Health and other State and local health authorities will be explained in detail. Advanced investigations in other states will also be presented and comparative studies made. Lectures, reports, and first-hand investigations on town and country school conditions, so far as practicable.

Elective for advanced or graduate students; first semester; 2 credits; 2 recitations.

192. CHILD STUDY. This includes the physical and mental characteristics of children and youth as contrasted with those of mature men and women. The relation of physical growth and development to the unfolding of mental powers; the instincts and their relation to the development of individuality, sense of responsibility to others, moral development, etc.; abnormalities; study and treatment of children as individuals and in class groups; and discussion of the social and economic implications as well as the psychological. Lectures, reports, and simple tests and records made by visitation of schools.

Elective for advanced or graduate students; second semester; 2 credits; 2 recitations.

200. RESEARCH. Advanced or graduate students who are qualified by previous training or experience, may register for extended investigation of some specific problem in industrial education. The studies may be historical, either European or American; administrative; or in the field of method. General government and state reports; publications by special commissions; reports of committees of educational organizations; contributions by departments of colleges and universities; educational and other periodicals; and original investigations into Oregon conditions, compose the material to be used. These studies will be assigned and outlined by the instructor and stated reports made from time to time by the student. Regular hours will be assigned the individual students and credit given according to the amount of work done.

Elective for advanced or graduate students; first semester; 2 credits.

201. RESEARCH. Continuation of course 200.

Elective for advanced or graduate students; second semester; 2 credits.

202. RESEARCH. As outlined in course 200.

Elective for advanced or graduate students; first semester; 4 credits.

203. RESEARCH. Continuation of course 202.

Elective for advanced or graduate students; second semester; 4 credits.

ART AND ARCHITECTURE

PROFESSOR MCLOUTH

MR. ROBINSON

MISS FLARIDA

ART

The department of Art offers no regular courses in Art with the idea of instruction in the Fine Arts in view, but only as art education relates to highest ideals in everyday life, and to meet the requirements of art in the industries. Courses in drawing, composition, light and shade and color are planned and given for the purpose of facilitating instruction in the applied arts courses—design, metal work, clay modeling, and the ceramic art; and in the work of such other departments as Architecture, Domestic Art, and Industrial Arts.

The following art courses not only develop utilitarian ideas, but they also cultivate an appreciation and love of the beautiful in nature and art.

102. **FREE-HAND DRAWING.** This course covers work in representation; still life in line and dark and light; free-hand perspective of circles and linear perspective; some of the principles of composition and design; historic ornament; the handling of pencil and charcoal, or brush and ink.

The degree course in Home Economics; freshman year; first semester; 2 credits; 3 studio periods of two hours each.

103. **BEGINNING COMPOSITION.** The study of design principles and color harmony applied to concrete problems of dress or home decoration; crayon, charcoal, and water color are used as media. Some historic design is studied.

Prerequisite: Drawing 102.

The degree course in Home Economics; freshman year; second semester; 2 credits; 3 studio periods of two hours each.

204. **DESIGN AND COLOR DRAWING.** Design and color continued. Design from nature forms in line, dark and light and color. Landscape forms as a basis of design. A practical application of design and color will be made by means of block printing or stenciling on textiles.

Prerequisites: Courses 102, 103.

Degree course in Home Economics; sophomore year; first semester; 2 credits; 3 studio periods of two hours each.

205. WATER COLOR. The courses in water color are offered as elective cultural subjects and are open to any student who has completed courses 102, 103, and 204 or their equivalent. The work of the first semester will include simple flat washes of geometric casts, and flat color washes of still life subjects of broad area.

First semester; 2 credits; 3 studio periods of two hours each.

206. WATER COLOR. A continuation of course 205, leaving flat washes and taking up more complex still life studies. These courses are open to all students after the required prerequisites in drawing and course 205.

Second semester; 2 credits; 3 studio periods of two hours each.

305. ADVANCED DESIGN. An elective offered to give a broader working knowledge of design principles which shall serve as a guide to selection, adaptation, and composition, both structural and decorative, for practical application in interior decoration, costume design, and for articles of personal and household use.

Prerequisites: Courses 102, 103, and 204.

First semester; 2 credits; 3 studio periods of two hours each.

306. ADVANCED DESIGN. A continuation of course 305.

Prerequisites: Courses 102, 103, 204, and 305.

Second semester; 2 credits; 3 studio periods of two hours each.

410. INDUSTRIAL ARTS DRAWING. Free-hand working sketches of wood joints, furniture, and machine parts; and drawing from written descriptions.

Prerequisite: Course 503.

The degree course in Industrial Arts; first semester; 1 credit; 1 studio period of three hours.

M. E. Vocational course; first year; second semester; 1 credit; 3 studio periods of one hour each.

411. INDUSTRIAL ARTS DESIGN. A course in the principles of design suited to the Industrial Arts course. Original design plates of door and cabinet paneling, metal parts—hinges, escutcheons, draw pulls, etc.—and furniture will be required.

Prerequisites: Courses 503 and 510.

The degree course in Industrial Arts; second semester; 2 credits; 3 studio periods of two hours.

412. **INDUSTRIAL ARTS DESIGN.** A continuation of course 411. Prerequisites: Courses 503, 410, and 411.

The degree course in Industrial Arts; second year; second semester; 1 credit; 1 studio period of three hours.

413. **CLAY MODELING.** The study of good pottery forms, and the making and decoration of pottery, occupies most of the time of this course. Some work in plaster casting, also the building of tiles and modeling in low relief.

Prerequisites: Courses 102 and 103.

Elective; the degree course in Home Economics; senior year; first semester; 2 credits; 3 studio periods of two hours each.

414. **CLAY MODELING.** A continuation of course 413, with a study of glazes and firing of pottery.

Prerequisites: Courses 102, 103, or their equivalents, and 413.

Elective; the degree course in Home Economics; senior year; second semester; 2 credits; 3 studio periods of two hours each.

503. **FREE-HAND DRAWING.** The purpose of this course is to teach the student to see correctly, to judge accurately, and to give him such a knowledge of drawing and such a training as will best and most fully meet the demands of his subsequent work.

The course consists of the principles of drawing and free-hand perspective, line drawing in charcoal and pencil from geometric forms, block casts and simple still life. Much attention is given to neatness and to accurate proportion.

Course in Architecture and Industrial Arts; freshman year; first semester; 1 credit; 3 studio periods of one hour each.

M. E. Vocational course; freshman year; first semester; 1 credit; 3 studio periods of one hour each.

504. **PEN AND PENCIL RENDERING.** The beginning course in the study of methods of architectural expression. The work is designed to give to the student an insight into the handling of pencil and pen. Free-hand drawings from casts of architectural ornament, and the portrayal of building materials, such as brick, wood, stone, terra cotta, and stucco, followed by sketching of details of buildings.

Degree course in Architecture; freshman year; second semester; 2 credits; 3 studio periods of two hours each.

505. **WATER COLOR RENDERING.** The purpose of this course in water color rendering is to give a knowledge of the handling and use of the brush and color in the expression of architectural subjects, detail, and decoration.

Degree course in Architecture; sophomore year; first semester; 2 credits; 2 studio periods of three hours each.

506. **WATER COLOR RENDERING.** A continuation of course 505, followed by full color drawings of buildings and their surroundings. Later in the semester opportunity is given for out-of-door sketching in color. During the summer which follows, students are encouraged to make sketches for criticism.

Degree course in Architecture; sophomore year; second semester; 2 credits; 2 studio periods of three hours each.

522. **HISTORIC ORNAMENT.** The course covers the history of ornament and explains its development and the characteristics of the different important styles. The use of color in decoration is also discussed. Short lectures are given and the student is required to render three problems in the design of ornament.

Degree course in Architecture; junior year; second semester; 2 credits; 3 studio periods of two hours each.

525. **LIFE.** This course is an advanced course in free-hand drawing. The work consists of drawing from the figure, time sketching, and the essentials of figure composition.

Course in Architecture; senior year; first semester; 2 credits; 3 studio periods of two hours each.

526. **INTERIOR DESIGN AND COLOR.** The object of this course is to give the student a knowledge of the design of interiors—fire-places, the built-in parts of living rooms and dining rooms, paneling, etc., and to acquaint him with appropriate color schemes for interiors.

Course in Architecture; senior year; second semester; 2 credits; 2 studio periods of three hours each.

600. **METAL WORK.** The first semester will be given to work in jewelry-making, using copper and silver, and covering the processes of sawing, hard and soft soldering, stone setting, etching, repousse, and cuttle bone casting.

Prerequisites: Courses 102, 103, or their equivalent.

Elective; the degree course in Home Economics; or any student having the desired prerequisites; 2 credits; 3 studio periods of two hours each.

Deposit for tools, \$2.00.

601. METAL WORK. A continuation of course 600, with the addition of some work in pounding metal.

Prerequisites: Courses 102, 103.

Elective; the degree course in Home Economics; or any student having the desired prerequisites; senior year; second semester; 2 credits; 3 studio periods of two hours each.

Deposit for tools, \$2.00.

ARCHITECTURE

The courses in Architecture are prescribed in such a manner as to train the student to do practical work in the design and construction of buildings. In order to permit him to follow the trend of his natural ability in this line, both general architecture and architectural engineering are offered. The courses are liberal, cultural, and scientific. The work extends over a period of four years, the first two being devoted more to liberal subjects than to Architecture, while the last two years are devoted to professional training almost exclusively.

In order to meet the demands of the day upon the practicing architect, rural or domestic architecture receives a large amount of attention; and problems in the planning of residences, schools, and churches are given to the student. Country homes and farm establishments are also considered. However, the principles of design and construction, and the art of expression, are the essentials which the student is required to grasp.

501. ARCHITECTURAL DRAWING. In this course the student is taught the use of the drawing board, T-square, triangle, and instruments. One plate each week will be prepared for the purpose of practice in lettering, line drawing, and scale. Much attention will be given to neatness and to correct presentation. The textbook will be Architectural Drawing and Lettering by Bournean Holst-Brown.

Freshman year; first semester; 3 credits; 3 draughting room periods of three hours each.

502. **ORDERS OF ARCHITECTURE.** This is a continuation of course 501, in which the proportions of the Classic orders of architecture are studied. Diluted ink drawings rendered in water color on Whatman hot pressed paper will be presented. The textbook will be the American *Viguola*, Part I.

Freshman year; second semester; 3 credits; 3 draughting room periods of three hours each.

507. **WOOD CONSTRUCTION.** This course is carried on in conjunction with course 510 and has one recitation each week, using *Kidders Building Construction*, Part II, *Carpentry*, as a textbook. Scale drawings, showing the construction of wooden buildings, designed by the student will be presented periodically. The properties of wood, methods of construction, and use of building materials will be carefully studied.

Sophomore year; first semester; 2 credits; 1 recitation; 1 draughting room period.

508. **MASONRY CONSTRUCTION.** This course will be studied similarly to course 507 and in conjunction with course 511, using *Kidders Building Construction*, Part I, *Masonry*, as a textbook.

509. **SHADES AND SHADOWS.** Although shades and shadows are studied in connection with the Orders, advanced work is given using as a textbook *McGoodwins Shades and Shadows*.

Sophomore year; first semester; 1 credit; 1 draughting room period. .

510. **RURAL ARCHITECTURE.** In this course original work in design is first offered. Problems such as bungalows, houses, and schools will be given the student for solution. Only frame buildings will be studied, and the drawings will be presented as sketches, except the structural drawings for course 507, which will be practical working drawings.

Sophomore year; first semester; 3 credits; 3 draughting room periods.

511. **RURAL ARCHITECTURE.** A continuation of course 510 in which buildings of masonry are studied. Drawings will be presented formally, the design and construction being original.

Sophomore year; second semester; 3 credits; 3 draughting room periods.

521. CERAMIC ART. A study of tile, brick and terra cotta from both the scientific and artistic standpoint. The work will be taken up in class room and laboratory and will include history, design, and methods pertaining to ceramics.

Elective; junior year; first semester; 2 credits.

523. SENIOR ARCHITECTURAL DESIGN. This course is given similarly to junior Design, but the problems are more advanced.

Senior year; first semester; 10 credits; 10 draughting room periods.

524. SENIOR ARCHITECTURAL DESIGN. A continuation of course 523, including a Thesis Design.

Senior year; second semester; 10 credits; 10 draughting room periods.

527. ARCHITECTURAL APPLIANCES. The student in architecture should know something of plumbing and drainage, heating and ventilating, lighting, and many other appliances. Special lectures are given in this course by trained engineers for the purpose of showing the application of these necessities to architectural work.

Senior year; first semester; 2 credits; 2 recitation periods.

528. PROFESSIONAL PRACTICE. In this course business etiquette, customs, competitions, and many other phases of professional practice are studied.

Senior year; second semester; 2 credits; 2 recitation periods.

529. REINFORCED CONCRETE DESIGN. A study of the methods employed in the design and construction of reinforced concrete buildings. Every known system receives due consideration. Original work will be required of the student.

Senior year; first semester; 6 credits; 6 draughting room periods.

530. STEEL DESIGN. Structural steel as used in buildings is studied in this course, and the student will be required to present original solutions of problems involving steel construction.

Senior year; second semester; 6 credits; 6 draughting room periods.

531. ESTIMATES AND SUPERINTENDENCE. This course aims to present the problems encountered by the building inspector, superintendent, and contractor. Costs of labor and materials, comparisons of methods, and personal superintendence are studied.

Senior year; first semester; 2 credits; 2 recitation periods.

512. EIGHT HOUR PROBLEMS. On one Saturday in each month, a problem in design will be assigned to the student to be worked out "en loge."

Junior year; first semester; 1 credit

513. EIGHT HOUR PROBLEMS. A continuation of course 512.

Junior year; second semester; 1 credit

514. HISTORY OF ARCHITECTURE. Hamlin's History of Architecture will be thoroly studied in this course, presenting the development of styles since pre-historic times.

Junior year; first semester; 1 credit;
2 recitation periods.

515. HISTORY OF ARCHITECTURE. A continuation of course 514.

Junior year; second semester; 1 credit;
2 recitation periods.

516. DOMESTIC PLANNING. This course takes up house planning from the practical standpoint. The drawings will be literal and comprehensive. The site, cost, use, and everything that goes into such a building will receive due consideration.

Elective; first semester; 2 credits;
2 draughting-room periods.

517. DOMESTIC PLANNING. A continuation of course 516.

Elective; Second semester; 2 credits;
2 draughting-room periods.

518. PERSPECTIVE DRAWING. A study of mechanical perspective.

Sophomore year; second semester; one credit; 1 draughting room period.

519. JUNIOR ARCHITECTURAL DESIGN.

The work of this course consists in the production and presentation of architectural designs as solutions of stated problems. The program for these problems will be given out periodically and a short time allowed for the preparation of a preliminary study by the student, which will be filed, and which the student must follow thruout the development of his design. Criticisms will be given as often as required; and finally, at the completion of the drawing, a general criticism to the entire class on the work presented. All drawings will be presented formally as competition drawings and honorable mentions will be awarded when deserved.

Junior year; first semester; 6 credits; 6 draughting room periods.

520. JUNIOR ARCHITECTURAL DESIGN.

A continuation of course 519.

Junior year; second semester; 6 credits; 6 draughting room periods.

532. ESTIMATES AND SUPERINTENDENCE. A continuation of course 531.

Senior year; second semester; 2 credits; 2 recitation periods.

533. AGRICULTURAL BUILDING DESIGN. This course is primarily for students of agriculture. Methods of framing, costs of materials, and finish of parts, also design of buildings for the farm are studied.

Elective; first semester; 1 credit; 1 draughting room period of three hours.

534. AGRICULTURAL BUILDING DESIGN. A continuation of course 533.

Second semester; 1 credit; 1 draughting room period of three hours.

CHEMISTRY

PROFESSOR FULTON
ASSOCIATE PROFESSOR TARTAR
ASSOCIATE PROFESSOR BRODIE
ASSISTANT PROFESSOR DAUGHTERS
MISS MILLER
MR. DUTCHER
MR. SEELEY
MR. JORDAN

The beginner's courses, Chemistry 100, 101, and 102, consist essentially of the proof of some of the well-known chemical laws, such as the law of conservation of matter, the law of definite proportions and of multiple proportions, the Law of Boyle, and the Law of Charles. The student attains skill in the manipulation of apparatus, and in the management of equipment in general. From this elementary work he proceeds to qualitative analysis, in the study of which he is taught to separate and identify the different elements composing the mass, and, in the case of metals, to learn of their properties, their use, the different methods of obtaining them from their ores, and the combinations in which they occur in nature.

If he has shown suitable proficiency, he advances to quantitative analysis, which is the determination of the amounts of the ingredients. He is taught both methods of analysis, volumetric, or the method by solution, and the gravimetric, or the method by precipitation and weighing. On completing these courses, the student is fairly well prepared to take up advanced chemistry, which treats of the analysis of soils, manures, cattle foods, dairy products, etc., or he can take up the subject from the inorganic side in the analysis of minerals, fuels, oils, gas, etc., or he can view it from the pharmacist's standpoint, in analyzing drugs.

The following courses are offered:

A. CHEMISTRY. This course is designed primarily for students taking the course in Mechanic Arts. It does not pretend to be a complete course in theoretical chemistry; it is to assist in familiarizing the student with the changes that take place when metals come in contact with such materials as sulphur, oxygen,

acids, water, etc. A certain amount of instruction is given in the non-metals, such as stated, in the properties of matter, common elements, and compounds; chemical equivalents and atomic weights; ionization; solution; electrolysis; carbon and its compounds; reduction; combustion; etc.; but all instruction will be mainly practical in character. No previous knowledge of chemistry is required for this course. A good high school course in physics, however, would be of great assistance in this course, and a thorough understanding of ratio and proportion is essential. Text, Stansbie's Introduction to Chemistry for Technical Students, or Smith's Elementary Chemistry.

Second year; 3 credits; 2 recitations; 2 laboratory periods of two hours each.

B. CHEMISTRY. A continuation of course A.

Second semester; 3 credits; 2 recitations; 2 laboratory periods.

10. GENERAL CHEMISTRY. This course deals with the general principles of the science, and extends through the divisions known as the non-metals. It is offered to students who have had no previous training in chemistry. It consists of lectures, recitations, and laboratory work.

Three credits.

11. GENERAL CHEMISTRY. A continuation of course 10.

Three credits.

If it be found advisable to divide the time into one lecture, two recitations, and two laboratory periods of two hours each, so far as courses 10 and 11 are concerned, all students registered for them will be required to arrange their schedules accordingly.

100. GENERAL CHEMISTRY. This course is arranged for students who have completed high school chemistry.

Freshman year; first semester; 3 credits; 2 recitations; 2 laboratory periods of two hours each.

101. GENERAL CHEMISTRY. A continuation of course 100.

Freshman year; second semester; 3 credits; 2 recitations; 2 laboratory periods of two hours each.

General Chemistry is required for all degree courses except Commerce.

102. GENERAL CHEMISTRY. This course is arranged especially for the students of the School of Home Economics.

Freshman year; first semester; 3 credits; 2 recitations; 2 laboratory periods of two hours each.

103. GENERAL CHEMISTRY. A continuation of 102.

Freshman year; second semester; 3 credits; 2 recitations; 2 laboratory periods of two hours each.

104. CHEMICAL CALCULATIONS. A course in the mathematics of chemistry; offered to those who intend teaching the subject, and required of all laboratory assistants.

Elective; first or second semester; 2 credits; 2 recitations.

200. ELEMENTARY ORGANIC CHEMISTRY. A brief course in Organic Chemistry, and is provided for the students of Home Economics.

Sophomore year; first semester; 3 credits; 2 recitations; 2 laboratory periods.

201. ORGANIC CHEMISTRY. This course consists of the study of the more typical and simple organic compounds and is designed for Pharmacy, and such students of Agriculture as desire to take up Physiological Chemistry and Veterinary Medicine.

Sophomore year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

202. ADVANCED ORGANIC CHEMISTRY. A course designed for those who desire to extend their information beyond that possible with 200 or 201.

Elective; second semester; 3 credits.

300. QUALITATIVE ANALYSIS. This course consists largely of laboratory practice in the ordinary processes of separating and identifying ions.

The course in Pharmacy; sophomore year; first semester; 3 credits; 1 recitation; 3 laboratory periods.

301. QUALITATIVE ANALYSIS. A course provided for Mining students.

Mining students; sophomore year; first semester; 5 credits; 5 laboratory periods of three hours each.

302. QUALITATIVE ANALYSIS. Students in Highway Engineering.

Three credits; 1 recitation; 3 laboratory periods of two hours each.

303. ORGANIC QUALITATIVE ANALYSIS. A course for Pharmacy students.

Elective; second semester; 3 credits; 3 recitations; 2 laboratory periods.

304. FOOD AND DRUG ANALYSIS. Pharmacy students.

Prerequisites: Organic Chemistry and Botany.

Elective; junior year; 3 credits.

400. QUANTITATIVE ANALYSIS. A course designed for students in Pharmacy, and consists of instruction in both gravimetric and volumetric analysis of pharmaceutical products.

Junior year; first semester; 3 credits.

401. QUANTITATIVE ANALYSIS. This is a course in analysis for Mining students, and consists of gravimetric analysis of limestones, iron, lead, zinc, arsenic and antimony ores, coal, and as much other work as time will permit.

The course in Mining Engineering; sophomore year; second semester; 5 credits; 5 laboratory periods.

402. CHEMISTRY OF FOODS. An advanced course for the students of Home Economics, consisting of practice in the best methods as applied in food analysis, and in detection of common adulterants. Opportunities for research work will be given if desired.

Four credits.

403. CHEMISTRY OF WATER. This course is designed especially for the students in Highway Engineering, and consists of the examination, both physically and chemically, of waters for domestic purposes, such as well waters, but more particularly that supplied to cities, whether under municipal control or that of private corporations. At the close of the chemical examinations, bacteriological tests will be made under the auspices of the department of Bacteriology.

Prerequisites: Chemistry 100 and 101.

The course in Highway Engineering; junior year; second semester; 2 credits; 2 laboratory periods.

404. PHARMACEUTICAL ANALYSIS. This is an extension of Quantitative Analysis 400, and consists of the chemical examination of alkaloidal drugs and galenicals, and of the examination of urine.

The course in Pharmacy; junior year; second semester; 4 credits; 4 laboratory periods.

405. **CHEMISTRY OF HIGHWAY MATERIALS.** The course is designed for students in Highway Engineering, and consists of the study of such materials as cement, asphalt, bitumen, mineral oils, tar, and tar products.

The course in Highway Engineering; junior year; second semester; 2 credits; 2 laboratory periods.

406. **ELECTRO-CHEMISTRY.** This is a course for advanced Mining students, and consists of the application of the electric current to solutions of the different metals in metallurgical analysis.

Senior year; first semester; 3 credits; 1 lecture; 2 laboratory periods.

407. **CHEMISTRY FOR ENGINEERS.** This course is particularly for students in Mechanical and Electrical Engineering. It consists of the analysis of coal, oil, gas, and of their calorific powers; also the technical analysis of flue gases.

Elective; junior or senior year; second semester; 2 credits; 2 laboratory periods.

409. **PHYSIOLOGICAL CHEMISTRY.** This course is primarily for students in Pharmacy, but is open to any one interested in the subject.

Prerequisite: Chemistry 200.

Junior year; second semester; 4 credits; 4 laboratory periods.

410. **ELEMENTARY PHYSICAL CHEMISTRY.** This course is particularly for students in Chemical Engineering, and consists of the study of the molecular weight of gases; chemical equilibrium; electro-chemistry.

Junior year; first semester; 3 credits; 1 recitation; 2 laboratory periods of three hours each.

411. **THERMOCHEMISTRY.** A course for the students in Chemical Engineering; consists of thermochemical measurements; heat of formation; heat of combustion; relation of chemical affinity to heat of reaction, etc.

Junior year; 3 credits; 1 lecture; 2 laboratory periods.

412. **METALLURGICAL ANALYSIS.** This consists of the analysis of Metallurgical and Engineering materials, such as limestone, cement, coal, iron ore, copper matte, brass, bronze, steel, babbitt metal, water, oil, etc.

The course in Chemical Engineering; junior year; first semester; 3 credits; 3 laboratory periods.

413. **CHEMICAL TECHNOLOGY.** A course of lectures in the principles of Organic, Analytical, and Technical Chemistry as applied to those industries depending upon chemistry as a basis for their processes.

The course in Chemical Engineering; senior year; first semester; 2 credits. A continuous course: credit will not be awarded until the second semester's work has been completed.

414. **CHEMICAL TECHNOLOGY.** A continuation of course 413.

The course in Chemical Engineering; senior year; second semester; 2 credits.

500. **AGRICULTURAL CHEMISTRY.** A course consisting of lectures, recitations, and laboratory work, dealing with the more important phases of Chemistry as related to Agriculture.

The course in Agriculture; sophomore year; first semester; 3 credits; 2 recitations; 2 laboratory periods.

501. **AGRICULTURAL CHEMISTRY.** A continuation of course 500.

The course in Agriculture; sophomore year; second semester; 3 credits; 2 recitations; 2 laboratory periods.

502. **DAIRY CHEMISTRY.** The study of the chemistry of milk and its products, including both qualitative and quantitative determination of adulterants and preservatives.

Prerequisites: Chemistry 201 and 500.

The course in Dairy Husbandry; junior year; second semester; 3 credits; 3 laboratory periods.

503. **SOIL CHEMISTRY.** This is a lecture and laboratory course on the methods of soil analysis, as used by the different experiment stations.

Prerequisites: Chemistry 201 and 500.

Junior year; first semester; 2 or 4 credits; 2 or 4 laboratory periods.

504. **SOIL CHEMISTRY.** A continuation of course 503.

Junior year; second semester; 2 or 4 credits; 2 or 4 laboratory periods.

505. **AGRICULTURAL ANALYSIS.** A course in analytical methods applied to agricultural materials, including cereals, fertilizers, soil, water, etc.

Prerequisites: Chemistry 201 and 500.

Junior year; first semester; 2 to 4 credits; 4 laboratory periods.

506. **AGRICULTURAL ANALYSIS.** A continuation of course 505.

Junior year; second semester; 2 to 4 credits; 4 laboratory periods.

507. **ADVANCED AGRICULTURAL ANALYSIS.** This course is especially thesis work in the Experiment Station laboratory, or work of the same general description.

Senior year; first semester; 4 credits; 4 laboratory periods

508. **ADVANCED AGRICULTURAL ANALYSIS.** A continuation of course 507.

Senior year; second semester; 4 credits; 4 laboratory periods.

509. **ANIMAL CHEMISTRY.** A study of the composition of the animal body and products of the animal body, such as milk, wool, etc. Special emphasis is placed on the chemistry of the fats, proteins, and carbohydrates. Enzyme action, digestion of foodstuffs, their absorption and distribution, fate of the foodstuffs in metabolism, metabolic products and their excretion, will be considered. Recent publications bearing on animal nutrition will be read and discussed.

Junior year; first semester; 2 credits; 2 lectures.

510. **PLANT CHEMISTRY.** Designed for students desiring a fuller consideration of the growth and composition of plants; properties, nature, and classification of plant constituents; chemical analysis; chemical synthesis; enzymes; chemistry of the manufacture of plant products, etc.

Second semester; 2 credits; 2 lectures.

ENGLISH LANGUAGE AND LITERATURE

PROFESSOR BERCHTOLD
ASSISTANT PROFESSOR CALLAHAN
ASSISTANT PROFESSOR PETERSON
MR. BALDWIN
MRS. MCELFRESH
MISS VANCE
MISS ROSAAEN

It is the aim of this department to teach the student to express with clearness what he thinks with vigor. He is taught that the essential part of any composition, whether oral or written, is thought, well organized and well expressed; that to comprehend clearly and to feel strongly what he has to say are the indispensable conditions of making others comprehend and feel it.

What his textbook helps him to do consciously, familiarity with superior writers should help him to do unconsciously; for we may get good from a master of English by unconscious absorption, just as we acquire good manners by associating with gentlemen and ladies. No mind can fail to be stimulated by contact with greater minds, whether living or dead. Their pages feed the powers of thought and strengthen the power of expression, thus enabling the student to think, talk, and write to more purpose.

In all the collegiate courses in English the work is correlated with that offered in the other departments, to bring it into harmony with the trend or spirit of the institution, which is distinctly technical and industrial in character. Subjects are assigned for presentation and discussion which bear close relation to the work pursued by the students in the different schools, in anticipation of their probable needs and activities in later life. What is sought and insisted on is, earnest, logical, forceful presentation of facts that will compel attention and carry conviction.

The Oregon Agricultural College participates in a number of intercollegiate oratorical contests and debates; and the department offers elective courses in public speaking, designed to give preparation for these contests.

A—RHETORIC AND LITERATURE

A. **ELEMENTARY CONSTRUCTIVE ENGLISH AND LITERATURE.** This course is designed, first, to make expression of ideas a pleasure to the student. It is not confined to the mere memorizing of inflections and the formulation of rules. The course consists of both oral and written work. Written exercises prepared under rules of form are required constantly to obtain flexibility and confidence in expression. There is daily drill in punctuation and capitalization, in analysis and synthesis of sentences. Special emphasis is laid upon spelling. Practice in the correction of written work is given to enable the student to detect his own mistakes readily. Elementary themes, one, two, and three paragraphs in length, are required, the subjects being chosen from the student's experience, and from classic readings. Ten short themes, with conferences for criticism, will be required.

The course is designed, second, to cultivate in the student a taste for reading; to assist him in the interpretation of the simpler classics of our literature; and to encourage him to express his own thoughts clearly and without embarrassment. Masterpieces of prose and poetry are studied, and some collateral reading is required. Oral and written reports on current events as outlined in the *Literary Digest*, the *Atlantic Monthly*, and other standard magazines. Special attention is given to—

“The Odyssey,” Lang’s translation.

“Snowbound,” Whittier.

The Vocational courses; first year; first semester; 3 credits; 3 recitations.

B. **COMPOSITION AND LITERATURE.** The aim of this course is to ground students thoroughly in the elements and fundamentals of composition, and to continue the work in elements of literature. Capitalization and punctuation reviewed; the importance of letter writing emphasized; principles governing sentence structure, paragraph structure, and theme structure, studied, with certain classic models always in the foreground; the aim is, in short, to develop power of expression and individuality as spontaneously and naturally as possible. Further, the logical arrangement of thoughts as

represented by the outline, receives special emphasis. At least eight short themes, six long themes, synopses, and one resume, with conferences for criticism to illustrate the forms of composition.

The following classics will be studied:

"The Iliad," Lang's translation.

"The Pilgrim's Progress," Part I, Bunyan.

"The Merchant of Venice," Shakespeare.

"The Vision of Sir Launfal," Lowell, or "The Ancient Mariner," Coleridge.

The Vocational courses; first year; second semester; 3 credits; 3 recitations.

C. ADVANCED COMPOSITION AND LITERATURE. Open to students who have had courses A, B, or their equivalent.

A review of the principles of grammar; exercises in syntactical construction; principles governing the structure of the whole composition; analysis and outline of specimens of easy classic prose and poetry, with a view to illustrating theme structure; writing of short compositions in class on "read up" matter; and the preparation of twelve short themes and two long themes, in the narrative and descriptive forms, with attention to sentence structure, spelling, punctuation, and paragraph arrangement.

Principles of literary criticism; interpretative study of classics; analysis and rendering. George Eliot's "Silas Marner," Irving's "Tales of a Traveller," Parkman's "Montcalm and Wolfe," or Dickens' "Tale of Two Cities," constitute the list of classics from which selections for study will be made.

The Vocational courses; second year; first semester; 3 credits; 3 recitations.

D. ADVANCED COMPOSITION AND LITERATURE. A continuation of course C. Intensive study of the Paragraph, the Sentence, and the Word; study of synonyms; paragraph writing, with a view to applying the principles governing the development of the topic statement; at least ten short themes, occurring weekly, and three long themes, in the expository and argumentative forms.

Continuation of the methods of work employed in the first semester. A selection of two classics will be made for study from a list consisting of Shakespeare's "As You Like It," Mary Johnston's "The Long Roll," Hawthorne's "The House of Seven Gables."

The Vocational courses; second year; second semester; 3 credits; 3 recitations.

M. BUSINESS ENGLISH. Besides giving a thorough training in the various forms of commercial correspondence, the course aims to ground the student in the vocabulary, forms, and usages peculiar to business and administrative pursuits. There is constant and persistent practice in spelling and punctuation, in composition and letter writing, with a view to imparting to the student's English strength and virility, and to enable him to achieve results.

Two-year Business course; second year; course in Pharmacy; sophomore year; first semester; 3 credits; 3 recitations.

N. TECHNICAL ENGLISH. A continuation of course M. Advanced composition and letter writing; business forms, incidental writing; summaries; advertising; preparation of copy and proof-reading. Good, clear, effective English is at all times insisted upon.

Two-year Business course; second year; second semester; 3 credits; 3 recitations.

31. COLLEGE RHETORIC. A rapid survey comprehending the work done by the high school in literature, rhetoric, and composition, and involving the preparation of several short essays, with a view to ascertaining the extent of the student's literary appreciation and command of rhetorical principles. Lectures, assignments, and recitations upon the methods of effective discourse. Lectures upon the intellectual and emotional types of expression, with practical exercises in discriminating these types and their variants. Studies in the expository and argumentative methods of writing, with analysis of specimens. Draughting of expository outlines with special attention given to obtaining correctness in coordination and subordination. The paragraph considered as a distinct stage in expository composition; practice writing to exemplify the various methods of developing the topic statement. Plotting of simple briefs, and writing of easy forensics. At every stage of study selections from standard and contemporary authors will be read and discussed, in order that the student may acquire ability to master content, differentiate literary types, and appreciate standards of excellence. Subjects of composition will be those suggested by the student's personal, school, literary, community, and vocational interests, oral composition supplementing written.

Adv. Comp + Rhet. (Eng 11-12)

1 term
3 cr.

2 term
3 cr.

Compositions required: five expository and three argumentative short themes; one expository long theme requiring research and accompanied by outline and bibliography; one resume and one criticism; one argumentative long theme, accompanied by brief. A student's standing in written composition will be determined, in part, by the form and rhetorical effectiveness of the class themes and examination papers that he writes in other departments.

Courses in Home Economics and Industrial Arts; freshman year; first semester; 3 credits; 3 recitations.

32. **ADVANCED COLLEGE RHETORIC.** Study of the elements and principles involved in effective discourse, continued. Lectures on the characteristics of the literature of feeling, with a rendering of selections for illustration. Discussion of the narrative and descriptive methods of writing. Expository and emotional description differentiated. Examination of the narrative principle in epic forms, in ballad literature, in the incidents occurring in the drama, in the news letter, and in anecdote. Studies and practice writing in the narrative paragraph and in dialogue. Analysis of two or three of the briefer and less complex short stories of standard authors, for the purpose of gaining an appreciation of the form and function of the short story type.

Compositions required: five short descriptive themes; four short narrative themes; one long narrative; one long theme retelling in abstract the story of a book of fiction; one criticism of a short story. Frequent oral delivery.

Courses in Home Economics and Industrial Arts; freshman year; second semester; 3 credits; 3 recitations.

51. **THE ENGLISH ESSAY AND NOVEL.** Study of structure of novel and essay. Study of essay and novel as expressions of national life and thought. Emphasizing the growth of the economic, critical, historical, and personal essay, and the larger categories of fiction; the novel of manners, of character; the problem novel and the romantic novel. Class and individual assignments, lectures, and reports.

Course in Home Economics; sophomore year; first semester; 3 credits; 3 recitations.

52. **THE ENGLISH DRAMA.** Study of the Elizabethan and the Stuart drama; the modern drama. A survey of the rise and devel-

opment of the tragedy, comedy, and historical play. Study of setting, plot, structure, and characters. Reading of plays in class; reports on assigned readings.

Course in Home Economics; sophomore year; second semester; 3 credits; 3 recitations.

61. THE HISTORY OF ENGLISH LITERATURE. A general outline course of the history of English literature. This includes a survey of the principal forms of literature as exemplified by the masters in each field. The aim is to cultivate an appreciation of what is excellent in quality and form. Masterpieces representing the best thought and form are studied in class or assigned to students for careful reading and reports. Chief attention given to Chaucer, Spenser, Shakespeare, Milton, Swift, Poe, Johnson, Burke, Goldsmith, and Burns.

Elective in all courses; first semester; 3 credits; 3 recitations.

62. THE HISTORY OF ENGLISH LITERATURE. A continuation of course 61. A study of the master minds of the nineteenth century. Wordsworth, Scott, Shelley, Keats, Macauley, Dickens, Thackeray, George Eliot, Matthew Arnold, Carlyle, Ruskin, Stevenson, and others. Lectures, reading, and discussions; critical reports on assigned topics required from all the students.

Elective in all courses; second semester; 3 credits; 3 recitations.

71. AMERICAN LITERATURE. A study of the growth and development of literature in our country. Particular emphasis is placed on the study of writers of the nineteenth century, including such authors as Irving, Cooper, Bryant, Poe, Hawthorne, Longfellow, Holmes, and Lowell, as well as to prominent writers of the present day. Lectures; class study; class reading; reports on assigned topics; essay.

Elective in all courses; senior year; first semester; 3 credits; 3 recitations.

72. AMERICAN LITERATURE. A continuation of course 71. The metropolitan writers; literature in the South; literature in the West; present schools and tendencies; periodical literature. Lectures; class room work; reports; essays.

Elective in all courses; senior year; second semester; 3 credits; 3 recitations.

81. MODERN ENGLISH PROSE. A study of representative modern prose writers, with special reference to prose as found in

present day standard periodicals. Study of the newspaper paragraph. Practice in reporting lectures. Exercises in the elaboration of field notes. Drills looking to the popularization of technical matters and the results of experiments. Writing of papers and reports. Theme writing. Oral composition.

The courses in Agriculture, Forestry, Logging Engineering, Mechanical Engineering, Highway and Irrigation Engineering, Commerce, Industrial Arts, and Pharmacy.

Freshman year; first semester; 3 credits; 3 recitations.

82. MODERN ENGLISH PROSE. A continuation of course 81.

The courses in Agriculture, Forestry, Logging Engineering, Mechanical Engineering, Highway and Irrigation Engineering, Commerce, Industrial Arts, and Pharmacy.

Freshman year; second semester 3 credits; 3 recitations.

107. SPECIAL COMPOSITION. If a student, in his work in any department, submits papers notably deficient in English, he may be required, at any time after his freshman year, to take course 107. It consists wholly of theme work and consultations, and is continued in each case as long as the needs of the student require.

Sophomore, junior, or senior year; first and second semesters; 2 credits; 2 recitations.

B—PUBLIC SPEAKING

103. COMPOSITION OF ADDRESSES. This course deals with the composition of the most important kinds of addresses, including the argument, the eulogy, the commemorative address, and various forms of non-forensics. The work consists of lectures, a study of textbooks, analysis of masterpieces, practice in the composition of the various forms, and frequent class room exercises.

Course in Pharmacy; elective in all other courses; junior year; first semester; 2 credits; 2 recitations.

104. COMPOSITION OF ADDRESSES. Continuation of course 103.

Course in Pharmacy; elective in all other courses; junior year; second semester; 2 credits; 2 recitations.

108. ORATORY. This course is intended as special preparation for those who wish to enter oratorical work. The work consists of lectures on the theory of oratory, the preparation of original orations, class room exercises, and personal conference and criticism. The course can be taken only with the consent of the instructor.

105 - Pro. Publ. Sp. 1st Sem. - 3 cred.

106 - Pro. " " 2nd " " 3 cred

Elective in all courses; first semester; 1 credit; 1 recitation.

109. ORATORY. A continuation of course 108.

Second semester; 1 credit; 1 recitation.

141. TECHNICAL ENGLISH. The writing which the engineer has to do is almost wholly of the nature of exposition. Indeed, it is only in so far as it is expository that it offers any problems different from those which arise in general composition. In technical English, then, in the engineering courses, attention is centered on exposition of the various types which the engineer has to use, in description, in narration, in directions, in criticism, and in argumentation.

Textbook: Earle's Theory and Practice of Technical English for Engineers.

At all times it will be insisted on that whatever facts the student expresses, shall be expressed accurately; that the treatment of the subject shall be complete for the purpose in hand; that the form of presentation shall be logical; and that the expression shall be economical for the reader.

Required in the course in Mining; elective in all other engineering courses; senior year; first semester; 3 credits; 3 recitations.

142. TECHNICAL ENGLISH. Study of advanced technical composition. Special attention is given to letters of application, letters of inquiry and information, circular letters, letters of complaint, sales letters, follow-up letters, and collection letters. The ability to write a clear, forceful, effective letter has become a first requisite, not only for business success, but for intellectual and social recognition.

The course in Commerce; sophomore year; first semester; 3 credits; 3 recitations.

191. STORY-TELLING. The study of children's literature, and the analysis and reproduction of short stories suitable for the primary grades, the kindergarten, and the nursery.

Elective in the course in Home Economics; senior year; first semester; 1 credit; 1 recitation.

192. STORY-TELLING. A continuation of course 191.

Elective in the course in Home Economics; senior year; second semester; 1 credit; 1 recitation.

201. ELOCUTION. Literary interpretation, including analysis, memorizing, and rendering of selected masterpieces of prose and

poetry. The aim of this course is to enable the student not only to understand and appreciate the thought and spirit of literature, but to render it naturally and effectively; to correct erroneous habits of speech, and to give freedom, purity, and strength of tone; to cultivate the power of expression through imagination; to eliminate artificiality, affectation, and self-consciousness.

Elective; first semester; 2 credits; 2 recitations.

202. ELOCUTION. Continuation of course 201.

Elective; second semester; 2 credits; 2 recitations.

203. ELOCUTION. Advanced literary interpretation. Training in the delivery of masterpieces of prose and poetry. Interpretative study of Shakespeare and the modern drama; presentation of scenes from plays; bodily expression; impersonation.

Prerequisites: Courses 201 and 202.

Elective; first semester; 2 credits; 2 recitations.

204. ELOCUTION. Continuation of course 203.

Elective; second semester; 2 credits; 2 recitations.

301. JOURNALISM. Opportunity for valuable practice in writing for publication is afforded by the existence at the Oregon Agricultural College of a large number of technical and scientific publications, besides those of general interest. The list of publications includes: the Barometer, general student paper, published twice a week; the Oregon Countryman, monthly agricultural-domestic science publication; the Student Engineer, published by the students of the Engineering and Forestry courses; the Commerce-Pharmacy Journal, published by the students of Commerce and Pharmacy; and the Orange, the junior annual.

Training is given not only through the guidance of the instructors in the technical specialties about which the student decides to write, but through the cooperation of Professors E. W. Allen and C. V. Dyment, of the department of Journalism of the University of Oregon, Eugene. These professors make weekly visits to the College to advise with the students writing for the College publications, and to conduct a regular series of practical talks and recitations, constituting a college course.

Elective; first semester; 1 credit; 1 recitation.

302. JOURNALISM. A continuation of course 301.

Elective; second semester; 1 credit; 1 recitation.

HISTORY

PROFESSOR HORNER

D. UNITED STATES HISTORY. With special attention to the colonial, political, and industrial aspects. A brief course that covers the leading events of our history. Particularly important in Oregon since the introduction of direct legislation and equal suffrage.

Two-year Business course; first year; first semester; 3 credits; 3 recitations.

30. EUROPEAN HISTORY. Course 30 includes the study of Europe at the time of Louis XIV; reconstruction of Europe at Utrecht; Russia and Prussia become European powers; Wars of Frederick the Great; Struggle between France and England for India; Rivalry of France and England in North America; The Old Regime in Europe; The Spirit of Reform; Enlightened Despots of the Eighteenth Century; The French Revolution; The First French Republic; Europe and Napoleon; The Reconstruction of Europe at the Congress of Vienna.

Elective; first semester; 3 credits; 3 recitations.

40. MODERN EUROPE. This course comprises a study of the following subjects: Europe after the Congress of Vienna; The Industrial Revolution; Revolution of 1848; Unification of Italy; Formation of the German Empire and the Austria-Hungarian Union; The German Empire; France under the Third Republic; Social and Political Reforms in England; British Empire in the Nineteenth Century; Russian Empire in the Nineteenth Century; Turkey and the Eastern Question; The Expansion of Europe in the Nineteenth Century; Some of the great problems of today.

The course in Commerce; sophomore year; second semester; 3 credits; 3 recitations.

52. HISTORY OF THE BRITISH EMPIRE. A coherent view of the larger factors influencing national development from the earliest times to the British Empire of today. Social, economic, artistic, and intellectual growth is broadly surveyed, and is made to reveal a picture of the changing conditions of the people rather than that of the king and nobility. Legal and constitutional development is

also emphasized by tracing the origin and development of English common law and by discussing the nature and importance of the great statutes. Particular attention is given to such subjects as the Industrial Revolution, Growth of the Power of the House of Commons, the Extension of the Franchise, Remedial Legislation, and Colonial and Imperial Development.

Elective; senior year; first semester; 3 credits; 3 recitations.

62. CONTEMPORARY AMERICAN HISTORY (1877-1914). The history of the United States from the Reconstruction Period to the inauguration of President Wilson. Such matters as the negro question, the industrial revolution, capitalism and socialism, free silver, direct government, woman suffrage, the growth of judicial review, the new nationalism, imperialism, the labor movement, the progressive movement, the Panama-Colombia question, present status of the Monroe Doctrine, and our relation with the Latin-American republics, are discussed from the standpoint of history.

The course in Commerce; freshman year; second semester; 3 credits; 3 recitations.

70. HISTORY OF OREGON. Early explorations. Lewis and Clark expedition. Minor expeditions. Fur trade. Rivalry between companies. Era of immigration. Oregon organized under Hudson Bay Company. Agitation in Congress for military occupation of the Columbia. The Nez Perce Indians ask for the Bible. Response by Methodists and Congregationalists. Doctor Whitman and the Oregon movement. Struggle for the Willamette. Struggle for the Columbia. First transcontinental wagon road. Provisional government. Progress of immigration and missions. Gold excitement. Subdivision of Oregon into territories. Indian wars. Home building. Disposition made of the Indians. Oregon becomes a state. Introduction of improved fruit, grains, and stock. Ships and railways. Select schools, public schools, and higher education. Oregon literature. Industrial training, and introduction of scientific methods. Irrigation; conservation of forests. "The Oregon System" of direct legislation.

The course in Commerce; sophomore year; first semester; 3 credits; 3 recitations.

80. AMERICAN DIPLOMATIC HISTORY. This course deals with the history of the chief events in American foreign affairs from

the beginning of the government to the present time. Its purpose is to show the policies of our government on the same subject at different times, the causes for the changed policies, and the methods employed to work out the policies. An attempt is made to show the changed attitude of governments in their dealings with each other in the course of our national history. Throughout the course considerable attention will be given to character studies of the men leading in our diplomatic work. The ultimate aim is the application of our experience to present problems.

Elective; senior year; second semester; 3 credits; 3 recitations.

90. GREECE AND ROME. Advanced course.

Elective; second semester; 3 credits; 3 recitations.

LIBRARY

MRS. KIDDER
MISS LEWIS
MISS GEORGE
MISS HAIGHT
MISS DOBELL
MR. ROACH
MISS HOUT

EQUIPMENT. The Library occupies the second floor of the Administration building. The reading and general reference room is large, well lighted, and extends entirely across the building. It is supplied with about five hundred leading magazines and newspapers. Through the courtesy of the editors, a large number of farm, orchard, stock, and home journals, and country newspapers of Oregon are received regularly at the reading room. The book stacks, occupying adjacent rooms, contain about 20,000 volumes of standard works of history, biography, engineering, agriculture, natural science, general literature and reference, and about 5,000 reports and other publications from the Agricultural Colleges and Experiment Stations of all the states, and 30,000 bulletins and pamphlets. The library is a designated depository of United States Government publications, of which it has about 7,000 volumes. Over 2,000 of these were received as a gift from the library of the late United States Senator Dolph.

Practical use of the books has led to the establishment of small laboratory collections kept in the rooms of the following departments: General Chemistry, Agricultural Chemistry, Animal Husbandry, Agronomy, Horticulture, Botany, Forestry, Bacteriology, Zoology, Pharmacy, Civil, Mechanical, Electrical, and Mining Engineering. Each department library is in charge of the head of that department, to whom application must be made for the use of the books.

All books are classified and catalogued according to the Dewey decimal system. Books may be drawn for home use by all officers and students of the College. Books may be kept by the students for two weeks with the privilege of a renewal, and by officers for

any reasonable time. All students have free access to the shelves of the reference library in the reading room, but apply at the delivery desk for other works which they may desire.

The reference library consists of encyclopedias, dictionaries, standard reference books in the different departments of study, and bound periodicals, together with books designated by professors for collateral reading in the various courses of instruction. A small collection of books for cultural reading is also kept in the reading room. In the same room, and accessible to all readers, is the card catalogue of the general library, including the books of the department libraries. The catalogue includes both authors and subjects under one alphabet on the dictionary plan; there is also a card catalogue of the publications of the U. S. Department of Agriculture, and a card index to the publications of the State Experiment Stations.

1. **LIBRARY PRACTICE.** This course teaches, by means of lectures and practical problems, the use of catalogues, indexes, and reference books, such as dictionaries, encyclopedias, atlases, handbooks of general information, handbooks of history, statistics, quotations, etc.

All degree courses; freshman year; one semester; $\frac{1}{2}$ credit; 1 recitation.

MATHEMATICS

PROFESSOR JOHNSON
ASSISTANT PROFESSOR TARTAR
ASSISTANT PROFESSOR BEATY
MR. BEARD

A. ALGEBRA. The work of the course includes a drill in the fundamental operations, use of parentheses, special rules of multiplication and division, factoring, highest common factor, lowest common multiple, and fractions.

The Mechanics Arts course; first year; first semester; 5 credits; 5 recitations.

B. ALGEBRA. The topics studied are solution of fractional and literal equations, problems involving linear equations, simultaneous linear equations, involving two or more unknown numbers, problems involving simultaneous linear equations, graphical representation, inequalities, involution, evolution, theory of exponents, radical expression, and imaginary numbers.

The Mechanic Arts course; first year; second semester; 5 credits; 5 recitations.

C. ALGEBRA. Required of freshmen who enter with but one year of Algebra.

Either semester; 3 credits; 3 recitations.

D. PLANE GEOMETRY Course D includes the first two books of Plane Geometry. The constant aim is to develop in the student the power of logical reasoning, and of clearness and accuracy of expression. To this end, many original exercises are studied, and at all times demonstrations and proofs are freely discussed in the class room. Required of freshmen entering deficient in first semester of Plane Geometry.

First semester; 3 credits; 4 recitations.

E. PLANE AND SOLID GEOMETRY. A continuation of Course D, arranged for freshmen in Engineering who enter deficient in the second semester of Plane Geometry.

Second semester; 5 credits; 5 recitations.

F. SOLID GEOMETRY. Required of all Engineering freshmen who are deficient in Solid Geometry.

Freshman year; first semester; 2 credits; 3 recitations.

G. PLANE GEOMETRY. Courses G and H are arranged for freshmen who enter deficient in the second semester of Plane Geometry, and who desire to use both semesters to make up the condition. The two courses are equivalent to course K.

Freshman year; first semester; $1\frac{1}{2}$ credits; 2 recitations.

H. PLANE GEOMETRY. A continuation of course G.

Freshman year; second semester; $1\frac{1}{2}$ credits; 2 recitations.

K. PLANE GEOMETRY. A continuation of course D, covering the last three books of Plane Geometry. Many original exercises are studied. Required of freshmen, except those in Engineering, who enter deficient in second semester of Plane Geometry.

Second semester; 3 credits; 4 recitations.

L. PLANE GEOMETRY. A course arranged to meet the needs of students in Mechanic Arts.

The course in Mechanic Arts; second year; second semester; 4 credits; 5 recitations.

M. COMMERCIAL ARITHMETIC. A review of all the essential operations. Special stress is laid on short methods; daily drills in rapid calculation; computation of estimates; partnership settlements, etc.

The two-year Business course; first year; first semester; 3 credits; 5 recitations.

N. COMMERCIAL ARITHMETIC. A continuation of course M.

The two-year Business course; first year; second semester; 3 credits; 5 recitations.

O. SHOP ARITHMETIC. A thorough drill in the principles of arithmetic, with special application to shop problems of all sorts.

The course in Mechanic Arts; second year; first semester; 4 credits; 5 recitations.

R. FARM ARITHMETIC. An elective course for students in the one-year course in Agriculture who feel the need of a review of arithmetic. A practical text dealing with problems of the farm will be used.

The vocational course in Agriculture; second semester; 4 credits; 5 recitations.

T. GEOMETRY AND TRIGONOMETRY.

The course in Mechanic Arts; third year; first semester; 4 credits; 5 recitations.

(Not given in 1914-15.)

10. **ADVANCED ARITHMETIC.** An advanced course in commercial arithmetic, especially for students in the School of Commerce. To do successful work in this course, the student should have a thorough knowledge of all the fundamental operations of arithmetic, including the various phases of percentage and interest. Emphasis is laid on computations of the more difficult problems connected with partnership and corporation settlements, balance sheets and statements, equation of accounts, partial payments, savings bank accounts, compound interest, stocks and bonds, life insurance, and annuities, partly for the information obtained in the various subjects and partly for the drill afforded in the use of figures. Daily drills are given in short methods and rapid calculation.

Freshman year; first semester; 3 credits; 3 recitations.

11. **PLANE TRIGONOMETRY.** This course includes functions of acute angles, right angles, functions of any angle, relations between functions, inverse functions, trigonometric equations, and oblique triangles. Considerable time is devoted to the deduction of trigonometric formulæ, study of trigonometric identities, and the solution of practical problems.

All Engineering courses; freshman year; first three-fifths first semester; 3 credits; 5 recitations.

12. **PLANE TRIGONOMETRY.** The course in Industrial Arts; second semester; 3 credits; 3 recitations.

14. **TRIGONOMETRY.** A review of algebra, including logarithms, is followed by a course similar in character to 11, except that more time is given to the solution of partial problems.

The course in Forestry; freshman year; first semester; 3 credits; 4 recitations.

21. **COLLEGE ALGEBRA.** After a brief review of radical expressions, theory of indices, and quadratic equations, graphical representation and mathematical induction are studied.

All Engineering courses; freshman year; last two-fifths of first semester; 2 credits; 5 recitations.

31. **ELEMENTARY ANALYSIS.** Under College Algebra are treated the binomial theorem, progressions, complex numbers, and the theory of equations. In analytical geometry the point, straight line, circle, conic sections, and some of the higher plane curves are studied. Considerable time is given to the plotting of curves in both rectangular and polar co-ordinates.

All Engineering courses; freshman year; second semester; 5 credits; 5 recitations.

34. **ELEMENTARY ANALYSIS.** This course is similar to 31, but shorter. Particular emphasis is given to curve plotting in both rectangular and polar co-ordinates.

The course in Forestry; freshman year; second semester; 3 credits; 4 recitations.

41. **PLANE ANALYTIC GEOMETRY.** Course 41 is offered to students who enter the sophomore year deficient in Analytic Geometry. The topics studied are the point, the straight line, polar co-ordinates, transformation of co-ordinates, the circle, conic sections, tangents, diameter, poles and polars, discussions of general equations of the second degree, problems in loci, and higher plane curves.

All Engineering courses; sophomore year; first semester; 3 credits; 3 recitations.

51. **DIFFERENTIAL CALCULUS.** Among the subjects presented are: differentiation and applications, evaluation of indeterminate forms, expansion of functions, Taylor's and Maclaurin's theorems, maxima and minima, points of inflection, curvature, change of independent variable, functions of two or more variables, asymptotes, curve tracing, etc.

All Engineering courses; sophomore year; first semester; 4 credits; 5 recitations.

52. **INTEGRAL CALCULUS.** Among the topics considered are: direct integration, definite integrals and applications; integration by parts, integration of trigonometric forms, etc.; applications to finding the lengths and areas of curves, surfaces, and volumes of solids of revolution, etc.; double and triple integration and applications. In this course, as in Course 51, great stress is laid upon practical applications, and a large number of practical problems are solved.

All Engineering courses; sophomore year; second semester; 4 credits; 5 recitations.

61. DIFFERENTIAL EQUATIONS. A study of the solution of ordinary and partial differential equations which the Engineering student is likely to encounter.

Prerequisites: Courses 51, 52.

Elective; junior year; first semester; 3 credits; 3 recitations.

71. METHOD OF LEAST SQUARES. Prerequisites: Courses 51, 52.

Elective; junior year; second semester; 2 credits; 2 recitations.

MODERN LANGUAGES

PROFESSOR BACH

MISS KUNEY

MISS LEROUX

Courses of three years are offered in French, German, and Spanish respectively.

The end in view is practical use for the various pursuits of life. Consequently the method of teaching is thoroughly practical, combining all the theory necessary with all the practice possible.

FRENCH

101. **FRENCH.** Grammar; oral and written exercises; some of the irregular verbs in general use; reading of 100 to 150 pages of easy prose.

First semester; 3 credits; 3 recitations.

102. **FRENCH.** A continuation of course 101.

Prerequisite: Course 101.

Second semester; 3 credits; 3 recitations.

103. **FRENCH.** Grammar continued; irregular verbs; reading of intermediate texts; oral and written exercises.

Prerequisites: Courses 101 and 102.

First semester; 3 credits; 3 recitations.

104. **FRENCH.** A continuation of course 103.

Prerequisites: Courses 101, 102, 103.

Second semester; 3 credits; 3 recitations.

In addition to the regular second year's work, a special elective conversational course is offered for all students who have completed the first year's work. (See course 109.)

105. **FRENCH.** Science course. Reading of selections from French scientific literature.

Prerequisites: Courses 101, 102, 103, 104.

First semester; 2 credits; 2 recitations.

106. **FRENCH.** A continuation of course 105.

Prerequisites: Courses 101, 102, 103, 104, 105.

Second semester; 2 credits; 2 recitations.

107. FRENCH. General third year course comprising selections from the various classes of literature, together with composition and conversational exercises.

Prerequisites: Courses 101, 102, 103, 104.

108. FRENCH. A continuation of course 107.

Prerequisites: Courses 101, 102, 103, 104, 107.

Second semester; 3 credits; 3 recitations.

109. FRENCH. A conversational course. Provides interesting and profitable conversational drill on practical every-day topics and includes, in a new form, a helpful review of the elements of the language.

Prerequisites: Courses 101, 102.

110. FRENCH. A continuation of course 109.

Second semester; 1 credit; 1 recitation.

111. FRENCH. Conversational course. Provides well-graded and systematically planned talks on all sorts of topics.

Prerequisites: Courses 101, 102, 103, 104.

First semester; 1 credit; 1 recitation.

112. FRENCH. A continuation of course 111.

Prerequisites: Courses 101, 102, 103, 104, 111.

Second semester; 1 credit; 1 recitation.

GERMAN

201. GERMAN. Grammar; elementary forms with oral and written exercises; reading of 100-150 pages of easy prose.

First semester; 3 credits; 3 recitations.

202. GERMAN. A continuation of course 201.

Prerequisite: Course 201.

Second semester; 3 credits; 3 recitations.

203. GERMAN. Grammar continued; reading of intermediate texts; oral and written exercises.

Prerequisites: Courses 201, 202.

First semester; 3 credits; 3 recitations.

204. GERMAN. A continuation of course 203.

Prerequisites: Courses 201, 202, 203.

Second semester; 3 credits; 3 recitations.

In addition to the regular second year's work, a special elective conversational course is offered for all students who have completed the first year's work. (See course 211.)

205. GERMAN. Science course. Reading of selections from German scientific texts.

Prerequisites: Courses 201, 202, 203, 304.

Elective; first semester; 2 credits; 2 recitations.

206. GERMAN. A continuation of course 205.

Prerequisites: Courses 201, 202, 203, 204, 205.

Second semester; 2 credits; 2 recitations.

207. GERMAN. A general three-year course comprising selections from the various classes of literature, together with composition and conversational exercises.

Prerequisites: Courses 201, 202, 203, 204.

First semester; 3 credits; 3 recitations.

208. GERMAN. A continuation of course 207.

Prerequisites: Courses 201, 202, 203, 204, 207.

Second semester; 3 credits; 3 recitations.

209. GERMAN. Conversational course. Provides interesting and profitable conversational drill on practical everyday topics and includes, in a new form, a helpful review of the elements of the language.

Prerequisites: Courses 201 and 202.

First semester; 1 credit; 1 recitation.

210. GERMAN. A continuation of course 209.

Prerequisites: Courses 201, 202, 203, 204, 209.

Second semester; 1 credit; 1 recitation.

211 GERMAN. Conversational course. Provides well-graded and systematically planned talks on all sorts of topics.

Prerequisites: Courses 201, 202, 203, 204.

First semester; 1 credit; 1 recitation.

212. GERMAN. A continuation of course 211.

Prerequisites: Courses 201, 202, 211.

Second semester; 1 credit; 1 recitation.

SPANISH

301. SPANISH. Grammar; elementary forms; oral and written exercises; reading of easy text, 100-150 pages.

Sophomore year; first semester; 3 credits; 3 recitations.

302. SPANISH. A continuation of course 301.

Second semester; 3 credits; 3 recitations.

303. SPANISH. Grammar continued; reading of intermediate texts; oral and written exercises.

Prerequisites: Courses 301, 302.

First semester; 3 credits; 3 recitations.

304. SPANISH. A continuation of course 303.

Prerequisites: Courses 301, 302, 303.

Second semester; 3 credits; 3 recitations.

In addition to the regular second year's work, a special elective conversational course is offered for all students who have completed the first year's work.

305. SPANISH. Conversational course. Provides interesting and profitable conversational drill on practical everyday topics and includes, in a new form, a helpful review of the elements of the language.

Prerequisites: Courses 301, 302.

First semester; 1 credit; 1 recitation.

306. SPANISH. A continuation of course 305.

Prerequisites: Courses 301, 302, 305.

Second semester; 1 credit; 1 recitation.

307. SPANISH. General third year course. Reading of standard selections from Spanish general literature with composition and conversation.

Prerequisites: Courses 301, 302, 303, 304.

First semester; 3 credits; 3 recitations.

308. SPANISH. A continuation of course 307.

Prerequisites: Courses 301, 302, 303, 304, 307.

Second semester; 2 credits; 2 recitations.

309. SPANISH. Conversational course. Provides well-graded and systematically planned talks on all sorts of topics.

Prerequisites: Courses 301, 302, 303, 304.

First semester; 1 credit; 1 recitation.

310. SPANISH. A continuation of course 309.

Prerequisites: Courses 301, 302, 303, 304, 309.

Second semester; 1 credit; 1 recitation.

PHYSICS

PROFESSOR WENIGER

MR. BEVAN

MR. BLAIR

MR. BELKNAP

The following courses are offered:

A. **ELEMENTARY PHYSICS.** An elementary or high school course in physics.

The vocational course in Mechanic Arts; third year; first semester; 3 credits; 3 recitations; 1 laboratory period.

B. **ELEMENTARY PHYSICS.** A continuation of course A.

Second semester; 3 credits; 3 recitations; 1 laboratory period.

1. **GENERAL PHYSICS.** A course in general physics, descriptive rather than mathematical in character, covering the subjects of mechanics and heat.

Prerequisites: Elementary physics; geometry.

The course in Agriculture, freshman year; the course in Forestry and Industrial Arts, sophomore year; elective in the course in Commerce, freshman year; first semester; 3 credits; 2 lectures; 1 recitation; 1 laboratory period.

2. **GENERAL PHYSICS.** A continuation of course 1 covering the subjects of sound, light, electricity, and magnetism.

Required as listed under course 1; second semester; 3 credits; 2 lectures; 1 recitation; 1 laboratory period.

3. **GENERAL PHYSICS.** A special course offered during the year 1914-15 for those who have not had elementary physics.

Required as listed under course 1; first semester; 3 credits; 2 lectures; 1 recitation; 1 laboratory period.

4. **GENERAL PHYSICS.** A continuation of course 3. Courses 3 and 4 together will cover mechanics, heat, and electricity.

Required as listed under course 1; second semester; 3 credits; 2 lectures; 1 recitation; 1 laboratory period.

101. **ENGINEERING PHYSICS.** A course in mechanics and heat.

Prerequisites: Elementary physics; trigonometry.

The course in Electrical Engineering, Highway Engineering, Irrigation Engineering, Logging Engineering, Mechanical Engineering, and Mining Engineering; sophomore year; first semester; 4 credits; 2 lectures; 3 recitations; 1 laboratory period.

102. **ENGINEERING PHYSICS.** A continuation of course 101, covering the subjects of electricity and magnetism, sound and radiation.

Sophomore year; second semester; 4 credits; 2 lectures; 3 recitations; 1 laboratory period.

131. **HOUSEHOLD PHYSICS.** A brief descriptive course with such applications as are of greatest interest to students in Home Economics.

The course in Home Economics; sophomore year; first semester; 4 credits; 3 lectures; 2 recitations; 1 laboratory period.

201. **ELECTRICAL AND MAGNETIC MEASUREMENTS.** A laboratory course in the exact determination of electrical and magnetic quantities, calibration of instruments, etc.

The course in Electrical Engineering; junior year; first semester; 2 credits; 1 three-hour laboratory period.

The course will be repeated during the second semester, as an elective, should a sufficient number of students apply.

202. **ELECTRICITY AND MAGNETISM.** An advanced course, taking up the theory of electrical measuring instruments, etc., with suitable practice in the laboratory.

Elective; credit to depend on work done.

211. **HEAT AND LIGHT.** An advanced course, taking up the phenomena of heat and light in detail, including recent discoveries.

Elective; credit to depend on work done.

212. **ILLUMINATION.** A study of illuminants and their utilization in exterior and interior illumination.

Prerequisites: Physics 101, 102.

The course in Electrical Engineering; elective; senior year; second semester; 3 credits; 2 recitations; 1 three-hour laboratory period.

222. **WIRELESS TELEGRAPHY.** A study of electric waves, their measurement, and their application to practical wireless telegraphy.

Prerequisites: Math. 51, 52; E. E. 101.

The course in Electrical Engineering; junior or senior year; elective; second semester; 3 credits.

PHYSICAL EDUCATION

PROFESSOR STEWART

PROFESSOR THAYER

MR. ARBUTHNOT

MISS PLOCK

MISS LEWIS

MISS CLEAVES

MR. _____

PHYSICAL EDUCATION FOR MEN

ATHLETICS. All College athletic contests are under the jurisdiction of the athletic board, composed of two members of the faculty, two members of the student body, and one alumnus; and the faculty committee on athletics, composed of six members of the faculty.

Direct and active supervision comes from the athletic board, while the faculty committee determines matters of policy and questions which have an important relationship to College affairs. The athletic board supports representative teams in football, basketball, wrestling, track and baseball, and awards monogram "O's" to members of these teams. The most efficient coaches are furnished to all of these teams, while assistants teach the theory and practice of the various sports to freshmen and other teams.

The new gymnasium will furnish to the students at the Oregon Agricultural College the most modern and complete equipment for specializing in indoor sports, while the new athletic field now under course of construction will include a new quarter-mile track, two football fields, and two baseball diamonds, together with eight tennis courts and outdoor handball courts.

The armory, one of the largest of its kind in the United States, provides fine facilities for winter training in football, track, baseball, and the various other outdoor sports. An indoor track, which is but eight laps to the mile, furnishes facilities which are proving a great aid in shaping all of the teams into condition.

GYMNASIUM WORK. Because physical health determines capacity for efficiently carrying out work which a student prepares for in college, the importance of Physical Education in the modern educational institution is being emphasized more and more every year. The functions of this department are: (1) to develop organic power, the basis of vitality, necessary to physical and mental

efficiency; and (2) to secure and maintain a good posture, harmonious muscular control, and a reasonable degree of scientific training for expert gymnasium and field athletic work.

The new gymnasium for men, two units of which will be completed in time for work at the opening of the College in September, 1914, will be equipped with all of the modern gymnastic apparatus and facilities for properly carrying on the work in physical education and recreation. The floor, 90x150 feet in dimensions, will furnish ample space for the most efficient type of gymnasium work. It will be surrounded by a running track of fourteen laps to the mile.

Features of the new gymnasium which will add to its attractiveness will be two regulation sized handball courts; two squash courts; three basketball courts; regulation sized, padded rooms for boxing and wrestling; bowling alleys; steel lockers to accommodate all the men students; modern hygienic showers, steaming rooms, hot rooms, etc., for scientific care of the body.

The treasurer's receipt for the \$1.50 gymnasium fee entitles the holder to registration at the gymnasium office for full privileges of the gymnasium, including physical examination, chart of measurements, locker, free towels, etc.

On the basis of the physical examination, special work of such a nature as the student's physique demands will be assigned, and a careful plan outlined for the symmetrical development of the body.

Membership and regular practice on any of the varsity squads is accepted as an equivalent for gymnasium work during the active practice season, the attendance being reported weekly.

FALL WORK. Instruction is given in both theory and practice of Physical Education. During the warm weather of the first semester the department emphasizes the desirability of outdoor work, furnishing a large and efficient corps of instructors in football, basketball, tennis, volley ball, soccer, swimming, cross country, track athletics, etc.

WINTER WORK. The active gymnasium work starts with the beginning of the fall rains, about October 15, when outdoor work is no longer convenient. The work prescribed is intended to correct cases of scoliosis, flat-foot, weak chest, round shoulders, or any other deformity which is susceptible of improvement through prescribed gymnastics.

Recreative games, such as basket ball, hand ball, indoor baseball, wrestling, boxing, indoor tennis, volley ball, etc., are also conducted during the winter period.

SPRING WORK. In the spring, full advantage will be taken by the gymnasium instructors of the opportunity for cross-country runs, track and field work, and out-door games with the classes, during which occasions correct methods of breathing, form in running, and proper carriage of the body will be emphasized.

NORMAL COURSE. Many students expect to take up the profession of teaching after graduation from college. A general knowledge of the theories of physical education and methods of gymnastics and athletic instruction is often of material assistance in securing important teaching positions.

Students showing an especial aptitude and interest in physical education will be admitted to this course. The work will include lectures on the history and development of physical training, the general physiological principles of exercises, methods of teaching, and first aid to the injured. Calisthenics, gymnastic drills, apparatus work, games, and athletics will comprise the practical work of the course.

Elective; hours and credits subject to arrangement.

All sophomores, freshmen, and students of the Vocational courses, unless physically unable, are required to take physical training. The classes meet twice a week for sixty-minute periods.

One-half credit per semester is allowed for this work, and is a requirement toward graduation.

COURSES IN PHYSICAL EDUCATION FOR MEN

11. First year Vocational; first semester; 2 periods; $\frac{1}{2}$ credit.
12. First year Vocational; second semester; 2 periods; $\frac{1}{2}$ credit.
13. Second year Vocational; first semester; 2 periods; $\frac{1}{2}$ credit.
14. Second year Vocational; second semester; 2 periods; $\frac{1}{2}$ credit.
15. Freshman year; first semester; 2 periods; $\frac{1}{2}$ credit.
16. Freshman year; second semester; 2 periods; $\frac{1}{2}$ credit.
17. Sophomore year; first semester; 2 periods; $\frac{1}{2}$ credit.
18. Sophomore year; second semester; 2 periods; $\frac{1}{2}$ credit.

PHYSICAL EDUCATION FOR WOMEN

PURPOSE. The aim of this department is to bring each student to her best possible physical condition, and by a careful system of gymnastic training to correct faulty posture and carriage, to aid in the formation of habits of hygienic living, to establish a normal condition in the circulatory and respiratory systems, to secure bodily vigor, and to attain a healthy and symmetrical development, rather than the greatest increase in mere muscular power. Students are under the care of teachers who have had thorough medical training, and will be given special medical and corrective gymnastics, prescribed according to individual needs as indicated by their physical examinations.

REQUIREMENTS. Work in physical education is required of all women four periods per week in all full-year, special, optional, and vocational courses, regardless of the student's course or classification. One credit per semester is granted for this work. After the satisfactory completion of two years' regular work, the courses will be made elective or optional for women who pass a satisfactory physical examination and have a correct posture and carriage. Corrective gymnastics will be prescribed for all others, credit being allowed on the basis indicated above. At least four credits are required in Physical Education toward graduation.

Persons presenting credentials of work in physical education taken elsewhere may be given credit for such work in so far as it is equivalent to the requirements of this institution.

Women students are required to be able to swim a distance of 35 yards by the end of their sophomore year. (This requirement will go into effect after the completion of the swimming pool in the new gymnasium.)

SPECIAL CORRECTIVE AND MEDICAL GYMNASTICS. Students who are shown by their physical examinations to be unfit for the work of the regular classes in gymnastics and sports, or to have physical defects, will be assigned to corrective classes where the work is light and the emphasis is laid on correct breathing and posture, relaxation and rest; or, whenever necessary, students will be given private work in medical or corrective gymnastics according to their individual needs. Thus the physical condition of each student is carefully diagnosed and supervised. The instructors encourage

conferences concerning matters of health, personal and sex hygiene, and as far as possible advise proper treatment for the student's temporary ailments. They also take care of the emergency and first aid work for the women of the College.

COSTUMES. In order that the gymnasium costumes be hygienic and uniform, a regulation suit and shoes are required of all students. The shoes are sold by the local dealers, subject to the approval of the director. The suits should be ordered at the gymnasium office, immediately upon arrival at the College.

Good second-hand uniforms of outgoing girls will be for sale at about \$4.00, while the new uniforms cost \$5.00.

Special Work in Physical Education

Students permitted to pursue special work in Physical Education for the purpose of teaching, should elect classes in regular and corrective gymnastics besides Aesthetic and Folk Dancing and various kinds of outdoor sports. It should be noted, however, that only under special circumstances will such free election of courses be allowed.

In addition to the practice work, the following courses in theory are advised for students permitted to pursue this special work.

Physiology, Elementary and Advanced.

Hygiene, Personal and School.

Anatomy.

Biology, Elementary and Advanced.

Home Nursing.

Psychology.

English and English Literature.

German (knowledge sufficient to read and study medical works).

Education.

Sociology.

Bacteriology.

Physics (Elementary).

Chemistry (Elementary).

Play and Playground Games.

Public School Methods and Practice Teaching.

COURSES IN PHYSICAL EDUCATION FOR WOMEN REQUIRED COURSES

In the regular courses in Elementary and Intermediate Gymnastics a variety of work is taught. Both the Swedish and German systems of gymnastics are used, and the best in both is adapted to the needs of the classes. Much emphasis is laid on correct posture and breathing. The following order is usually observed: (1) tactics; (2) exercises which include all the groups of muscles, taken free hand or with light hand-apparatus (wands, dumb-bells or Indian clubs); (3) apparatus exercises for those physically adapted; (4) recreative work at the end of the lessons, games, or fancy steps.

1. Elementary Secondary Gymnastics; first semester; four hours per week.

2. Elementary Secondary Gymnastics; second semester; four hours per week.

Prerequisite: Course 1.

3. Intermediate Secondary Gymnastics; first semester; four hours per week.

Prerequisites: Courses 1 and 2.

4. Intermediate Secondary Gymnastics; second semester; four hours per week.

Prerequisites: Courses 1, 2 and 3.

5. Elementary College Gymnastics; first semester; four hours per week.

6. Elementary College Gymnastics; second semester; four hours per week.

Prerequisite: Course 5.

7. Intermediate College Gymnastics; first semester; four hours per week.

Prerequisites: Courses 5 and 6.

8. Intermediate College Gymnastics; second semester; four hours per week. Participation in the Annual Pageant is a requisite for the completion of this course.

Prerequisites: Courses 5, 6 and 7.

(It will be noted that unless it is necessary for a corrective student to take gymnastics, she will be allowed to substitute for two periods of the above courses two periods per week in the elective courses described below.)

ELECTIVE COURSES

26. **CORRECTIVE GYMNASTICS.** Open to all students who have need of remedial work. Special attention is given to those having spinal curvature, round shoulders, narrow chests, forward heads, weak backs, pronated ankles, and other physical defects or weaknesses.

27. **OUTDOOR SPORTS.** Open to all students physically qualified. In this course are taught a variety of games, including baseball, indoor baseball, soccer, playground ball, cross ball, track athletics, and relay racing. In the rainy season games are played in the Armory.

One, two, or three periods a week.

28. **BASKET BALL.** Open to students physically qualified. In good weather the games will be played outdoors.

One period a week for each class throughout the year.

29. **SOCCER.** Open to all students physically qualified.

One period a week in the spring and fall.

30. **BASEBALL.** Open to all students in spring and fall seasons.

One period a week.

31. **INDOOR BASEBALL.** Open to all students during indoor season.

One period a week.

32. **HOCKEY.** Open to all physically qualified.

One period a week in the spring and fall.

33. **CROSS BALL.** Open to all students physically qualified.

One period a week during the outdoor season.

34. **TENNIS.** Courts will be assigned to those who wish to play regularly.

35. **SWIMMING.** One or two lessons a week are allowed each student.

36. **FENCING.** Open to all students.

One period a week during indoor season.

37. **INDIAN CLUBS.** Open to all students.

One period a week during indoor season.

38. AESTHETIC DANCING. (Elementary). Open to all students. The purpose of this course is to develop grace and freedom of movement. Classic dancing, which is now considered one of the most important phases of gymnastic exercise, is emphasized.

One or two periods a week.

39. AESTHETIC DANCING. (Intermediate). Open to all students who have completed course 38.

One or two periods a week.

40. FOLK DANCING. Open to all students. In this course are taught a variety of peasant and national dances suitable for recreation or teaching.

One period a week.

41. THEORY OF GYMNASTICS. Open to all students interested in the teaching of school gymnastics. This course is very elementary, but gives an insight into public school conditions and methods of teaching practical gymnastics. Each student learns how to teach proper breathing, correct posture, and simple prescriptions of corrective exercises for round-shouldered and hollow-chested children. Practice teaching with children from public schools.

Two periods a week for one semester; 2 credits.

42. THEORY OF GYMNASTICS. Continuation of course 41, and open to all students who have completed course 41.

Two periods a week for one semester; 2 credits.

43. PLAY AND PLAYGROUND GAMES. Open to all students. This course is designed for public school teachers or students interested in playground work, or wishing to specialize in Physical Education. The psychology of play, adaptation of play to varying ages, necessity of supervision of play, simple equipment for school playgrounds, organization of games, will be given briefly. The majority of the time, however, will be given to the practice of various playground games and simple folk dances.

Five periods a week for one semester; 2 credits.

44. ARCHERY. One period a week in outdoor season.

45. Theory of Playground Supervision - 1st Sem.

MILITARY SCIENCE AND TACTICS

LIEUTENANT HENNESSEY
MR. DUGGER

The Oregon Agricultural College was founded in pursuance of three lines of national legislation. The first of these was the Act of Congress known as the Congressional Land Grant Act, of July 2, 1862, and the Acts supplemental thereto, for the establishment of colleges "where the leading object shall be, without excluding other classical and scientific studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts."

The absolute dependence of the College upon the benefactions of the Nation and the State imposes a particular obligation on all who enjoy its privileges. The College, on its part, conforming to the spirit of law, has provided for an efficient system of military instruction, and the Corps of Cadets is entitled to the loyal, zealous, and true support of each and every student in the College. That it receives that support each year will be best evidenced by the standing which the corps attains among the military organizations of the higher universities and colleges.

The Congressional Land Grant Act of 1862 requiring military instruction, was passed during a critical period in the life of the Nation while it was engaged in a civil war. The best of evidence was then at hand showing the need of trained citizen soldiers prepared at all times for service in the cause of the Nation. The object of the law, therefore, was to provide well-trained citizen soldiers. The object has been successfully met. Students enrolled in the Military Department may attain a high state of military proficiency, if the spirit, as well as the letter of the law, is followed out during the prescribed course, thereby fulfilling a duty to the Nation, the State, and the College.

The military body of this College consists of one regiment of infantry having three battalions of four companies each, a hospital corps and signal corps detachment, and a band of fifty instruments. The drill and administration are the same as in the Regular Army.

One of the objects of this instruction is to prepare the cadet so that upon graduation he will be thoroughly competent to hold a commission in the National Guard or volunteer army.

The greater part of the instruction is directed toward having cadets adopt a systematic rule of conduct inculcating accurate methods in everything they undertake. This not only places cadets in the condition to receive favorably all instruction in the military department, but facilitates study in the other departments, and becomes a valuable asset to a young man going out into the world in any profession.

Military drill improves the habits and manners of the student, develops him physically, and gives him that military knowledge which it is desirable every citizen should possess in order that he may render intelligent aid to his country or state in time of need. It cultivates a manly spirit, ready and implicit obedience, respect for authority, and self-restraint—all qualities of inestimable value to a young man in whatever calling he may select.

Instruction in the course is prescribed for all undergraduate male students. The instruction is both practical and theoretical.

The new armory contains a drill room 120x300 feet in extent, ample office room, and suitable rooms for storing guns and other ordnance.

Eight hundred and forty modern U. S. magazine rifles (Krag-Jorgensen), with equipment and ammunition, are furnished by the U. S. government. Other necessary accoutrements and apparatus for the thorough equipment of the military department are furnished by the College.

Appointment and promotion of officers and non-commissioned officers, and their relative rank in each grade, are determined according to the military standing of the cadets, based upon a careful consideration of the following points: knowledge of drill and other duties, as determined by examination, practical application of this knowledge on the drill field, and recommendations of superior officers; zeal, soldierly bearing, and aptitude for command; character; military record; general standing in College.

Commissioned officers are selected from the senior class or from such students as have had three or more years of drill; non-commissioned officers, from the junior and sophomore classes; all re-

ductions are to the grade of private. All appointments and promotions are made by the Commandant, with the approval of the President of the College.

Work in military drill is required of all male students of the institution, including all regular degree students, and all vocational, special, and optional students, four periods per week throughout their undergraduate course. Senior privates may, however, upon petition approved by the President of the College, be excused.

One credit per semester is allowed for military drill, and grades are reported at the end of each semester the same as in any other subject.

Students physically unable to participate in the regular military drill may be assigned by the Commandant to light duty in the department.

Persons transferring to the Oregon Agricultural College with advanced credits from other educational institutions of equal rank will not be exempt from the military requirements, but will be required to offer an equivalent of credits for the back military credits represented or accumulated.

Persons presenting credentials for military work taken at other educational institutions, or for service in the U. S. Army, may be given credit for such work in so far as it is deemed equivalent to the requirements of this institution.

If for any reason a student is relieved from the military requirements, except as specified above, other credits must be substituted therefor.

The practical course in infantry includes the School of the Soldier; School of the Squad; School of the Company; School of the Battalion; School of the Regiment; Ceremonies; Intrenchments; Guard Duty; and Combat. The practical course in the Field Service Regulations will include the Service of Information and the Service of Security. The practical work in Small-arms Firing will include instruction preliminary to gallery and range practice; gallery practice; and range practice. A gallery range with four targets has been built and an outdoor range with four targets is being built. The instruction also includes company administration, camp sanitation, and map reading.

Paragraph 24, General Orders No. 70, War Department, November 18, 1913, directs that, "Upon occasions of Military Ceremony, in the execution of drills, guard duty, and when students are receiving any other practical military instruction, they shall appear in the uniform prescribed by the institution. They shall be held strictly accountable for the arms and accoutrements issued to them."

The wearing of mixed civilian and uniform clothing is prohibited at all times. The uniform complete costs about \$19.45; it is of the regulation olive drab color adopted by the United States Army, and makes a very neat and serviceable suit. It consists of an olive drab cap with ornament, an olive drab blouse with collar ornaments, a pair of olive drab breeches, an orange colored hat band, an orange colored breast cord, a pair of canvas puttee leggings of the new design, a pair of olive drab gloves, a pair of marching shoes as adopted in the United States Army, and an olive drab shirt. It is not advisable to purchase any of these articles before entering College as the necessity for uniformity in style, material, etc., makes it necessary to insist upon articles that conform to the standard set by the department. All of these articles can be purchased cheaper here than they can at other places on account of special arrangements made.

Students must come prepared to deposit the price of the uniform, for which they will be measured as soon as they learn the position of a soldier.

Proficiency in the military department is a requisite to graduation.

Military Drill 1. Freshman year; first semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 2. Freshman year; second semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 3. Sophomore year; first semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 4. Sophomore year; second semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 5. Junior year; first semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 6. Junior year; second semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 7. Senior year; first semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 8. Senior year; second semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 9. This is for students who may elect to drill and who are not required to drill by existing regulations. Also for those students who may have received any credits in Military Drill 1 to 8, inclusive, who are still required to drill or who may elect to drill. First semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill 10. This is for students who may elect to drill and who are not required to drill by existing regulations. Also for those students who may have received any credits in Military Drill 1 to 8, inclusive, who are still required to drill or who may elect to drill. Second semester; 1 credit; 1 hour of practical drill on each drill day.

Military Drill A. First semester; first year; Vocational Course; 1 credit; 1 hour of practical drill on each drill day.

Military Drill B. Second semester; first year; Vocational Course; 1 credit; 1 hour of practical drill on each drill day.

Military Drill C. First semester; second year; Vocational Course; 1 credit; 1 hour of practical drill on each drill day.

Military Drill D. Second semester; second year; Vocational Course; 1 credit; 1 hour of practical drill on each drill day.

Military Drill E. First semester; third year; Vocational Course; 1 credit; 1 hour of practical drill on each drill day.

Military Drill F. Second semester; third year; Vocational Course; 1 credit; 1 hour of practical drill on each drill day.

Special and optional students will be given credits in military drill as indicated above for undergraduate students. For their first semester's drill work they will be given credits in Military Drill 1. For their second semester's drill work they will be given credit in Military Drill 2. In the following years they will be given credits correspondingly.

1. **THEORETICAL INSTRUCTION.** This instruction consists of recitations in Infantry Drill Regulations, Field Service Regulations, Manual of Guard Duty, and Army Regulations; instruction in military correspondence and reports and returns; lectures on military subjects that pertain to the organization and administration of the United States military forces in peace and in war; and the Military Policy of the United States.

Military Science 1. Junior year; first semester; 1 credit; 1 recitation or lecture.

Military Science 2. Junior year; second semester; 1 credit; 1 recitation or lecture.

THE BRODIE BANNER is a richly decorated silken banner that is carried by the best drilled company as a mark of merit. Each year it goes to the company making the highest total number of credits in competitive drill. Company E carries the honor for 1914-15.

COLLEGE EXTENSION

The complete mission of the Oregon Agricultural College, as understood by those who are charged with the direction of its efforts and the determination of its policies, is to serve the people of the State. This service clearly extends to those who come to its campus and claim the advantage of its instructional work. But its mission does not end there. It is concerned also with the interests of all who may be in a position to benefit from its assistance. In the prosecution of this conception of the mission of the College, the Department of Extension is charged with the task of extending to the people of the State the advantages of their institution.

A valuable service in the form of institutes, lectures and demonstrations, demonstration trains, the preparation and distribution of bulletins, and cooperative work in connection with private and community interests has been maintained by the institution for a number of years through the indefatigable efforts of the authorities and staff members of the College and Experiment Station. The Extension Division, by giving exclusive attention to these phases of the College's activities, coordinates and directs the efforts of the various departments in their endeavor to meet the growing demands made upon the College for this type of work.

EXTENSION SUBJECTS. Extension teaching is concerned with all instruction given by the College which is not classified as a part of the regular resident work. The subjects which are included in the extension work are, therefore, all the subjects taught at the College which are of such a nature as to lend themselves to extension methods. While the College, in the past, has been exclusively concerned with agricultural and domestic science and art extension, it has now provided for extension work in all lines of instructional effort. In addition to all the various branches of agriculture which include agronomy, horticulture, gardening, animal and poultry husbandry, dairying, entomology, and other related subjects, extension instruction is being given in domestic science and art, forestry, mining engineering, mechanical engineering, electrical engineering, highway engineering, commerce, education, and other scientific and industrial subjects. While it is clearly impossible to attempt to

give complete and full courses in the great majority of these lines of work, there is much that is practical, usable, and valuable that can be taught through extension methods. It is, then, only such branches of the College work as can be effectively taught without residence requirement, that will come within the scope of extension work.

EXTENSION AGENCIES. The agencies, which the College uses in disseminating information among the people of the State, are as varied as the conditions which have to be met in carrying out the work.

The plan now in operation includes the use of institutes, movable schools, lectures, demonstrations, and demonstration trains, as one distinct group of extension methods. The institutes include the farmers' institutes, teachers' institutes, and special institutes, such as are held in connection with picnics, banquets, and other public or semi-public gatherings. The movable schools consist of a staff of lecturers, numbering from three to ten, who go out from the College equipped with portable laboratories for demonstrating their work, and who remain in each of the various communities from three days to a week. The lectures are given upon request at any of the many occasions when the service of some member of the College staff may be of value. Demonstration trains are run from time to time in cooperation with the railway companies. They vary in the scope of the work undertaken from a single car to a full train equipped to demonstrate many lines of work. By these methods, the College endeavors to extend directly to those who cannot come to it the advantages of its instruction.

In the second group are the correspondence courses. The plans provide ultimately for such courses in all the lines of work given at the institution which may be taught by this method. At present four courses are offered by correspondence; namely, (1) Shop Drawing—designed to meet the requirements of journeymen mechanics and trade apprentices; (2) Gas Engines, a course of instruction for those desiring to become familiar with the construction, care, and operation of the smaller sizes of gasoline engines; (3) Electricity and Magnetism—a course for electricians and others engaged in branches of electrical business; (4) Commercial Course—covering the subjects of (a) Farm Accounting, (b) Rural Eco-

nomics, (c) Commercial Law. These courses are offered to residents of the State for a nominal fee. Additional courses in other subjects will be added from time to time as demands are made for them.

Cooperative Work, or bringing the resources of the College, the State, and the Federal Government to the aid of community organizations, comprises the third division of extension activities. This provides for the organization and direction of boys' and girls' industrial club projects in connection with school and county fairs and the State Fair; it is also the means of supporting the cooperative dairy work now conducted by two specialists who devote their entire time to field work in connection with the proper development of the dairy industry in Oregon.

The College is concerned, also, in this connection, with organizations among the adults. It is the purpose of the extension lecturers to foster and encourage the organization of improvement associations and clubs throughout the State, and to assist them in all work which will tend to improve local conditions. Where these organizations now exist and are doing effective work the College will cooperate and assist in every possible way.

Organizations of this kind are now receiving valuable assistance from the Oregon Library Commission through the loan of well-selected libraries. The Commission has consented to cooperate with the Extension Division of the College in extending this line of work and making it even more effective. This should result in stimulating interest among the people of the State, and especially in the rural districts, in social and industrial conditions, and place within their reach the means by which their interests may be materially advanced and their conditions improved.

Extension publications and educational exhibits form the fourth division of the extension work. From this department there are published many bulletins written in clear, simple form telling the secrets of applied science and improved methods, and which make it possible for the laborer, the clerk, the farmer, the mechanic, and the housewife to ease and vitalize their daily tasks. Helpful articles are also furnished to the newspapers and the magazines.

The exhibits, which it has been the custom of the College to make at the State Fair, will be enlarged, and as funds become available

for the purpose others will be prepared for county fairs, association meetings, and conventions. These will be in the form of educational demonstrations.

One of the most important features of the College extension service, as provided for by laws passed in the 1913 Legislature, is the county farm management and demonstration work in agriculture. The new legislation authorizes the county court of each of the several counties of the State to provide and appropriate funds, either by special provision in the annual tax levy or by an appropriation of funds not otherwise appropriated, to be used in field work in agriculture and in promoting farm demonstration work in such county.

The law further provides that the State will appropriate one dollar for each dollar so raised by the respective counties, the appropriation not to exceed \$2,000 a year to any county having an area of 5,000 square miles or less, and not to exceed \$4,000 to any larger county. This fund is to be expended, and the work is to be done, under the supervision of the State Agricultural College in cooperation with the U. S. Department of Agriculture.

This feature of the law is responsible for the placing of county agricultural agents in such counties as have taken action under the law. These agents, under the direction of the Agricultural College, arrange for and carry on cooperative farm demonstration work with farmers in various sections of their respective counties; they study conditions, and advise with farmers as to the crops best adapted to their locality and the best methods in agricultural practice; they study marketing problems and assist the farmers in planning for the most profitable disposition of their products; they aid the teachers of the public schools in giving proper instruction in agricultural subjects, and help to interest our young people in country life, directing their energies into the proper channels. In short, the county agents are traveling agricultural evangelists devoting their time to improving country conditions and country life. It is their ambition to combine the results of scientific discovery with the best experience of practical farmers, and apply them to existing conditions.

PRESENT ORGANIZATION. During the next year the extension work will be organized and prosecuted according to the laws passed by the 1913 session of the State Legislature and in accordance with

the provision of the Lever-Smith bill recently enacted by Congress. This will be along the lines above indicated and to as great an extent as funds and conditions will permit. The College extension staff will be enlarged, and it is hoped that a greater number of the counties will take steps in the very near future to provide for the county field and demonstration work.

In the meantime, the College will continue to offer lectures, hold institutes, cooperate with the railway companies in running demonstration trains, publish extension bulletins, cooperate with the school authorities of the State in the advancement of industrial education, offer some courses by correspondence, prepare and circulate exhibits, furnish many valuable articles to the newspapers and magazines, and conduct demonstrations on farms and in the orchards of the State.

HOW TO APPLY. All persons or communities in the State wishing assistance in any of the lines indicated, should communicate with the Extension Department as far as possible in advance of the time the service is desirable. Short notice requests may not find the department in position to render the best service. If an institute is desired, be sure to give all particulars pertaining to the time, the nature of the subjects in which the community will be interested, the number of speakers desired, and the plans for the meeting. If a single lecture or demonstration or exhibit is wanted, be equally prompt and explicit.

It must be remembered that the College is willing at all times to help all who apply, but that its staff, facilities, and funds are limited, and so it sometimes is unable to give aid where it would like most to give it. However, the College can serve in the great majority of cases and is always ready and glad to do so.

Any county desiring to organize under the provisions of the law for agricultural field and demonstration work and the support of a county agriculturist should communicate with R. D. Hetzel, Director of Extension at the Agricultural College, in order to determine the best methods of procedure.

SCHOOL OF MUSIC

PROFESSOR GASKINS.
GENEVIEVE BAUM-GASKINS
MR. BEARD.
MRS. RESSLER.
MISS JOHNSON.
MISS BLOUNT.
MR. HELLIER-COLLENS

The advantage of studying music with instructors skilled in the psychology and practice of teaching cannot be overestimated. It results in an appreciable saving of time and expense and a maximum gain in efficiency. Hence the School of Music offers the following comprehensive courses of study to earnest students who wish to acquire scholarly musicianship at moderate cost. The courses may be begun at any time during the school year. All students may advance as rapidly as is consistent with good scholarship. The time required for completion of any of the courses is dependent upon the age, previous preparation, talent, ability, and character of work of each student.

In these courses the following subjects are included: elements of music, history of music, interpretation, languages, music form and analysis, music pedagogics, song singing, oratorio singing, opera singing, choral singing, organ playing, organ structure, piano playing, piano structure, sight reading, stage deportment, stringed instrument playing, wind instrument playing, brass instrument playing, theory, harmony, counterpoint, composition, voice culture. Outlines of the courses:

1. VOICE. Exercises will be given for correct breath control; purity of tone production; freedom of action and blending of registers; articulation and correct pronunciation and enunciation of vowels and consonants; elements of phrasing and style. Students must appear on programs if requested, singing from memory, and attend all rehearsals and recitals unless otherwise instructed by the Director.

Required: Two lessons a week in voice; practice with instrument one or two hours daily; sight reading and ear training, two

hours a week; harmony and history of music, two hours a week each; choir and chorus practice. Physical education.

2. VOICE. This course consists of exercises for tone placing; phrasing and style; legato, marcato, and portamento delivery. Physiology of the vocal mechanism. First year German, Italian or French, at student's option unless otherwise advised by the Director. Songs and exercises of medium grade of difficulty. Attendance at recitals and rehearsals required, unless otherwise directed as above.

Required: Two lessons a week in voice; practice with instrument one or two hours daily; harmony and counterpoint, two hours a week each; German, Italian or French, as required in beginning work by the department of Modern Languages; physical education; choir and chorus practice.

Prerequisite: Course 1 or its equivalent.

3. VOICE. This course includes the study of tone color, agility, the trill, messa di voce, recitation, declamation, phrasing, style, through the use of songs in English, German, French, Italian; the regular second year study of one of the above foreign languages at the student's option, in the department of Modern Languages, unless otherwise advised by the Director. Attendance at recitals and rehearsals required unless otherwise directed as above, singing from memory on programs of the School of Music when so required.

Required: Two lessons a week in voice; two lessons a week each in advanced harmony and harmonic analysis; German, French, or Italian, at student's option, second year study as required in department of Modern Languages; choir and chorus practice; physical education.

Prerequisite: Course 2 or its equivalent.

4. VOICE. This course includes advanced study of vocal technique by means of difficult exercises, songs, oratorios, operatic arias, declamation. Advanced composition throughout the year. Attendance at rehearsals required in preparation for public appearances, and at recitals, singing from memory. For graduation a public recital must be given as arranged by the Director, unless he may specify to the contrary. A diploma will be issued upon the satisfactory completion of this course.

Prerequisite: Course 3 or its equivalent.

5. PIANO PREPARATORY COURSE. FOR BEGINNERS. Training of the hand, fingers, wrist, and arm. Extended preparation for scales and arpeggios; exercises for same. Chords. Octaves. Sonatinas by Clementi; Kuhlau; smaller compositions of Mozart, Handel, Beethoven, and other composers. Easiest sonatas of Haydn and Mozart. Selections from easier works of Schumann, Kullak, Reineke, and Grieg; other easy, appropriate compositions.

Required: Two lessons a week in piano; practice with instrument, one to three hours daily.

6. PIANO. Scales and arpeggios, tempi, accent, nuance, rhythm. Double notes. Trills. Exercises for endurance, speed, accent, and rhythm. Etudes from Czerny, Cramer, Kullak, Krause, two-part inventions and dance forms by Bach. Easier sonatas of Haydn, Mozart, Beethoven. Easier composition of Mendelssohn, Schubert, Schumann, Grieg, Raff, and others.

Required: Two lessons a week in piano; two lessons a week in harmony; two lessons a week in music history for thirty-six weeks; practice with instrument, two to four hours daily. Physical education.

Prerequisite: Course 5 or its equivalent.

7. PIANO. Two- and three-part inventions and suites by Bach. Etudes of Czerny, Cramer, Hasert, Berens. Sonatas of Beethoven of moderate difficulty. Sonatas of Mozart. More difficult selections from Weber, Mendelssohn, Schumann, Chopin, Grieg, Liszt, Mozart concertos; transposition of easy hymns; to sight read readily; to play from memory five compositions from the preceding course in a satisfactory manner.

Required: Two lessons a week in piano; two lessons a week for thirty-six weeks in advanced harmony; one lesson a week in counterpoint; practice with instrument three to five hours daily. German or French. Physical education.

Prerequisite: Course 6 or its equivalent.

8. PIANO. Collegiate Course: Well-tempered clavichord, chromatic fantasy and fugue, Bach. A limited number of etudes by Rubinstein, Chopin, Henselt. The more difficult sonatas of Beethoven. Solo works of Mendelssohn, Chopin, Schumann, Grieg, Liszt, Brahms. Concertos by Mozart, Mendelssohn, Beethoven.

Required: Two lessons a week in piano; practice with instrument three to five hours daily; two lessons a week in composition; one hour a week in harmonic analysis; German or French. Physical education.

To complete this course satisfactorily the student must fulfill the requirements above outlined and appear in programs when requested by the Director.

9. PIANO. Graduate Course: Beethoven sonatas Op. 57, 106, 110. Liszt Rhapsodies. More extended study of the principal classics and romantic composers. Solo works of modern composers. Concertos by Schumann, Chopin, Beethoven, and other composers.

Following is the list of graduate course pieces of which the student must play six from memory: Wagner-Liszt—Tannhauser March; Chopin—Scherzo in B Minor, op. 31; Mendelssohn—Rondo Capriccioso, op. 14, Prelude and Fugue in A Minor; Variations Serieuses; Schumann—Kreisleriana, op. 16, Carnival, op. 9; MacDowell—Marzwind and Wald Idyllen, op. 19, Nos. 1, 3, and 4; Bach—Fugue in A Minor, or his Italian Concerto; Handel—Suit in D; Moszkowski—Caprice Espannol, op. 37; MacDowell—Concert Etude, op. 36; Grieg—Ballade; Liszt—Liebestod (Tristan and Isolde); Bach—Chromatic Fantasy and Fugue; Mozart—Fantasia in C Minor; Rubenstein—Sonata in F; Beethoven—Sonatas to be selected. Concertos by Chopin, Henslet, Hummel, Liszt, MacDowell, Mendelssohn, Mozart, and Saint-Saens, or five other works at teacher's option.

Required: Two lessons a week in piano; practice with instrument three to five hours daily; advanced German or French. For graduation, students are required to perform publicly under the direction of the School of Music, playing a program not less than one hour in length, arranged by the instructor and approved by the Director, which shall include two or more numbers equal in difficulty to any composition in the list of graduate course pieces. A diploma will be issued upon the satisfactory completion of this course.

10. THEORY. The course in theory will comprise systematic and progressive study in the elements of music. Consideration will be given to the theories of acoustics, to notation, scales, keys, modes, sight reading, intervals, melodic progression, tempo, dynamics,

rhythm, and ear training. Advanced theory will embrace harmony, counterpoint and subdivisions thereof, music history, concluding with form, composition, and orchestration.

11. VIOLIN. This course is preparatory, and designed to develop correct fingering, free bowing, and accuracy as to pitch and rhythm.

Studies. Sevcik School, Schradieck; major scales, minor scales in the first position; special sight reading duos by Mazas and Dancla. Other appropriate studies may be substituted for the above, if approved by the Director, as acceptable equivalents, the same to be satisfactorily performed before entering Course 12.

Students must appear in public recitals when required, playing from memory.

Required: Two lessons a week, harmony, music history, as in Course 6.

12. Studies by Kayser, Wohlfahrt, Schradieck, Mazas, Dont, and Kreutzer, or acceptable equivalents. Suitable solos, concertos, sonatas, etc. Students must appear in performance at public recitals when required by the management, playing from memory.

Required: Two lessons a week, harmony and counterpoint.

Prerequisite: Course 11.

13. This course consists of advanced studies by Fiorillo, Singer, Rhode, Gaviniés, Paganini; solos by Dvorak, Brahms, Vieuxtemps, Wieniawski, or other acceptable equivalents. Students must appear in public recitals when requested, playing from memory.

Required: Two lessons a week, harmonic analysis, composition, German or French, as in Course 8. As a qualification for graduation students are required to perform publicly, under the direction of the School of Music, a program not less than an hour in length, arranged by the Instructor and approved by the Director. A diploma will be issued upon the satisfactory completion of this course.

Prerequisite: Course 12.

THE ORCHESTRA. Students of stringed instruments in attendance at the College, who are sufficiently advanced, may be admitted to membership in the College Orchestra by arrangement with the Conductor on such terms as may be approved by the Director. It is the intention of the management to encourage in every reasonable manner the development and maintenance of a good

orchestra under competent, progressive leadership. Students are invited to investigate these opportunities for excellent training in orchestra routine and solo playing.

Ensemble: Sonatas for violin and piano; string trios; quartettes for two violins, viola, and 'cello; and for four violins, will be studied. All students in the above classes, or registered in any of the above courses, must perform in public when requested by the Instructor and approved by the Director. Membership in the ensemble classes is free, and instruction is to be given by the principal violin instructor.

BAND INSTRUMENTS

Instruction will be given by the regular College band leader in the use of brass, wood-wind, and percussion instruments.

To become a member of the College Band, a student must pass a satisfactory examination in the elements of music and ability to perform on his instrument.

Members are required to attend rehearsals each school day, and a reasonable amount of individual practice is expected.

There is no charge for instruction in the band. Each member must furnish his own instrument and music stand, except basses, baritones, altos, and drums, whose instruments are furnished by the College.

Any student desiring to enter the band should see that his instrument is in low pitch.

The courses for the various band instruments are as follows:

14. CORNET. Methods by Arbou; characteristic studies by St. Jacome.
 15. CLARINET. Methods by Dieppo; studies by Dieppo and Blume.
 16. FRENCH HORN. Methods by Franz; studies by Franz and Hayffman.
 17. In all other band instruments, including the oboe, bassoon, saxophone, alto, and bass clarinets, drummer's trapps, xylophone, and orchestra bells, the courses will be similar to those given above.
- The work in theory required to complete these courses is that outlined for piano courses 6 and 7.

18. **THEORY.** The course in theory will include systematic and progressive study of the elements of music; acoustics, notation, scales, keys, modes, sight reading, intervals, melodic progression, chords, rhythm, dynamics, and ear training.

Advanced theory will include harmony, counterpoint and subdivisions thereof, harmonic analysis, form, composition, and orchestration.

GENERAL INFORMATION

Any student in the Oregon Agricultural College with a satisfactory record in scholarship in his major course may take at least one hour a day in music.

Students in the School of Music may enter classes in the several departments of the College; and in order to enhance their general culture are encouraged to take at least one study throughout the school year other than the work required in the regular music courses.

Applicants for instruction may take complete or partial courses. Those registering for the former are classified as "regular music," while the others are classified as "special music."

"Special Music" students have the option of selecting such music studies as they desire by registering for the same with the Director in the regular manner and at the catalogue rates of tuition.

Non-resident young women are required to live in the dormitories, where their conduct is subject to the approval of the Preceptress. Outside rooming and boarding places may be obtained, subject to the approval of the College authorities. The rates for board and room are listed elsewhere in detail.

Students registered for study in the regular courses of the Oregon Agricultural College School of Music are subject to the same rules and regulations as all regular students in other courses.

No student is permitted to omit lessons or practice without sufficient excuse, and no refund will be made for absence from lessons or practice or for discontinuance, except in cases of severe personal illness; for such unavoidable absence, lessons may be made up only by appointment, and before the expiration of the term.

Lessons falling on legal holidays, or on special holidays petitioned for by the student body or by special student organizations, which may be granted by the College authorities, *will not be made up.*

Students will not be permitted to transfer tuition accounts to others, nor to receive credit for tuition fees beyond the assigned registration period, except in cases of severe personal illness, attested by a physician, or similar extreme necessity, and then only by making suitable arrangements with the Director.

The College year in the School of Music consists of thirty-six weeks, divided into terms of twelve weeks each, the first term beginning at the opening of College on September 21, 1914.

Private individual instruction is given in lessons of thirty minutes each, in all departments of the School of Music. Class instruction in theoretical branches is required of candidates for graduation, as specified in the preceding outlines of courses. Terms for instruction are as follows:

VOICE CULTURE AND SINGING—Professor Gaskins, private instruction:	
One lesson a week, a term	\$15.00
Two lessons a week, a term	30.00
ORGAN—Genevieve Baum-Gaskins, private instruction:	
One lesson a week, a term	\$24.00
Two lessons a week, a term	48.00
PIANO—Genevieve Baum-Gaskins, private instruction.	
One lesson a week, a term	\$15.00
Two lessons a week, a term	30.00
PIANO—May Babbitt-Ressler, private instruction.	
One lesson a week, a term	\$15.00
Two lessons a week, a term	30.00
PIANO—Instructor Corinne Blount, private instruction.	
One lesson a week, a term	\$12.00
Two lessons a week, a term	24.00
VIOLIN, VIOLINCELLO, VIOLA—Instructor Hellier-Collens, private instruction.	
One half-hour lesson a week, a term	\$12.00
Two half-hour lessons a week, a term	24.00
*One one-hour lesson a week, a term	22.50
*Two one-hour lessons a week, a term	45.00
BAND INSTRUMENTS—Instructor Beard, private instruction.	
One lesson a week, a term	\$10.00
Two lessons a week, a term	20.00
MUSIC HISTORY—Professor Gaskins, class instruction.	
Two hours a week, a term	\$ 3.00

*Stringed instrument students are not required to take "hour lessons," but may do so at their option at the above rates.

HARMONY, COUNTERPOINT, HARMONIC ANALYSIS—Instructors Johnson and Blount; class instruction, classes limited to six students.

Each subject two hours a week; tuition for each subject, a term\$ 7.50

COMPOSITION (including FORM), ORCHESTRATION—Instructor Blount, class instruction, classes limited to six students.

Two hours a week; each subject, a term\$ 7.50

PRACTICE

Rooms located in one of the College buildings have been suitably furnished for the use of students wishing to practice in private. These rooms may be rented for about one-third the cost of using pianos located in private houses, and without any of the disadvantages that must be endured in private homes. These practice rooms, with steam heat, good ventilation, good light, electric illumination for night practice, and good janitor service, are furnished with good pianos, kept in tune by the College. Students living in the College dormitories are required to practice upon these pianos. Students living away from the campus may arrange with the Director for practice on the same terms and conditions, as follows:

PIANO—	
Term of twelve weeks, one hour a day	\$ 5.00
Two hours	7.50
Three hours	10.00
Four hours	12.50
Five hours	15.00

ORGAN—	
Term of twelve weeks, one hour a day	\$12.00
Two hours	18.00

The pipe organ is a new, modern Kimball two manual, concave pedal board instrument of beautiful tone.

For additional information address William Frederic Gaskins, Director, Administration Building, Oregon Agricultural College, Corvallis, Oregon.

SUMMER SESSION

The chief purpose of the Summer School is to afford an opportunity for study to those unable to attend during the academic year. The courses are arranged for elementary and secondary teachers interested in Agriculture, Commercial branches, Home Economics and Manual Training; for credit in regular college subjects, as well as for prospective students deficient in entrance credit; for those interested in music and art; and for those desiring practical instruction in agriculture, household economics, and woodwork.

It is thought advisable to arrange for a series of two-weeks courses in addition to those continuing six weeks. They are provided for students who will not find it possible to remain longer than two weeks and are so planned that practically the entire time each day will be devoted to each special line of study. Should any decide to continue through the remaining four weeks of the summer session, a number of six-weeks courses, conducted on the topical method, will admit of the entrance of students with profit.

Of special interest is the inclusion in the two-weeks calendar of courses for boys and girls of upper grammar grades and high school age. At this formative period, an opportunity to study in an interesting way the problems of the two great fundamental occupations should arouse new ideals of the beauty, importance, and significance of such callings. The romance, as well as the dignity of agriculture and home pursuits have their appeal to youthful imagination, but ordinary school education, both consciously and unconsciously, places the emphasis on the professions and occupations leading to a public career.

A large faculty, chiefly regular College instructors, supplemented by a number of specialists from Oregon public schools and from other states, the extensive equipment in class rooms, laboratories, libraries, shops, and experimental fields, are at the service of the students.

The state-wide interest in garden and household contests of the public school pupils has resulted in a demand for more knowledge of these industrial subjects on the part of the teachers. The summer courses will not only provide specific and detailed instructions for conducting these contests, but will show the teacher how to use

the state-adopted text in elementary agriculture and supplement it with simple and interesting experiments both indoors and outdoors. In the same way, the direct and practical instruction in cooking and sewing will furnish the essentials for assisting the girl pupils. Any teacher who has the advantage of six weeks' contact with expert instructors and practical demonstrations in the work in which he is to direct his pupils, will greatly multiply his efficiency and usefulness in his community.

The winter short course comes at a time best suited to the convenience of the farmer. Professional and business men find their slack season during the summer; so also do the youths who are attending school, and the women of the family. The summer school offers them the opportunity of some study of the problem nearest every town dweller's heart—the acquirement of a piece of land and its cultivation. From the standpoint also of the beautification and sanitation of the dooryard and home premises, the kitchen-garden, house decoration, hygienic and economic preparation of foods, and other indoor problems, the summer school makes its appeal. Young men and women who are through high school, and others undecided as to their life work, may find just the leadings in summer study which will determine their future vocation.

RAILROAD RATES

To those attending the summer school, the railroad companies grant a special rate of one and a third fare for the round trip, on the certificate plan, from all stations in Oregon. In order to receive the benefit of the reduction, the purchaser must pay full fare to Corvallis, *securing a receipt from the ticket agent* at the time of purchase. This receipt must be countersigned by the College secretary at Corvallis, and on presentation to the ticket agent at Corvallis will secure rate of one-third for the return. This special rate takes effect three or four days before the opening date of the summer session and remains in force until the same length of time after the closing date. Tickets on this plan may be secured at any time while the school is in session, and are also good for return at any time. If, for any reason, receipt should not be secured at time of purchase, get train conductor's receipt, showing the form and number of your ticket. If a through ticket to Corvallis cannot be sold from your station, do not fail to get a receipt

for each ticket, even if the fare be paid on the train. The reduced rate is good only within the State; if you live beyond the State line, buy your ticket to a station in Oregon, and from that point to Corvallis.

ADMISSION AND EXPENSES

There are no entrance examinations or other educational tests for admission. Students desiring College credit must do the required work and pass satisfactory examinations at the close of the session. The registration fee of five dollars and a small laboratory fee to cover the cost of material in some of the courses, are the only charges made for class instruction, and entitle the student to admission to as many courses as he cares to attend during the entire session. Private, individual lessons in music will be given at the regular price charged during the school year; students taking music only, will not pay the College registration fee.

Waldo Hall, one of the two College dormitories for women, will accommodate over one hundred students with board and lodging. A charge of two dollars will be made to cover cost of heat, light, use of laundry, etc. No charge will be made for the use of the rooms, which are provided with bed, mattress, table, and chairs. Each room has closet, hot and cold water, and electric light. Each student who desires to occupy one of these rooms must bring bed pillows, pillow-cases, sheets, blankets or comfort, bed-spread, towels, napkins, and soap. The laundry room will be open for the use of students at Waldo Hall without extra charge.

Table board will be furnished at Waldo Hall at three and one-half dollars per week. Lists of private lodging and boarding places will also be provided and every assistance rendered in finding satisfactory accommodations. Furnished rooms for light housekeeping may also be had.

Allowing \$23.00 for board and room, \$5.00 registration fee, and 50c for drayage on baggage, \$6.50 for laundry and incidentals, the minimum cost for the entire six weeks need not exceed \$35.00, exclusive of railroad fare. Those who take courses requiring textbooks must make some additional allowance, and others for small laboratory fees, but it is safe to estimate the absolutely necessary expenses, textbooks and all, under \$45.00.

SOCIAL AND OTHER FEATURES

The informal and recreation diversions from the class and study routine have not only a social but an educational value as well. These are so controlled and directed as to be inexpensive and unobtrusive. Opportunity for students to become acquainted with each other and with the instructors outside the class room may be had each evening at Waldo Hall, during the informal social hour and at the formal receptions and parties each week.

The College numbers among its faculty some of the best known popular lecturers in the State. Several will be heard in illustrated stereopticon addresses on interesting phases of Oregon's industrial development. At least once each week an evening will be given up to entertainment, either in the form of a lecture of general interest, or a musical concert.

The tennis courts, baseball field, golf course, gymnasium, and other recreation resources of the institution may be used by the students and instructors, free of charge. Boating on the Willamette and Mary's rivers, picnics and excursions to various points of interest, including Mary's Peak, and week-end trips to the ocean at Newport, will also be available for those who desire to indulge in these recreations. The social features of the Summer School are given careful attention, so they may not come in conflict with the regular work, but at the same time be full of pleasure and interest.

COURSES OF INSTRUCTION

The summer instruction is of two general kinds: the regular College courses, reciting a sufficient number of periods per day to equal the credits of one semester; and special courses organized for needs not met by the regular instruction. For the session of 1914, ten regular courses in agriculture are offered, including Agronomy, Animal Husbandry, Dairy Husbandry, Horticulture, and Poultry Husbandry. Other regular courses are given in Art, Botany, Chemistry, English, Geology, History, History of Education, Mathematics, Modern Languages, Physics, Psychology, School Administration, School Management. Special courses are offered in Elementary Agriculture, Domestic Science, Domestic Art, Manual Training, Drawing, Music, and Physical Education for teachers;

also special courses for those not caring to teach, in Agriculture, Domestic Science, Domestic Art, Woodwork, Music, Art. Provision is also made for the admission to the regular courses of those not desiring College credit, in order that the widest possible freedom of selection may be made.

SPECIAL ILLUSTRATED BULLETIN

Each spring, special circulars are issued, giving complete description of the various courses offered, statement in detail of living and other expenses, list of instructors, directions for registration, and other matters. These bulletins are illustrated with interesting views of the College campus. Copies may be obtained by addressing the director, Professor E. D. Ressler, or the Oregon Agricultural College, Corvallis, Oregon.

WINTER SHORT COURSE

For many years the Oregon Agricultural College has offered each winter one or more courses of lectures and demonstrations which have been known as Winter Short Courses. These courses have been so generally successful and have called forth so many expressions of approval from those in attendance, that the work has expanded until several courses are given in each of the following schools:

- School of Agriculture.
- School of Home Economics.
- School of Forestry.
- School of Engineering.
- School of Commerce.

Each of these courses, except the one in Industrial Arts, which will consist entirely of practical work in the shops or in the draughting room, will consist of a series of lectures supplemented by demonstrations, and by practical exercises in the dairy, the orchard, and the various laboratories.

The work offered will be adapted to the various needs of farmers, fruit growers, dairymen, mechanics, or of women in the home. It is believed, also, that teachers who desire to prepare themselves to teach Elementary Agriculture, now required in our public schools, will find these courses decidedly helpful.

The various courses are so planned as to provide the largest amount of practical information in the short time available. The subjects to be discussed are those in which every farmer should be interested, and the aim will be to present them in the most practical manner possible. The laboratories and collections, the shops, the creamery, the orchards, the College farm, the cutting, fitting, and sewing rooms; the dining rooms and kitchens—all offer facilities for demonstration or for practical exercises by the students attending these courses. A pleasing and profitable feature of these courses will be a series of lectures by prominent men who are qualified by successful experience to speak upon some particular phase of Agriculture.

Special lessons in Music may be taken by short course students at the regular rates listed under the School of Music.

Students should report to the Registrar for registration and for assignment to the various classes. The inclusive dates of these short courses are as follows: Farmers' Week, November 30 to December 5; Winter Short Courses, January 4 to January 30; Forestry Short Course, November 2 to April 16. A list of boarding and lodging places may be consulted at the office of the Y. M. C. A.

No entrance examination or other educational test will be required; but no one will be received who is less than sixteen years of age. Over fifteen hundred men and women registered in these courses in 1911, their ages ranging from sixteen to over seventy-five.

There will be no fees whatever for attending the exercises of Farmers' Week. Those who attend the other courses will be expected to pay a registration fee of \$1.00. In addition, students who elect certain courses will be expected to pay small fees, to cover the cost of materials used, as indicated in the following list:

	Fees	Deposits
Apple Packing	\$2.50	
Basketry	1.50	
Blacksmithing	3.00	
Dairying	1.00	\$2.00
Dressmaking25	
Food Preparation (Invalid)	2.00	
Food Preparation (Simple)	3.00	
Millinery50	
Plant Propagation50	
Pruning, Advanced50	
Spraying Laboratory50	
Woodworking	3.00	

Board and lodging may be had in Corvallis at \$4.50 to \$6.00 per week.

RAILROAD RATES. The railroad companies grant a rate of one and one-third fare for the round trip on the usual certificate plan.

A circular descriptive of all Short Course work will be issued about November 1, and may be obtained by addressing the Registrar, Oregon Agricultural College, Corvallis, Oregon.

SCHOOL OF AGRICULTURE

The School of Agriculture offers to its Short Course students instruction in the following courses; viz., Agronomy, Animal Hus-

bandry, Dairy Husbandry, Poultry Husbandry, Horticulture, and Crop Pests. In addition to these courses, students are advised to take advantage of the courses in Rural Economics which are offered in the School of Commerce, as well as the course in Rural Highways, in the School of Engineering.

Something of the nature of the work is indicated in the following program of a single day's lectures as given during January, 1913. For more detailed information regarding these courses, write for the descriptive circular mentioned above.

TUESDAY, JANUARY 28, 1913

A. M.

- 8-9. Principles of Fruit Growing.
C. I. Lewis.
Dairy Herd Management.
E. R. Stockwell.
Irrigation Farming.
W. L. Powers.
- 9-10. Soil Fertility.
H. D. Scudder.
Commercial Vegetable Growing.
A. G. Bouquet.
Landscape Gardening.
A. L. Peck.
Anthracnose of Loganberry and Other Cane Fruit Diseases.
H. S. Jackson.
- 10-11. Cabbage and Cauliflower Insects.
A. L. Lovett.
Vegetable Marketing.
A. G. Bouquet.
Flower Forcing.
A. L. Peck.
- 11-12. Principles of Fruit Growing.
C. I. Lewis.
Farm Machinery.
E. M. D. Bracker.
Swarms and Swarming.
H. F. Wilson.
- 10-12. Sheep Judging.
E. L. Potter.
- P. M.
- 1-2. Farm Management.
H. D. Scudder.
- 2-3. Oregon Seed Crops.
G. R. Hyslop.

- 3-4. Mutton and Wool Production.
E. L. Potter.
Farm Drainage.
W. L. Powers.
- 4-5. Breeds of Sheep.
G. R. Samson.
- 2-5. Orchard Practice (Sec. 1).
R. W. Allen.
Spraying (Sec. 2).
V. R. Gardner.
Plant Propagation (Sec. 3).
F. C. Bradford and E. J. Kraus.
Fruit Packing (Sec. 4).
F. R. Brown.
Orchard Economics.
C. I. Lewis.
- 8-9. The 1912 Apple Market.
E. H. Shepard, Editor "Better Fruit."

The work is so arranged that at each hour of the day lectures may be heard and demonstrations witnessed on special Agricultural phases. The work in the other schools is similarly arranged.

FARMERS' WEEK

The exercises of Farmers' Week will begin Monday noon, November 30, and will close Saturday noon, December 5. They will be conducted somewhat upon the plan of an extended farmers' institute, and will consist principally of lectures, supplemented by such demonstrations and practical exercises as are made possible by the equipment of the College and Experiment Station. The aim of the course will be to give to those in attendance the largest possible amount of information regarding the principles of successful agricultural and horticultural practices. The lectures and demonstrations by the various members of the faculty will be supplemented by one or more lectures each day by some of the most successful men in the State.

COMMERCE

COMMERCIAL WORK. To meet the demand for a short, practical business course, the work outlined below will be offered under the same conditions and entrance requirements as other winter courses.

BOOKKEEPING. This course will embrace the fundamental principles of double entry bookkeeping. It will be made strictly prac-

tical and only sufficient theory will be introduced to give the student a firm foundation for his work. The basis of the work will be a study of a model general store equipped with the latest labor-saving methods of bookkeeping and office practice. Two laboratory periods daily.

BUSINESS ARITHMETIC. In connection with the course in bookkeeping, the instructor will review the fundamental processes of business arithmetic for the benefit of those who need it.

COMMERCIAL LAW. The course in Commercial Law will begin with the thought that there are certain fundamental principles of commercial law with which everyone should be familiar, and will include the following important subjects: property, contracts, negotiable instruments, interest and usury, bailment, agency and partnership, and real estate. Three recitations per week.

BUSINESS FORMS AND LETTER WRITING. The purpose of this course will be to familiarize the student with various forms used in general business practice. Exercises will be required illustrating both principle and practice in a clear, simple understandable manner. In the work on letter writing the correct form, wording, and general arrangement of the business letter will be taken up. Original letters, received from the most important manufacturing concerns and business houses of the United States, will be studied. Three recitations per week.

PENMANSHIP. The work in penmanship will embrace the study and practice of the best forms and style of practical business writing. The primary aim of the course will be to develop an easy, rapid, legible business hand. Two recitations per week.

TYPEWRITING. The work in typewriting will be outlined to suit the requirements of the individual student. The beginner will be taught the correct method of fingering, the uses of the various parts of the machine, the care of the machine, manifolding, and the correct arrangement of the typewritten letter or form.

FARM ACCOUNTING. A complete analysis of farm accounts by different methods, in which simplicity, accuracy, and labor-saving are emphasized; household and personal accounts; cost accounting and special records; cost of production; special cost records; labor records; milk records; poultry records; etc.; the farm plot; office methods; business organizations; business correspondence and business forms. Two lectures; two recitations per week.

RURAL LAW. The general principles of common and statutory law are discussed and explained; special phases of law affecting the farm, such as titles to real estate, deeds, mortgages, county records, etc.; landlord and tenant; eminent domain, and right-of-way; water rights and boundaries; laws governing shipping, insurance, banking, etc.; court procedure. Two lectures.

RURAL ECONOMICS. The fundamental principles of production, distribution, and exchange with special reference to rural life. Rural labor problems, farm finance, legislative problems affecting rural life, cooperative organizations, marketing products, advertising, the economics of machinery, transportation, etc. Three lectures.

HOME ECONOMICS

These courses are designed for all women who are interested in the practical and scientific working out of household problems, and who are unable to avail themselves of a regular course in Home Economics. Many agricultural men and their sons, yearly take advantage of the Short Courses which deal with the problems of the farm, such as feeding of cattle, judging of corn, study of soils, etc. It is to meet the demand of Oregon women who are interested in the correct feeding of the family, the judging and selection of materials used in the home, the making of suitable and attractive clothing, and study of sanitary conditions which lead to the health, comfort, and happiness of the family, that this course has been established, and is to be carried on.

FOOD PREPARATION. This course deals with the subject of foods and food preparation in its scientific and economic aspect. It is the study of the nutritive principles as they are found in various foods, and the method of cooking foods to retain those principles in digestive form; serving of food in simple and attractive form; economy of money, time, and labor being the watchword.

SPECIAL FOOD PREPARATION. This course consists of the selection and preparation of foods for children of different ages, adults in active life, the aged, and invalids.

HOME MANAGEMENT.

1. General health and welfare of the home.
 - (a) Economy of time, labor, and income.
 - (b) Sanitation of the home.
 - (c) Home nursing.

NOTE.—These courses have been planned to meet the needs of those who have had previous work, as well as those who are entering for the first time.

PLAIN SEWING. This course is planned for those women wishing instruction in the economical purchasing and making of household linens and underwear; the mending and renovating of old garments usually found in all households; the draughting of patterns for underwear to the student's own measurements, together with the practice of interpreting and using purchased patterns.

All women are eligible to this course.

DRESSMAKING. This course offers instruction in the principles of dressmaking; the taking of accurate measurements; the draughting and use of patterns; the choosing and economical cutting of materials; the making of at least one dress, with special emphasis on artistic color combinations and suitable design.

Tests will be made showing the adulterations of textiles; and simple methods of detecting the adulterations in dress materials will be given.

This course is given for those women who have had experience in sewing and dressmaking.

ADVANCED DRESSMAKING. Students who have previously taken one winter's short course will be given instruction in advanced dressmaking, if they so desire.

MILLINERY. This work will be given by lectures and demonstrations only. No practice work will be given to the students.

BASKETRY. This course will be given three times each week.

CARE OF CHILDREN. Three lectures each week will be given on the care of children. Only mature women will be admitted to this class.

CAMP COOKERY. The course in Camp Cookery consists of two laboratory lessons each week. It is especially designed for men, but women are admitted if the class is not already full. Only twenty students can enter these classes.

ENGINEERING AND INDUSTRIAL ARTS

It is the purpose to teach the subjects offered in a straightforward, practical manner, which can be readily grasped and understood by farmers, mechanics, and others who have had only the advantage of a common school education.

WOODWORKING. Considerable latitude will be allowed in choosing the particular line of work desired in this department as set forth under the following headings:

(a) A course for those not familiar with the care and handling of tools. This course affords instruction in the correct methods of using, sharpening, and caring for the tools of the carpenter's bench. The work is exemplified by exercises in planing, sawing, chiseling, and the construction of useful articles of furniture.

(b) The Steel Square and Its Use. This work includes laying out rafters, braces, stairs, and other work with the steel square. Lectures will be given on the use of the square, after which the actual construction of work will be undertaken by the student.

(c) Those already familiar with the use of bench tools may obtain instruction in machine work, such as band-sawing, jig-sawing, wood-turning, the care and management of woodworking machinery.

(b) Instruction in the use of paints, stains, and varnishes.

BLACKSMITHING. Two lines of work are offered in blacksmithing:

(a) Making repairs on machinery, tools, and farm implements. Students with no previous knowledge of blacksmithing are taught how to build and manage a forge fire; how to draw, bend, upset, forge, and weld iron; how to make chains, clevises, hooks, gate-hinges, whiffletrees and neck-yoke irons, and other useful articles.

(b) A course in working and welding steel for those with some general knowledge of blacksmithing. This course includes a study of the different grades of steel; the effect of heat treatment on the quality and temper of steel; the use of the color scale in tempering; and finally the forging, dressing, and tempering of steel tools.

**ROSTER OF OFFICERS AND NON-COMMISSIONED
OFFICERS OF THE MILITARY DEPARTMENT,
JUNE 8, 1914**

COMMANDANT

P. J. Hennessey, First Lieutenant, U. S. Cavalry

ASSISTANT COMMANDANT

C. F. Dugger, Post Commissary Sergeant, U. S. Army, Retired.

CADET REGIMENTAL FIELD AND STAFF

H. Odeen	Colonel	C. L. Robinson.....	Capt. and Adjt.
R. M. Howard.....	Lieut. Colonel	J. C. Bonner.....	Capt. and Qr. Mr.

NON-COMMISSIONED STAFF AND BAND

Dallas, W. R.....	Sergt. Major	McGinnis, L.	Sergeant
Ballhorn, O.....	Comsy. Sergt.	Stull, B. L.....	Sergeant
Thomas, G. R.....	Q. M. Sergt.	Akers, R.	Corporal
Jordan, M. H.....	Color Sergt.	Davis, D.	Corporal
Tinker, H. W.....	Color Sergt.	Day, R. C.....	Corporal
Woodcock, E.....	Chief Mus.	Holmes, F. A.....	Corporal
James, O. W.....	Prin. Mus.	Hardman, G.	Corporal
Walters, H. S.....	Drum Major	Kenton, R.	Corporal
Archbald, A. C.....	Sergeant	Luxton, W.	Corporal
Anderson, L. F.....	Sergeant	Nash, J.	Corporal
Kenedy, R.	Sergeant	Von Lehe, H.	Corporal

FIRST BATTALION

Major.....	A. F. Mason	Sergt. Major.....	O. B. Hayes
First Lieut. and Adjt.,	R. B. Boals		

COMPANY "A"

Cronemiller, L. F.

CAPTAINS

Rice, T. A.

FIRST LIEUTENANTS

Horning, E. E.

SECOND LIEUTENANTS

Evendon, J. C.
Smart, W. A.

Thayer, G.

FIRST SERGEANTS

McFadden, C. L.

Berry, C. E.

SERGEANTS

Whitby, R. H.
Tartar, N. L.
Cole, A. B.
Johnson, A.

Macpherson, W.
Williams, J. F.
Flanagan, C. B.
Lamb, H. N.

CORPORALS

Richards, D. E.
Thompson, F. H.
Vilas, N. E.
Hewitt, M. S.
Allingham, W.
Graf, H.
Middlekauff, M. H.

Frost, C. M.
Hoerner, G. R.
Johnson, P. N.
Pearson, R.
Venstrand, C. P.
Curtis, R. E.
Hill, C. E.
Buchanan, B.

COMPANY "C"

Miller, C. N.

Irving, B. B.

Schuster, C. E.

Gentner, L. G. O.

Fletcher, A. T.
Taylor, J. L. V.
Wolff, G. T.
Koons, H.

Hurley, A. D.
Lange, A. J. H.
McClellan, T. R.
McMinn, R. B.
Story, C. L.
Turner, A. E.
Lee, E. F.
Strain, C.

COMPANY "D"

CAPTAINS

Rinearson, P.

FIRST LIEUTENANTS

Andrews, A. K.

SECOND LIEUTENANTS

Gambée, L. P.

FIRST SERGEANTS

Moe, F. L.

SERGEANTS

Clark, A. C.
Amort, F. P.
Harriman, A.
Warner, D.

CORPORALS

Amort, P. F.
Olcott, W. H.
Smith, C. F.
Reichart, E.
Shaver, L. A.
Watson, C. H.
Telford, W.

SECOND BATTALION

Major.....C. A. Dickey Sergeant Major.....G. Pelland

COMPANY "E"

COMPANY "F"

CAPTAINS

Howard, D. C.

FIRST LIEUTENANTS

Loken, E. B.

Edward, C. W.

SECOND LIEUTENANTS

Blackden, R. S.

Shirley, C. C.

FIRST SERGEANTS

Olsen, J.

Belton, H. C.

SERGEANTS

Paine, J.

Gilbert, M. C.

Shurtliff, F.

Wright, R. V.

Wright, B. C.

Williamson, C.

Zimmerman, E. E.

CORPORALS

Bartruff, F.

Amort, A. A.

Burns, R.

Bixby, C. M.

Crumley, E.

Fisk, C. E.

Frick, R. B.

Funk, A. J.

Lamereux, T. L.

Gerke, W. H.

Mason, W.

Hackett, H. N.

Tamerlane, R.

Michaelbook, R.

Woods, L. R.

COMPANY "G"

COMPANY "H"

CAPTAINS

Norton, J. E.

Kehrli, F. W.

FIRST LIEUTENANTS

Howard, W. W.

Siefert, H. W.

SECOND LIEUTENANTS

Gambée, H. C.

Wahlberg, L. E.

FIRST SERGEANTS

Ellestad, T.

Betzel, I. L.

COMPANY "L"

Neer, F. E.

Baynard, C. C.

Bowers, R. J.

Lamley, A. L.
Zwicker, A. E.
Moore, J. W.
Wilson, J. A.Lindsay, A. L.
Hathaway, M.
Struble, F. H.
Chambers, G.
Romig, F. V.
Parrish, R. A.

COMPANY "M"

CAPTAINS

Smith, D. R.

FIRST LIEUTENANTS

Anthony, W. B.

SECOND LIEUTENANTS

Magness, J. R.

FIRST SERGEANTS

Gildner, W. F.

SERGEANTS

King, L. A.
Crosby, H.
Kinderman, W.
Calkins, O. C.

CORPORALS

Brett, S. E.
Fox, K. L.
Sinks, V. H.
Brown, J. R.
Manning, K. C.
Mulkey, O.
Millikin, S. J.

CATALOGUE OF STUDENTS

(The following abbreviations are used to indicate the course in which the student is registered and the classification within the course: Agri., Agriculture; C. E., Civil Engineering; Com., Commerce; D. S., Domestic Science and Art; E. E., Electrical Engineering; For., Forestry; Ind. Arts, Industrial Arts; M. A., Mechanic Arts; M. E., Mechanical Engineering; Min., Mining Engineering; Phar., Pharmacy; Fr., Freshman; Soph., Sophomore; Jr., Junior; Sr., Senior; F. Sec., First Year Secondary; S. Sec., Second Year Secondary; Opt., Optional; Spec., Special; First Yr., first year of Pharmacy Short Course; Sec. Yr., second year of Pharmacy Short Course.)

GRADUATE STUDENTS

<i>Name.</i>	<i>Course</i>	<i>Home Address</i>
Barss, Alden F. (Cornell University)	Agri.	Rochester, N. Y.
Burgess, Charles Grant (Pomona College)	Agri.	Brighton, Mich.
Cole, Grace May (University of Oregon)	Agri.	Wilbur
Corsaut, Jesse Harrison (Kansas Agricultural College)	Agri.	Salina, Kan.
Cross, Homer Morton (O. A. C.)	Agri.	Corvallis
Gardiner, Harriett Barbara (Michigan Agricultural College)	D. S.	Lansing, Mich.
Hyland, Harold Wilson (Massachusetts Agricultural College)	Agri.	Weymouth, Mass.
Marshall, Roy Edgar (University of Nebraska)	Agri.	Lincoln, Neb.
Newman, Ollis Willard (Stanford University)	Agri.	Springfield, Mo.
Posey, Gilbert Bradley (Maryland Agricultural College)	Agri.	Riverside, Md.
Pratt, Hiram Eldridge (O. A. C.)	Agri.	Boston, Mass.
Ralston, Glancy Sherman (Colorado Agricultural College)	Agri.	Paradise, Calif.
Scherer, Christopher Marion (Wabash College)	Agri.	Brookville, Ind.
Schulte, Wilfred Adelbert (Western Reserve University)	Agri.	Corvallis
Shattuck, Obil (O. A. C.)	Agri.	Klamath Falls
Sprague, Helen Maude (O. A. C.)	D. S.	Corvallis
Tufts, Warren P. (University of California)	Agri.	Berkeley, Calif.

UNDERGRADUATE STUDENTS

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Abraham, Bernice	D. S.	Fr.	Roseburg
Abraham, Herman J.	Phar.	Fr.	Albany
Acheson, Gertrude	D. S.	Fr.	Portland
Adams, Mary Etta	D. S.	Sr.	Corvallis
Adolph, Chris	M. A.	F. Sec.	Newberg
Ahern, Merrie Ierne	D. S.	Fr.	Hugo
Aker, Homer F.	Agri.	Jr.	Chula Vista, Calif.
Akers, Robert	Agri.	Fr.	Portland
Albers, Harold Helmuth	Phar.	Jr.	Shoshone, Idaho
Albert, Paul	Agri.	Soph.	Seattle, Wash.
Alderton, Ada	D. S.	Jr.	Portland
Aldrich, Winifred Reba	Opt.		Corvallis
Alexander, George	Agri.	Spec.	Minneapolis, Minn.
Allen, Ethel E.	D. S.	Spec.	Corvallis
Allen, Frederick J.	Min.	Fr.	Portland
Allen, Harold B.	Phar.	Sec. Yr.	Lents
Allen, Leonard John	Agri.	Sr.	Cove
Allen, Martin H.	For.	Fr.	Salem
Allingham, William D.	M. E.	Soph.	Warm Spring
Allworth, Edith	D. S.	Sr.	Crawford
Allworth, Edward	Com.	Soph.	Crawford
Allworth, Helen	D. S.	Sr.	Crawford
Alward, Charles Wm.	Phar.	Fr.	Corvallis
Amerige, Violet	D. S.	F. Sec.	Astoria
Amesbury, Ruth	D. S.	Jr.	Portland
Amort, Albert Alexander	C. E.	Soph.	Corvallis
Amort, Frank P.	C. E.	Jr.	Orland, Calif.
Amort, Paul	M. E.	Soph.	Corvallis
Anderson, Alfred Stephen	E. E.	Soph.	Astoria
Anderson, Archie	Agri.	Fr.	Ashland
Anderson, Edmund G.	For.	Soph.	Albany
Anderson, Helen	D. S.	Jr.	Portland
Anderson, Isaac Milton C.	Agri.	Sr.	Drewsey
Anderson, Louis F.	Agri.	Sr.	Pendleton
Anderson, Marion	D. S.	S. Sec.	Albany
Anderson, Olaf	M. A.	S. Sec.	Astoria
Anderson, William	C. E.	Fr.	Portland
Andreson, Olaf	Agri.	Spec.	Vancouver, Wash.
Andrews, Alan Kendall	C. E.	Sr.	Medford
Andrews, Marie Anna	Opt.		Corvallis
Anthony, Hilda Florence	Opt.		LaGrande
Anthony, Marie	D. S.	Jr.	McMinnville
Anthony, Walter Burton	C. E.	Sr.	Carmel by the Sea, Calif.
Archbold, Alston Conway	E. E.	Jr.	Hillsboro
Archibald, Harold G.	For.	Soph.	Albany

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Archibald, Viva	D. S.	Sr.	Albany
Arens, Ralph Waldo	Agri.	Sr.	Parkdale
Armitage, Carleton	Agri.	Fr.	Sunset Beach, Calif.
Armstrong, Chester Hays	C. E.	Fr.	Salem
Armstrong, Fay	D. S.	Soph.	Corvallis
Armstrong, Jay M.	Agri.	Sr.	Lapeer, Mich.
Arnold, Edith Gertrude	Com.	Spec.	Providence, R. I.
Asbahr, Catherine	D. S.	S. Sec.	Cornelius
Ashcraft, Elmer	Min.	Fr.	Ashland
Ashenfelter, James	Com.	F. Sec.	Olex
Asplund, John W.	E. E.	Sr.	Marshfield
Atherton, Leona	D. S.	Sr.	Heppner
Atwood, Ralph	Agri.	Fr.	Sheridan
Ault, Indiana	D. S.	Jr.	Enterprise
Austin, Helen	D. S.	Fr.	Aberdeen, Wash.
Averill, William Samuel	Agri.	Fr.	Corvallis
Avery, Ruth	D. S.	Fr.	Klamath Falls
Axtell, Edward Goodchild	Agri.	Fr.	Corvallis
Ayers, A. A.	For.	Fr.	Lacombe
Babb, Harold Sidney	E. E.	Sr.	San Jose, Calif.
Babbitt, Richard Carrick	C. E.	Soph.	Corvallis
Backstrand, Carl Enoch	C. E.	Fr.	Portland
Bacon, Runa Elizabeth	Opt.		LaGrande
Bahr, Mrs. Alice Jenkins	Opt.		Grand Ronde
Bailey, Willis	Agri.	Fr.	Ashland
Bailiff, Florence	D. S.	Soph.	Corvallis
Baker, John Oscar	C. E.	Jr.	Portland
Baker, Verna	D. S.	Spec.	Corvallis
Baldwin, Frank Timmons	Agri.	Soph.	Baker City
Baldwin, Lee Ernest	Phar.	Soph.	Winlock, Wash.
Baldwin, Neil Burton	Com.	Spec.	Philomath
Ballard, Frank L.	Agri.	Jr.	Meredith, N. H.
Ballhorn, Otto	Com.	Jr.	Woodland, Wash.
Ballin, Herbert August	Agri.	Fr.	Portland
Bannister, Edna	D. S.	Fr.	Weston
Barden, Paul Elsworth	Com.	Fr.	Missoula, Mont.
Barden, Una Marguerite	D. S.	Fr.	Missoula, Mont.
Barnes, Clay A.	Agri.	Fr.	Goldendale, Wash.
Bartholomew, Lelia Mae	Opt.		Corvallis
Bartruff, Elmer W.	Agri.	Fr.	Salem
Bartu, Frank	M. E.	Soph.	Crabtree
Bartu, Mylo	M. E.	Sr.	Crabtree
Barzee, Faye Pearl	D. S.	Fr.	Corvallis
Bass, Chester Allan	Agri.	Soph.	Portland
Bassett, Olive	D. S.	Fr.	Newberg
Bates, E. G.	For.	Sr.	Williamsport, Pa.
Baum, Olin Huntington	Agri.	Soph.	Portland
Bayliss, Edwin J. C.	Agri.	Fr.	Lafayette

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Bayliss, John Clifford	Phar.	First Yr.	Myrtle Creek
Baynard, Claud Carthel	M. E.	Sr.	Portland
Beals, Agnes	D. S.	Soph.	Corvallis
Beals, Elva	D. S.	Jr.	Corvallis
Bechtel, Aimee	D. S.	Fr.	Creswell
Beck, Charline	Opt.		Corvallis
Beck, James Obye	Agri.	Jr.	Boise, Idaho
Beck, Pauline	D. S.	Sr.	Corvallis
Beck, Ursula	D. S.	Sr.	Aurora
Becker, Marian	Opt.		Keokuk, Iowa
Becker, Mary	D. S.	Fr.	American Falls, Idaho
Beckett, Carl Wm.	Agri.	Spec.	Salem
Beers, Ruby	D. S.	Fr.	Corvallis
Behnke, Olive Greene	D. S.	Fr.	Florence
Belton, Howard Claire	Agri.	Jr.	Gardena, Calif.
Bennett, Arthur	M. E.	Soph.	Dallas
Bent, Charles	Phar.	Soph.	Corvallis
Berks, Anna	D. S.	Spec.	Edenbower
Berry, Carl Evan	Agri.	Jr.	Hood River
Betzal, Irwin Leonard	Phar.	Jr.	Portland
Bewley, Charlcia	Opt.		Nashville
Bewley, Philip Mendenhall	Agri.	Sec. Yr.	Nashville
Bick, Norma	D. S.	Sr.	Philomath
Billie, Brewer Astor	M. E.	Jr.	Astoria
Binswanger, Alvin Otto	Agri.	Fr.	Portland
Binzer, Harry A.	M. E.	Fr.	Concrete, Wash.
Binzer, Karl Henry	Agri.	S. Sec.	Concrete, Wash.
Bixby, Clarence Milton	Agri.	Soph.	Freewater
Black, Emerson Perry	Agri.	Fr.	Corvallis
Black, Wm. Merle	Agri.	Spec.	Fossil
Blackden, Earl Benj.	For.	F. Sec.	Ashland
Blackden, R. S.	For.	Sr.	Ashland
Blackwell, Harlie A.	M. E.	Fr.	Juneau, Alaska
Blackwell, Helen S.	D. S.	Fr.	Juneau, Alaska
Blackwell, Ira	For.	Fr.	Aberdeen, Wash.
Blagg, Henry Wilson	E. E.	Fr.	Hood River
Blair, Joe Earl	Agri.	Fr.	Seattle, Wash.
Blakely, Cecil Grant	Com.	Spec.	Glide
Blakely, Harold G.	Phar.	Sec. Yr.	Brownsville
Blakely, Lloyd Herbert	M. E.	Soph.	Newport
Bliss, Cleveland Albert	Agri.	Fr.	Gresham
Boals, Ray B.	M. E.	Sr.	Dallas
Boies, Etta Philippi	Com.	Soph.	Corvallis
Boies, John	M. E.	Soph.	Corvallis
Boies, Thurza	D. S.	Jr.	Corvallis
Bolin, Francis Gerald	Agri.	Fr.	Portland
Bones, John Wm.	C. E.	Soph.	Carlton
Bonner, James Charles	Agri.	Sr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Bonney, Arthur A.	Agri.	Fr.	Tygh Valley
Boon, Walter Wm.	For.	F. Sec.	Portland
Boone, Earl	M. E.	Fr.	Toledo, Wash.
Boone, John C.	M. E.	Fr.	Toledo, Wash.
Boone, Stanley	Com.	Soph.	Stanley, Wis.
Booth, Bertha	D. S.	Sr.	Madras
Booth, Clarence	Phar.	Fr.	Amity
Boothe, Joe Miles	Agri.	Sr.	Union
Bosshart, Elizabeth	D. S.	F. Sec.	Warrenton
Both, Julius	Agri.	Fr.	Rainier
Bovingdon, James C.	E. E.	Fr.	Oakland
Bowen, Merle	D. S.	Sr.	Silverton
Bower, Hazel Harriet	Opt.		Corvallis
Bowers, Ralph J.	Agri.	Jr.	Seattle, Wash.
Bowman, Roy	E. E.	Fr.	Falls City
Boyer, Will M.	Min.	Soph.	Portland
Bozorth, Inez V.	D. S.	Jr.	Bay City
Bozarth, Levi S.	Agri.	Fr.	Amboy, Wash.
Brackett, Ethel Belle	Com.	Soph.	Rufus
Brackett, Florence Marie	Com.	S. Sec.	Rufus
Bracons, Josephine	Opt.		Portland
Brady, James	Com.	Spec.	Portland
Brandes, Irene	D. S.	Fr.	Portland
Branthoover, Lester Lee	Com.	Fr.	Fruitland, Idaho
Breithaupt, Alva	Agri.	F. Sec.	Portland
Brett, Sereno Elmer	For.	Soph.	Portland
Bristol, Ralph Ray	Opt.		Portland
Brixey, Homer	E. E.	Fr.	McMinnville
Brockman, Mildred Florence	D. S.	Soph.	Weiser, Idaho
Brogden, John Lewis	Agri.	Fr.	Hillsboro
Bromberg, H. Harold	Phar.	Fr.	Portland
Brown, Donald Edgar	Agri.	Soph.	Oregon City
Brown, Ellis Elmer	Agri.	Jr.	New Era
Brown, Florence	Com.	Spec.	Sheridan, Wyo.
Brown, Francis B.	Agri.	Fr.	Crystal
Brown, Harry Calvin	Agri.	Fr.	Smith River, Calif.
Brown, James Robert	Agri.	Spec.	Payette, Idaho
Brown, Mae	D. S.	Soph.	New Era
Brown, Wm. Hiram	Agri.	Jr.	Portville, N. Y.
Brown, Zoe Agnes	D. S.	Soph.	Seaside
Brownell, Dorothy	D. S.	Fr.	Portland
Brundage, Alfred Fleming	Agri.	Fr.	Fullerton, Calif.
Brunner, H. W.	For.	Fr.	Bellevue, Pa.
Brunquist, Edith	D. S.	Sr.	Hood River
Buchanan, Bayard B.	C. E.	Soph.	Roseburg
Budelier, Clarence Jos.	For.	Fr.	Rock Island, Ill.
Buick, Veva	D. S.	S. Sec.	Roseburg
Bullis, Deloss Everett	E. E.	Fr.	Payette, Idaho

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Burke, Volma	D. S.	Fr.	Cove
Burkhead, George Arthur	Agri.	Fr.	Monmouth
Burnell, Ina Ruth	D. S.	Fr.	Claremont, Calif.
Burns, Amelia Earle	D. S.	Jr.	Spokane, Wash.
Burns, John Richard	Min.	Fr.	Portland
Burns, Lillian E.	Com.	Fr.	Spokane, Wash.
Burns, Ralph Wilson	Agri.	Soph.	Tualatin
Bush, Eugene Stanley	M. A.	F. Sec.	Los Angeles, Calif.
Butler, Alice R.	D. S.	Sr.	Mapleton, Iowa
Byerly, Oliver F.	For.	Fr.	Portland
Byers, Oscar L.	For.	Fr.	Portland
Cadwell, Clytie Laurel	Agri.	Jr.	Seattle, Wash.
Cadwell, Jennie	D. S.	Sr.	Seattle, Wash.
Caldwell, Beulah	Opt.		Corvallis
Calkins, Nelta Grace	Opt.		Airlie
Calkins, Oscar	Agri.	Soph.	Airlie
Callison, Annabelle	D. S.	Sr.	Aberdeen, Wash.
Camp, Beryl	Phar.	First Yr.	Portland
Camp, Roy H.	M. E.	Fr.	Portland
Campbell, Edna Opal	D. S.	S. Sec.	Oak Bar, Calif.
Campbell, George Kenneth	Agri.	Fr.	Honolulu, Hawaii
Cannon, Owen Anthony	M. A.	F. Sec.	Mitchell
Cardinell, Horace Albert	Agri.	Jr.	Portland
Carlson, Alvida	D. S.	Soph.	Corvallis
Carlson, Evelyn	Com.	Jr.	Corvallis
Carlson, Ned	Agri.	Fr.	Seattle, Wash.
Carlson, Ruth	Com.	Soph.	Corvallis
Carnie, Norval C.	Agri.	Fr.	Chicago, Ill.
Carpenter, Eugene Johnson	Agri.	Fr.	Ashland
Carroll, Maurine	D. S.	Fr.	Junction City
Carson, Walter Guy	C. E.	Jr.	Hermiston
Cartan, Hazel	D. S.	Sr.	Corvallis
Carter, Wilder Jameson	Agri.	Fr.	Aberdeen, Wash.
Case, Richard Burton	Agri.	Jr.	Portland
Case, Russell Jeffrey	Agri.	Soph.	Portland
Case, Theodore Dwight	Agri.	Fr.	Klamath Falls
Casper, Elsie	D. S.	Fr.	Union
Cathey, Evelyn	D. S.	Fr.	Corvallis
Catterlin, Merlin Herman	Agri.	Fr.	Bandon
Cavendar, Alberta	D. S.	Fr.	Portland
Chamberlain, Everett	Opt.		Labanon
Chamberlin, W. J.	For.	Jr.	Albuquerque, N. Mex.
Chambers, George Frederick	Min.	Soph.	Newberg
Chambers, Joseph W. Jr.	Agri.	Jr.	Newberg
Chandler, George Leo	Agri.	Spec.	Rogue River
Chapin, Douglas Bryant	C. E.	Jr.	Franklin Place, N. Y.
Chapler, Raymond Herald	For.	Jr.	Salem
Chapman, Charles Lloyd	Min.	Sr.	Sheridan

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Chase, Ernest	For.	Jr.	Corvallis
Chase, Lila	Com.	Soph.	Corvallis
Chase, Lucile	D. S.	Jr.	Salem
Cheadle, Dorothy	D. S.	Fr.	Lebanon
Chenault, Ralph Garfield	Agri.	Jr.	LaGrande
Cheney, Maribel	D. S.	Sr.	Coupville
Chindgren, Anton Benj.	Agri.	F. Sec.	Mulino
Chinn, Jas. Edgar	Phar.	First Yr.	Weiser, Idaho
Chioco, Juan O.	C. E.	Fr.	Santo Domingo, P. I.
Chrisman, R. J.	For.	Sr.	Danville, Ky.
Christensen, Carl	For.	S. Sec.	Boise, Idaho
Christianson, Herman Hans.	Agri.	F. Sec.	Moro
Clark, Arthur Clarence	C. E.	Jr.	St. Johns
Clark, Carrie	D. S.	Soph.	Waitsburg, Wash.
Clark, Cedric William	Com.	Jr.	Canyon City
Clark, Frank Lewis	For.	Fr.	Portland
Clark, Wm. Beverly	For.	Spec.	Portland
Clausen, Arnold Alvin	C. E.	Jr.	The Dalles
Clausmeyer, Blanche	Com.	Spec.	Heppner
Clock, Audrey	Com.	Fr.	The Dalles
Clough, Huron Willoughby	C. E.	Sr.	Canyonville
Cobb, Cecil Edward	Com.	Spec.	Portland
Coe, Wayne Walter	Agri.	Jr.	Portland
Cohen, Benjamin Bernard	Agri.	Fr.	Portland
Cohen, Julius	Com.	S. Sec.	The Dalles
Cohn, Henry	Com.	Fr.	Heppner
Cole, Albert Benj.	Agri.	Jr.	Pasadena, Calif.
Cole, Grace Elizabeth	D. S.	Fr.	Portland
Cole, Harry Julius	Opt.		Emporia, Kan.
Coleman, Lawrence L.	Phar.	First Yr.	Roseburg
Collamore, Lorna Anne	D. S.	Fr.	Portland
Conklin, Evelyn	D. S.	Jr.	Grants Pass
Connell, Dorothy Marcella	Opt.		Portland
Conner, Edna	D. S.	Fr.	Sheridan
Conner, Raymond M.	C. E.	Jr.	Corvallis
Conner, Rhoda	D. S.	Fr.	Sheridan
Cook, Elsie	D. S.	Soph.	Philomath
Cook, Mortimer Parker	Agri.	Sr.	Portland
Cook, Susie	Opt.		Corvallis
Cooley, Florence	Phar.	Fr.	Junction City
Cooley, Inez	Phar.	Fr.	Junction City
Coon, Abbie R.	D. S.	Jr.	Corvallis
Cooper, Rodney Waldo	C. E.	Fr.	Dufur
Corbett, Grace Adelaide	Opt.		Corvallis
Corbin, Kathryn	Com.	Jr.	Portland
Cordiner, Peter Clarence	Phar.	Sec. Yr.	Astoria
Corey, Everett	Com.	Soph.	Medford
Corkins, Vernon G.	E. E.	Sr.	Enterprise

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Corl, Helen	D. S.	Fr.	Corvallis
Corl, Leland David	M. E.	Soph.	Corvallis
Cornell, Edna Frances	D. S.	Fr.	Grants Pass
Cornwall, Alice	D. S.	Fr.	Portland
Corrie, Bernice	D. S.	Fr.	Corvallis
Corrie, Eva Mary	Opt.		Corvallis
Coulter, Olive Ethlyne	D. S.	Jr.	Corvallis
Courtney, Lois	D. S.	Fr.	Portland
Covell, Spender Albert	M. E.	Sr.	Corvallis
Cox, Helen Madeline	D. S.	Soph.	Hood River
Cox, Walter Judson	Com.	Spec.	Portland
Craig, Asa P.	Agri.	Sr.	Enterprise
Craine, Erma M.	D. S.	Jr.	Bandon
Crain, William Wallace	Agri.	Soph.	Biggs, Calif.
Cramer, Floyd Samuel	M. A.	S. Sec.	Corvallis
Cramer, Olive F.	Opt.		Corvallis
Crane, Fred Hovey, Jr.	Agri.	S. Sec.	Cleone
Creekpaum, Alonzo B.	M. E.	Fr.	Cornelius
Crimmins, William	M. A.	Fr. Sec.	Chicago, Ill.
Crocker, Will J.	Phar.	Fr.	Holley
Crockatt, Edith	D. S.	Jr.	Pendleton
Cronemiller, Fred Parks	For.	Fr.	Lakeview
Cronemiller, Lynn	For.	Sr.	Lakeview
Crosby, Hartzell	Agri.	Jr.	Sherwood
Crouchley, E. F.	For.	Soph.	St. Louis, Mo.
Crouter, Leogrand DeHart	Com.	Soph.	Union
Crouter, Paul H.	Agri.	Fr.	Union
Cruikshank, Ivan M.	Agri.	Fr.	Portland
Crum, McKinley	Agri.	S. Sec.	Olex
Crumley, Elmer	Agri.	Soph.	National City, Calif.
Culver, Benj. C.	For.	Jr.	The Dalles
Cunning, Jennie M.	D. S.	Fr.	Baker
Currey, Hiram Meyrick	Agri.	Jr.	Ontario
Currey, Joseph Edmond	Agri.	Fr.	Olympia, Wash.
Currey, Pinney Alfred	Phar.	Fr.	Baker
Currin, Mary Edith	Com.	Fr.	Heppner
Curtis, Roland Edward	Agri.	Jr.	Claremont, Calif.
Dabney, Mary L.	Opt.		Hood River
Dallas, Earle Wesley	Agri.	S. Sec.	Corvallis
Dallas, Willis Robert	Agri.	Jr.	Corvallis
Damon, Leola	D. S.	Spec.	Corvallis
Damon, Ruth Columbia	D. S.	Fr.	Newport
Damon, Sumner John	Agri.	Sr.	Ferndale, Calif.
Danneel, Henry	E. E.	Fr.	Hillsboro
Davidson, Leffie	D. S.	Soph.	Portland
Davidson, Robert Hershel	Agri.	Fr.	Milton
Davis, Charles E.	Agri.	Fr.	Union
Davis, Charles Harold	Com.	Soph.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Davis, Durrell	Com.	Soph.	Independence
Davis, George Cecil	Agri.	Fr.	Hoquiam, Wash.
Davis, Mabelle Josephine	D. S.	Fr.	Corvallis
Davis, Percy Evert	Agri.	F. Sec.	Corvallis
Davis, Robert Ray	M. E.	Sr.	Hillsboro
Davis, William A.	Min.	Fr.	Los Angeles, Calif.
Davisson, Margaret	D. S.	Jr.	Central Point
Dawson, Mary Ethel	D. S.	S. Sec.	Skamokawa, Wash.
Day, Oswald Newton	E. E.	Fr.	Portland
Day, Ralph Coulter	C. E.	Jr.	Portland
Dean, Stella	Phar.	Jr.	Castle Rock, Wash.
Dearmin, Lillian G.	Com.	Soph.	Baker
Delmarter, James Elsworth	Agri.	Fr.	Alhambra, Calif.
Denny, Edward Bell Jr.	Agri.	Spec.	Newark, N. J.
Denny, Elizabeth	D. S.	Fr.	Salem
Deutsch, Henry C.	For.	Jr.	Portland
Dewey, Garrington Geo.	Agri.	Soph.	Marshfield
DeWitt, Charley H.	Agri.	Fr.	Portland
Deyoe, Harold Leroy	E. E.	Soph.	Portland
Dickerson, Jesse Earl	Agri.	Soph.	Parma, Idaho
Dickey, Chester Allan	Com.	Sr.	Molalla
Dietsch, Frank J.	Agri.	Soph.	Days Creek
Dilley, Dean	M. E.	Fr.	Gervais
Dinges, Grace May	D. S.	Sr.	Corvallis
DoBell, Roland	Com.	Fr.	Corvallis
Doerner, Armin Meredith	Agri.	Soph.	Denver, Colo.
Dolde, William Earl	Opt.		Guthrie, Okla.
Doolittle, Harold V.	Agri.	Fr.	Pomona, Calif.
Doolittle, Lydia	D. S.	Jr.	Corvallis
Doolittle, Maida	D. S.	Soph.	Corvallis
Dorsey, Glen Emerson	E. E.	Fr.	Louisville, Neb.
Doty, Paul	Agri.	Soph.	Pasadena, Calif.
Dowden, Ethelbert	Min.	Sr.	Plainview, Tex.
Downing, Hazel	D. S.	Fr.	Kingston
Downs, Addie Isabella	Phar.	Fr.	Cornelius
Doxsee, Earl DeWitte	Agri.	Jr.	Brownsville
Dunn, Edwin	Agri.	Fr.	Ashland
Dunn, Wallace Wilkinson	M. A.	F. Sec.	Corvallis
Dunsmore, B. Fay	M. A.	Spec.	Independence
Dupee, Cherie Mabel	D. S.	Fr.	Corvallis
DuRette, Cecil A.	M. A.	S. Sec.	Gervais
Durkheimer, Sylvan F.	Com.	Sr.	Portland
Dwyer, May	D. S.	Fr.	Portland
Eaton, Joseph Edmund	Opt.		Portland
Eaton, Karl	Agri.	Jr.	Yamhill
Eckley, Winfield	E. E.	Soph.	LaGrande
Eddy, Ben A.	C. E.	Sr.	Roseburg
Eddy, Delmar	Com.	Sr.	Kings Valley

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Edwards, Connor Whealdon	Agri.	Sr.	Monroe
Edwards, James Homer	Agri.	Fr.	Monroe
Edwards, Jess	Phar.	Sec. Yr.	Sumpter
Ehrman, Harry J.	E. E.	Jr.	Junction City
Eldridge, Shalor Charles	Agri.	S. Sec.	Independence
Ellestad, Theodore Alfred	Agri.	Jr.	Central Point
Ellestad, Melvin H.	M. A.	F. Sec.	Central Point
Embry, Clay T.	Agri.	Fr.	Clarkston, Wash.
Emery, Lee Earl	For.	Sr.	Corvallis
Engbretson, Albert	Agri.	Fr.	Astoria
Erickson, Anton	M. E.	Fr.	Portland
Ervin, Albert G.	Agri.	Fr.	Hood River
Estes, Marie	Opt.		Corvallis
Evenden, James C.	For.	Sr.	Warrenton
Failing, Kate Whittlesey	Agri.	Sr.	Portland
Farmer, Clifford	M. E.	Fr.	Salem
Feathers, Mabel	D. S.	Soph.	Corvallis
Feldman, Gus Lester	Com.	Soph.	Portland
Felton, Dannie Sherman	Com.	Fr.	Corvallis
Fendall, DeVere	Agri.	Fr.	Newberg
Fendall, Virgil	Agri.	Fr.	Newberg
Fenn, Donald	Agri.	Soph.	Lake George, N. Y.
Ferguson, Arthur	Agri.	Fr.	Helix
Ferguson, Oscar Earl	Agri.	Fr.	Helix
Fertig, Charles Arthur	M. E.	Fr.	Hood River
Fiedler, Frank D.	C. E.	Sr.	Bellingham, Wash.
Finch, Arthur William	Agri.	Fr.	Gardena, Calif.
Finch, Leslie	Phar.	First Yr.	Baker
Fisher, Lester George	Com.	Fr.	Hood River
Fisk, Carlos E.	Agri.	Soph.	Parma, Idaho
Fitts, Grace Elizabeth	D. S.	Soph.	Corvallis
Fitzgerald, Gerald	Agri.	Spec.	Portland
Flanagan, Charles Bartlett	Agri.	Jr.	Marshfield
Flanery, Floyd B.	Phar.	Soph.	Corvallis
Flegel, Charles P.	Agri.	Jr.	Portland
Fletcher, Allan Taylor	Com.	Jr.	Buell
Flint, John Walter	Agri.	Jr.	San Diego, Calif.
Flippin, Thomas J.	Agri.	Fr.	Rainier
Floss, Fritz Carl	Min.	Soph.	Milwaukie
Floydstead, Harry	Agri.	S. Sec.	Tacoma, Wash.
Foister, Robert Paul	Com.	Fr.	Pasco, Wash.
Follette, Peter Wilson	Agri.	Fr.	Nicholas, N. Y.
Forbis, John Franklin, Jr.	Agri.	Jr.	Dilley
Ford, Charles Edward	Com.	Jr.	Sheridan
Forster, F. H.	C. E.	Soph.	Tangent
Foster, Albert D.	Phar.	Soph.	Dayton
Foster, Harold Darwin	Agri.	Sr.	Seattle, Wash.
Foster, Harriett	D. S.	Fr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Foster, Verna	D. S.	Fr.	Baker
Foster, Warren Ralston	Agri.	Spec.	Independence
Foster, Will H.	E. E.	Sr.	Corvallis
Fowler, Robert G.	Agri.	Jr.	Portland
Fox, Kenneth Lawrence	Min.	Soph.	Portland
Fraley, Earl	Com.	Jr.	Ashland
Francis, George Leslie	Agri.	Soph.	Portland
Frank, Arthur	Agri.	Sr.	South Bend, Ind.
Frank, Herbert W.	Agri.	Soph.	Valley City, Ohio
Franz, Earl Alfred, Jr.	Com.	Spec.	Hood River
Fraser, John Henry	C. E.	Soph.	Parkplace
Freeman, Addice Loraine	D. S.	Soph.	Hood River
French, Phoebe Caroline	D. S.	S. Sec.	Corvallis
Freydig, Paul E.	For.	Sr.	Sutherland
Frick, Robert B.	For.	Soph.	Presidio, Calif.
Friday, Roberta	D. S.	Jr.	Hood River
Fridley, Callie	D. S.	Fr.	Wasco
Fridley, Dora	D. S.	Soph.	Klondike
Fridley, Nettie M.	D. S.	Fr.	Klondike
Frost, Carl Magnus	E. E.	Soph.	Portland
Fryer, Carl Augustus	Phar.	Jr.	Shaw
Funk, Arnold John	Com.	Soph.	Corvallis
Funk, Arthur Louis	Agri.	F. Sec.	Oregon City
Funk, Maud	D. S.	Fr.	Etna Mills, Calif.
Gaines, Clarence	Agri.	Fr.	Stockton, Calif.
Gall, Erskine Meade	Agri.	Soph.	Santa Ana, Calif.
Gambee, Hosmer C.	Agri.	Sr.	Corvallis
Gambee, Louis Phaon	Agri.	Sr.	Corvallis
Garber, Hazel	D. S.	Fr.	Nampa, Idaho
Garbutt, E. Edward	M. E.	Fr.	Sheridan, Wyo.
Gardiner, William Benson	Agri.	Sr.	Colorado Springs, Colo.
Gates, Pearl Imogene	D. S.	Soph.	Corvallis
Gaylord, Clarence Clyde	Phar.	Jr.	Baker
Gentner, Louis G. O.	Agri.	Jr.	Portland
Gentry, Eva Lenore	Opt.		Portland
Gerdes, Lawrence Marion	Opt.		Hood River
Gerke, Walter Henry	Agri.	Soph.	Portland
Giguette, George J.	Agri.	Spec.	Pasadena, Calif.
Gilbert, Henry C.	Agri.	Jr.	Salem
Gilbert, Lovina	D. S.	S. Sec.	Portland
Gilbert, Mahlon Bruce	Agri.	Jr.	Woodburn
Gildner, Walter Fred	E. E.	Jr.	Astoria
Gillette, Mina E.	D. S.	Spec.	Claremont, Calif.
Gillmore, John Emery	Phar.	First Yr.	St. Johns
Glaser, Elizabeth	D. S.	Jr.	Lebanon
Glines, Halcie Williford	Agri.	Soph.	Waldport
Goble, Ray E.	Agri.	Jr.	Ferndale, Calif.
Godel, Howard	Agri.	F. Sec.	Portland

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Godfrey, Gaylord Gerald	Phar.	Sr.	Oregon City
Godfrey, Lena	D. S.	Jr.	Portland
Goffe, Cordelia	D. S.	Sr.	Medford
Golden, John Justus	M. A.	S. Sec.	LaGrande
Golden, Zoa	D. S.	Fr.	LaGrande
Goodale, Frank W.	M. E.	Fr.	Medford
Gooding, Joseph Hunter, Jr.	Agri.	Sr.	Wilmington, Del.
Goodbrod, Adrian	Agri.	Fr.	Union
Goodrich, Lee Jesse	Agri.	Spec.	Seattle, Wash.
Gould, Beatrice Marie	Opt.		Hood River
Graf, Herman	M. E.	Soph.	Portland
Gragg, George Merle	Agri.	Fr.	Monroe
Graham, Aubrey Gifford	M. E.	Fr.	Pendleton
Grasle, Wesley Reed	E. E.	Jr.	Milwaukie
Graybeal, Carlyle West	Agri.	Fr.	Snohomish, Wash.
Green, Carl Clifford	Agri.	Fr.	Parkdale
Green, Dorr Dudley	Agri.	Fr.	Parkdale
Green, John Wesley	C. E.	Soph.	Suver
Greene, Killaly	Agri.	Fr.	Aberdeen, Wash.
Greenlee, James	Agri.	S. Sec.	Portland
Greer, Medora	D. S.	Fr.	Dundee
Gregg, Rodney	M. A.	S. Sec.	Gazelle, Calif.
Grimes, Etta	D. S.	Fr.	Portland
Grubbe, Eugene Erle	Com.	S. Sec.	Elkton
Grubbe, Vernet Garland	Com.	F. Sec.	Elkton
Guha, Dakshina K.	M. E.	Soph.	Dasca, India
Hackett, Harold Nelson	E. E.	Soph.	Elgin
Hadrys, Frank V.	E. E.	Jr.	Portland
Hagey, Grover Adel	Phar.	First Yr.	Sherwood
Hale, Oscar George	Com.	Fr.	Spray
Hall, Eldora	Com.	Fr.	Burns
Hall, Mildred	D. S.	Jr.	Corvallis
Hamilton, Edith A.	Opt.		Corvallis
Hamilton, Harry E.	M. E.	Soph.	Portland
Hamilton, John Monroe	Agri.	Fr.	National City, Calif.
Hamilton, Wm. D.	Phar.	First Yr.	LaGrande
Hammer, Leetta Fay	Opt.		Corvallis
Hammerly, Hugh Fisher	Phar.	Fr.	Albany
Hammersley, Ray Roy	M. E.	Sr.	Corvallis
Hammond, Helen Hunt	Opt.		Portland
Hammond, Louise	D. S.	Fr.	Portland
Hampton, Lester	Agri.	Fr.	Randle, Wash.
Hansen, Beneta Kareen	D. S.	Jr.	Corvallis
Hansen, Jettie Marie	D. S.	Sr.	Corvallis
Hansen, Laura	D. S.	Spec.	Portland
Hanson, Manette	D. S.	Fr.	Corvallis
Hanson, Margaret	Com.	Jr.	Corvallis
Hanthorn, Faith	D. S.	Fr.	Portland

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Happold, Louis	M. A.	S. Sec.	Klondike
Harding, George Edwin	Agri.	F. Sec.	Barton
Hardman, Florence Rozelle	Opt.		Corvallis
Hardman, George	Agri.	Jr.	Ontario
Hardman, Sylvia A.	D. S.	Jr.	Portland
Hare, Bruce	For.	S. Sec.	Tillamook
Harlow, Charles N.	E. E.	Soph.	Cottage Grove
Harmon, William L. Jr.	Agri.	Fr.	Portland
Harrah, Martin Aaron	Agri.	Fr.	Freewater
Harriman, Arthur Absalom	Com.	Jr.	The Dalles
Harriman, Edna Cornelius	Com.	Jr.	The Dalles
Harriman, Fred Edward	Com.	Fr.	Corvallis
Harriman, Nellie Hanford	Com.	Jr.	The Dalles
Harris, Earl Sorsby	Com.	Jr.	Corvallis
Harris, Emma Gertrude	D. S.	Soph.	Vale
Harris, Milton	C. E.	Fr.	Portland
Harrison, M. Allen	Agri.	Soph.	Brownsville
Harritt, Jessie	D. S.	Jr.	Salem
Harry, Earl Logan	M. E.	Sr.	Corvallis
Harry, Olive M.	Phar.	Sr.	Corvallis
Hart, Martha	D. S.	Fr.	Portland
Hart, Otho Clement	M. E.	Soph.	Corvallis
Hartley, Edwin A.	For.	Fr.	Mapleton
Hartung, Esther	D. S.	Sr.	Eugene
Hartzog, Delphia Mary	D. S.	Soph.	Corvallis
Harvey, Corwin Satterthwaite	Com.	Soph.	Milwaukie
Harvey, Guysbert	For.	Fr.	Grants Pass
Harvey, Paul A.	Agri.	Fr.	St. Maries, Idaho
Harvey, Ruth	D. S.	Fr.	St. Maries, Idaho
Hathaway, Marcus Francis	Agri.	Soph.	Corvallis
Hauser, Salomon Wm.	Agri.	S. Sec.	Tygh Valley
Haverstick, Russell N.	Agri.	Fr.	Cashmere, Wash.
Haw, Horace Leo	Agri.	Jr.	Pendleton
Hawley, Mary W.	Com.	Jr.	Corvallis
Hawley, Ruth Blanche	Com.	Sr.	Blodgett
Hawley, Willa	D. S.	Jr.	Corvallis
Hawver, Samuel Wm.	Agri.	Soph.	Los Angeles, Calif.
Hay, William Chalmers	Com.	S. Sec.	Lihue, Hawaii
Hayes, Frank Arthur	Agri.	Fr.	Pasadena, Calif.
Hayes, Lucile	D. S.	Fr.	Portland
Hayes, Marshall C. Jr.	For.	Sr.	Pasadena, Calif.
Hayes, Oliver Bliss	Agri.	Jr.	Pasadena, Calif.
Haynes, Dorothy	D. S.	Fr.	Springfield
Heath, Laura	D. S.	Jr.	Corvallis
Heaward, Robert E.	Com.	Fr.	Portland
Heidel, Wilma	Opt.		Hillsboro
Heminger, Norris Lyle	For.	F. Sec.	Parsley
Heminger, Willard	For.	Fr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Henderson, Charles A.	Agri.	Soph.	Gardiner
Henderson, Ruth	D. S.	S. Sec.	St. Johns
Henderson, Wright	Agri.	Fr.	Honolulu, Hawaii
Hendricks, Bertha	D. S.	Jr.	Silverwood, Mich.
Hester, Curtis Sherman	Opt.		Indianapolis, Ind.
Hewes, Cora	D. S.	Fr.	Albany
Hewett, Henry	Agri.	Sec. Yr.	Milton
Hewitt, Harry Nutting	Phar.	Soph.	Portland
Hewitt, Marion Samuel	M. E.	Jr.	Stockton, Calif.
Heywood, Herbert Joseph	M. E.	Soph.	Portland
Hiestand, Clynton H.	Phar.	Fr.	Corvallis
Hiestand, Zula Helen	Com.	Fr.	Corvallis
Hill, Charles Edwin	Agri.	Jr.	Springfield, Mass.
Hill, Charles Lester	Agri.	Sr.	Warrenton
Hill, Ruth	D. S.	Jr.	Eugene
Hinds, Ralph Hubert	Agri.	Spec.	Philomath
Hinton, Richard Bird	M. A.	F. Sec.	Shaniko
Hirst, Bernard	Agri.	Soph.	Sitka, Alaska
Hirst, Percy V.	Agri.	Fr.	Sitka, Alaska
Hitt, Abe	Agri.	Fr.	Emmett, Idaho
Hittson, Carmen	Phar.	Jr.	Medford
Hobgood, Guy	Agri.	Jr.	Madisonville, Ky.
Hoerner, Godfrey Richard	Agri.	Soph.	Seattle, Wash.
Hoerr, Carl Gerlich	M. E.	Soph.	Lebanon
Hofer, Marie Annette	D. S.	Sr.	Salem
Hofer, Paul Ballon	Agri.	Soph.	Salem
Hoff, Melvin Rutherford	Agri.	Sr.	Portland
Hoff, Norlyn Paul	Phar.	Soph.	Salem
Hoffman, Leota	D. S.	Fr.	Whiteson
Hoflich, Neva	D. S.	Fr.	Albany
Hogg, John Ashton	M. E.	Soph.	Lihue, Hawaii
Holboke, Sophia Marie	Opt.		Portland
Holdren, Homer	Agri.	Fr.	Gladstone
Holland, Gladys Glenn	Com.	Fr.	Corvallis
Hollenberg, Leo D.	Agri.	Fr.	Burns
Hollingworth, Gertrude	D. S.	Fr.	Newberg
Holloway, Daphne Mae	D. S.	Fr.	Portland
Hollowell, Garland E.	Agri.	Spec.	Milwaukie
Holmes, Elise	D. S.	Jr.	Enterprise
Holmes, Frederick Aram	Agri.	Jr.	Enterprise
Holmes, Juana	D. S.	Fr.	Portland
Holt, Ada	D. S.	Fr.	Corvallis
Holt, Hazel	D. S.	Sr.	Corvallis
Hooper, John Amos	E. E.	Fr.	Corvallis
Hoover, Fenton Whitman	C. E.	Fr.	Portland
Hopkins, Geo. Evans	C. E.	Jr.	Corvallis
Horning, Benj. F.	Phar.	Sr.	Otter Rocks
Horning, Emil Edwin	Com.	Sr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Horning, Helen	D. S.	Soph.	Corvallis
Horobin, Walter Leo	Agri.	Sr.	Cornwall-on-Hudson, N. Y.
Hosford, Edwin Frederick	C. E.	Soph.	Stayton
Houck, Roy Lester	E. E.	Fr.	McMinnville
Houlston, George McLean	Agri.	Soph.	East Aurora, N. Y.
Howard, D. C.	Agri.	Sr.	Corvallis
Howard, Russell Marion	Com.	Sr.	Corvallis
Howard, Walter William	Agri.	Sr.	Corvallis
Howe, George B.	For.	Fr.	Lents
Howell, Herbert Badolett	Agri.	Fr.	Portland
Howey, Iva	D. S.	Fr.	Coquille
Howitt, Elizabeth	D. S.	Fr.	Gresham
Hubbard, Chauncey Mulka	Agri.	Fr.	Corvallis
Hubbard, Harry Lee	C. E.	Jr.	Amity
Hubbard, Walter P.	Agri.	Fr.	Corvallis
Hubbard, Winfield	Agri.	Fr.	Corvallis
Hughes, Clifton	Agri.	Fr.	Stevenson, Wash.
Hukill, Brooke	Agri.	Sr.	Corvallis
Hull, Harry Stephen	Com.	Fr.	Grants Pass
Hult, Mrs. Ellen	Opt.		Corvallis
Hult, Gustaf W.	For.	Soph.	Corvallis
Humason, Harvey	M. A.	F. Sec.	Portland
Humason, Mattie	D. S.	Spec.	Spokane, Wash.
Humphrey, Esther	D. S.	Fr.	Eugene
Huntley, Floyd J.	Com.	Fr.	Gold Beach
Hurley, Alton D.	Agri.	Soph.	Seattle, Wash.
Huss, Julia	D. S.	Fr.	McMinnville
Hutt, Lester	M. E.	Sr.	Yamhill
Hyde, Sara	D. S.	Spec.	Corvallis
Hyde, Walter Rob.	Phar.	Fr.	Portland
Hyams, Leo Klein	M. E.	Soph.	Portland
Ide, Russell Sanders	Agri.	Fr.	Portland
Imrie, Lillian Mildred	Opt.		Melrose
Ingels, Hollis Glen	C. E.	Fr.	Salem
Irving, Benjamin Barton	C. E.	Sr.	Corvallis
Irving, Iona	D. S.	Jr.	Corvallis
Irwin, Albert Hugh	Agri.	S. Sec.	Vanora
Irwin, Mary Louise	Opt.		Salem
Ito, Chonosuke	Com.	Fr.	Tokio, Japan
Jackson, Della M.	D. S.	Soph.	Lorane
Jackson, Eva	D. S.	Fr.	Portland
Jackson, Maud Gracia	Opt.		Lorane
Jacobson, Ernest	Agri.	Fr.	Newberg
Jacobson, Harry C.	Agri.	Spec.	San Francisco, Calif.
Jacoby, Carl C.	For.	F. Sec.	Toledo, Wash.
Jacoby, Fred	Agri.	F. Sec.	Toledo, Wash.
Jaeger, Harry D.	Agri.	S. Sec.	Portland
James, Oscar William	Ind. Arts	Jr.	Robinet

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Jamison, Dwight L.	Agri.	Jr.	Puyallup, Wash.
Jamison, Neal Clement	Agri.	Sr.	Corvallis
Janes, Marjorie	D. S.	Fr.	Portland
Jaye, Edith	D. S.	Fr.	Skamokawa, Wash.
Jeffers, Fred Marion	Agri.	Fr.	Portland
Jenkins, Merle Freeman	Agri.	Fr.	Portland
Jennings, D. V.	E. E.	Soph.	Sherwood
Jensen, Martha	Opt.		Silverton
Jernstedt, Maurice	Agri.	Fr.	Carlton
Jessup, John Mercator	Agri.	Spec.	Cooks, Wash.
John, Morris	Com.	Soph.	Corvallis
Johns, Miles Shirk	Agri.	Soph.	Bellingham, Wash.
Johnson, Alfred Pullman	Agri.	Jr.	Enumclaw, Wash.
Johnson, Clarence Benjamin	Agri.	Fr.	Hermiston
Johnson, Carl Stewart	Agri.	Fr.	Portland
Johnson, George Ray	Agri.	Sr.	Cooston
Johnson, Gustaf	Agri.	F. Sec.	Boring
Johnson, J. Lewis	Agri.	Spec.	Eugene
Johnson, Lewis Ross	Agri.	Jr.	Bloomington, Ill
Johnson, Louis Merle	Com.	Fr.	Portland
Johnson, Lillian	D. S.	S. Sec.	Corvallis
Johnson, Owen H.	For.	Soph.	Quincy, Wash.
Johnson, Willard	For.	S. Sec.	Scappoose
Johnston, Perry Nolan	Agri.	Soph.	Moro
Johnston, Theodore	Agri.	Jr.	Moro
Johnston, William	Agri.	Fr.	Corvallis
Jonassen, Olaf	For.	Fr.	Davenport, Iowa
Jones, Charles D.	For.	S. Sec.	Portland
Jones, Edward Delta	M. E.	Soph.	Jefferson
Jones, Glenn C.	Phar.	First Yr.	Heppner
Jones, Leon	Agri.	Fr.	Antelope
Jones, Melville Seymour	Opt.		Salem
Jonsrud, Albert E.	Agri.	F. Sec.	Boring
Jordan, Arthur	C. E.	Soph.	Pendleton
Jordan, Clifford	Agri.	Fr.	Pendleton
Jordan, Marvin	Com.	Spec.	Corvallis
Jordan, Melvin Harold	Com.	Jr.	Corvallis
Jory, Elmo Clayton	Agri.	Fr.	Salem
Joyce, Lula	Opt.		Portland
Kadderly, Wallace	Agri.	Fr.	Portland
Kain, Corland Edward	E. E.	Fr.	Portland
Kalbus, Minnie	D. S.	Fr.	Chehalis, Wash.
Kan, Frank Fan	Agri.	Soph.	Canton, China
Kathan, George Lewis	Agri.	Fr.	Syracuse, N. Y.
Kaufmann, Vera Marie	Opt.		Portland
Keatley, Eva	D. S.	Fr.	Castlerock, Wash.
Keatley, Virginia	D. S.	Sr.	Castlerock, Wash.
Keen, Wm. Henry Harrison	M. A.	F. Sec.	Portland

OREGON AGRICULTURAL COLLEGE

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Kehrli, Frank Walter	Agri.	Sr.	Hillsdale
Kellar, Anna	D. S.	Sr.	Portland
Keller, Fred	Agri.	S. Sec.	Portland
Kelner, Rowan Burns	Agri.	Spec.	Portland
Keifner, Lucy Louise	Opt.		Logansport, Ind.
Kennedy, Rowe Davis	M. E.	Jr.	Corvallis
Kent, Nola	D. S.	Fr.	Drain
Kenton, Ralph M.	M. E.	Soph.	Albany
Kern, Winnifred	D. S.	Fr.	Jenning's Lodge
Kerr, Lynette	D. S.	Fr.	Corvallis
Ketchum, Beth	D. S.	Fr.	Independence
Ketchum, Jean	D. S.	Fr.	Independence
Keyser, Florence	D. S.	Fr.	Corvallis
Kilham, Oliver Frank	Agri.	Sr.	Beverly, Mass.
Kimberk, Irene	D. S.	Fr.	Monroe
Kimble, Loren	Com.	F. Sec.	Portland
Kinderman, W. C.	E. E.	Jr.	Hoskins
King, Charles Allen	E. E.	Jr.	Ashland
King, Winnifred	D. S.	Jr.	Corvallis
King, Luther Andrew	Ind. Arts	Jr.	Cottage Grove
King, Philip S.	Agri.	Fr.	Portland
King, Will O.	Agri.	Sr.	Eugene
Kingsley, Earl James	Com.	Soph.	Corvallis
Kinnison, Grace	D. S.	Fr.	Presidio, Calif.
Kirkpatrick, Kathreen	D. S.	Sr.	Pendleton
Kirry, Zola	D. S.	Fr.	Forest Grove
Kirtley, Naomi	D. S.	Fr.	LaGrande
Klinghammer, Reinhold M.	Ind. Arts	Jr.	Elgin
Knight, Florence	D. S.	Fr.	Port San Luis, Calif.
Knox, Leland Jay	Com.	Jr.	Fossil
Koenig, Walter	Opt.		Corvallis
Koeppel, Oliver	Agri.	F. Sec.	Delaware, Ohio
Koon, Harvey	Phar.	Spec.	Portland
Koons, Hubert E.	Agri.	Jr.	Orland, Calif.
Kroner, Leo	M. E.	Jr.	Portland
Kruger, Herbert W.	Min.	Fr.	Portland
Kuhnhausen, Arnold E.	E. E.	Sr.	Portland
Kuks, Anna	D. S.	Fr.	Milwaukie
Kunzmann, Carl Frederick	Agri.	F. Sec.	Bow, Wash.
Kurtz, Harry L.	Phar.	Soph.	Rainier
Lafky, Ernest Herman	Agri.	Jr.	Salem
Laird, Ralph P.	Agri.	Soph.	Pleasant Hill
Laird, Thomas	Phar.	Soph.	Bandon
Lake, Emery Dudley	Agri.	Jr.	Eugene
Lall, Shiam	Opt.		Ry. Str. Gwalior, India
Lamb, Howard	Agri.	Spec.	Fossil
Lamb, Stewart Frank	Agri.	Fr.	Albany
Lamley, Harry Bernette	Min.	Jr.	Portland

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Lamoreux, Louis	For.	Soph.	Ft. Baker, Calif.
Lamoreux, Thomas Liggett	Agri.	Soph.	San Francisco, Calif.
Lance, Mayme	D. S.	Sr.	Corvallis
Lance, Neely Samuel	Agri.	Fr.	Corvallis
Landreau, Catherine	D. S.	F. Sec.	Warm Springs
Lane, Dorothy	D. S.	Fr.	Corvallis
Lane, Vivian	D. S.	Soph.	Harrisburg
Lange, Alfred J.	M. E.	Jr.	Portland
Lansdale, Lane Arthur	C. E.	Soph.	Weston
Lantz, Harvey Lee	Agri.	Soph.	Cove
Larson, Adolph Leonard	Agri.	Jr.	Astoria
Larson, Carl Julius	M. E.	Fr.	Marshfield
Larsen, Walter Winfred	C. E.	Sr.	Laurel
Laskar, Adhar, Chandra	E. E.	Soph.	Calcutta, India
Lasswell, Avery Lloyd	Com.	Soph.	Portland
Lasswell, Sydney Smith	Agri.	Fr.	Portland
Lawrence, Sylvester Ernest	Agri.	Spec.	Portland
Laythe, Leo L.	Agri.	Soph.	Harriman
Lee, Bernice A.	D. S.	Fr.	Portland
Lee, Earl Francis	Com.	Spec.	Eugene
Leekun, Yukon George	Com.	Fr.	Victoria, B. C.
Leeper, Enid Glenda	Com.	Jr.	Corvallis
Legg, Gladys	D. S.	Fr.	Portland
Leibner, Emil C. W.	Agri.	F. Sec.	Albany
Lentz, Glen Allen	M. E.	Fr.	Parkdale
Letellier, George H., Jr.	E. E.	Fr.	Mill City
Levage, Harry V.	Agri.	Fr.	Florence
Levengood, Alma Mae	Com.	Jr.	Athol, Kan.
Levengood, Frank	Com.	Soph.	Athol, Kan.
Leweaux, Victor	Phar.	Jr.	Corvallis
Lewis, Dolorosa	D. S.	S. Sec.	Smith River, Calif.
Lewis, Elizabeth Thurman	D. S.	Sr.	Pacific Grove, Calif.
Lewis, Eugene Davis	Agri.	Fr.	Hood River
Liddle, Mrs. Edith Dunn	Opt.		Corvallis
Liles, Virgil	Agri.	Fr.	Crow
Lindeman, Laird N.	Agri.	Fr.	Corvallis
Linquist, Herman Andrew	M. A.	F. Sec.	Cathlamet, Wash.
Lindquist, Eric Arthur	M. A.	F. Sec.	New Hazelton, B. C.
Lindsay, Alexander Lewis	Agri.	Soph.	Hilo, Hawaii
Lindsley, Sterling L.	M. E.	Soph.	Portland
Locher, Leonard	M. E.	Sr.	Burns
Logan, Arthur Evan	Com.	Soph.	Escondido, Calif.
Loken, Edward Benjamin	C. E.	Soph.	Harrisburg
Long, Howard Allen	Com.	Fr.	Portland
Long, Yick	Com.	Jr.	Canton, China
Loof, Hans Walter	For.	Soph.	Oak Harbor, Wash.
Loosley, Claude Frederick	Agri.	Jr.	Ft. Klamath
Lorence, Ruby Anne	Opt.		Monmouth

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Lorenz, Ralph Childs	For.	Spec.	Cove
Loughary, Elithe	D. S.	S. Sec.	Monmouth
Loughary, Ivan Hill	Agri.	Soph.	Monmouth
Love, Annis	D. S.	Fr.	Junction City
Lowell, Arthur	Agri.	Fr.	Wasco
Lowry, Ralph William	Agri.	Fr.	Corvallis
Lucas, Fred A.	Com.	Soph.	Bend
Lundeen, Arthur Robt.	For.	Soph.	Rock Island, Ill.
Lutz, Arthur Wm.	Agri.	Fr.	Santa Ana, Calif.
Luxton, William Lee	Com.	Spec.	Idaho Falls, Idaho
Lyon, Helen Louise	D. S.	Soph.	Corvallis
Lyster, Kathleen	D. S.	Jr.	Corvallis
McCabe, Fred	C. E.	Soph.	Portland
McCafferty, Tommie Lee	D. S.	Spec.	Nampa, Idaho
McClaran, Joe Wallace	Com.	Jr.	Wallowa
McClellan, Thomas R.	Agri.	Soph.	Turner
McCollum, Charles	For.	Fr.	Salinas, Calif.
McCollum, John E.	For.	Fr.	Salinas, Calif.
McCord, George	Phar.	First Yr.	Baker
McCormick, Andrew Cameron	Agri.	Sr.	Lebanon
McCormick, Anna	D. S.	Fr.	Lebanon
McCormick, Harl Craig	Opt.		Drain
McCown, Cordelia	Opt.		Corvallis
McCurdy, Ellen	D. S.	Fr.	Hood River
McDermott, Katharine	D. S.	Jr.	Portland
McDermott, Mary	D. S.	Jr.	Portland
McDonald, Allie M.	D. S.	Jr.	Corvallis
McFadden, Curran Lane	Phar.	Jr.	Corvallis
McGeorge, William	C. E.	Fr.	Stillwater, Okla.
McGinnis, James Luther	Agri.	Jr.	Corvallis
McGogy, Donald H.	E. E.	Fr.	McMinnville
McHenry, Bertha Isabelle	Opt.		Corvallis
McHenry, Muriel Esther	Com.	Fr.	Corvallis
McIntosh, Fern	Opt.		Union
McKay, James Douglas	M. A.	S. Sec.	Portland
McKee, Hazel Adelia	D. S.	Sr.	Lakeview
McKinney, Loette Virginia	Com.	Soph.	Waitsburg, Wash.
McLean, William Donald	Com.	Soph.	Kakabeka Falls, Ont.
McMaster, Cedric Stuart	Agri.	S. Sec.	Pomona, Calif.
McMillan, Donna	D. S.	Fr.	Garibaldi
McMinn, Ray Ben	M. E.	Fr.	Portland
McNamee, George Paul	M. E.	Fr.	Portland
McQuaid, Zena	D. S.	Soph.	Portland
McRayde, Donald William	Agri.	Fr.	Corvallis
McVey, Jacob A.	M. A.	S. Sec.	Harrisburg
Mackenzie, Ronald Seaforth	Agri.	Spec.	Portland
Macpherson, Wm. M.	Agri.	Jr.	Pasadena, Calif.
Magness, John Robert	Agri.	Sr.	Amity

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Mahoney, Grace	D. S.	Fr.	Gervais
Mallett, Ernest Alfred	Agri.	S. Sec.	Portland
Mangold, Alfred Oscar	E. E.	Sr.	Portland
Manners, Charles Haddon	Agri.	Jr.	Montclair, N. J.
Manning, Kenneth C.	Agri.	Soph.	Los Angeles, Calif.
Manock, Nathan Edwin	Phar.	Fr.	Corvallis
Manuel, Mildred	D. S.	Fr.	Oakland, Calif.
Manula, Wayne Erik	E. E.	Soph.	Astoria
Marcks, Raymond Arthur	Agri.	Soph.	Corvallis
Markham, Arthur Gordon	Agri.	Soph.	Portland
Martin, John Holmes	Agri.	Sr.	Corvallis
Martin, Melissa Margaret	D. S.	Jr.	Corvallis
Martin, Porter Wilson	M. E.	Fr.	Corvallis
Marvin, Julia O.	D. S.	Jr.	Enterprise
Mason, Albert Freeman	Agri.	Sr.	Pasadena, Calif.
Mason, Joy	Com.	Sr.	Hood River
Mason, Harold	E. E.	Soph.	Ione
Mason, Rose Coffman	Phar.	Sr.	Jefferson
Mateer, Marion	D. S.	Fr.	Nampa, Idaho
Mather, Arthur Gilmore	Min.	Jr.	Clackamas
Mathews, Helen	Com.	Fr.	Portland
Mattson, Marshall	Com.	Spec.	Astoria
May, Thomas Everett	Com.	Sr.	Grass Valley
Mayhew, Spencer	Agri.	Fr.	Joseph
Meek, Margaret	D. S.	Fr.	Oakland, Calif.
Mehl, Paul	Agri.	Jr.	Chicago, Ill.
Mentzer, Lottie	D. S.	Sr.	Pendleton
Mercer, Frank B.	Phar.	Sec. Yr.	North Powder
Mercer, Grover C.	Phar.	Sec. Yr.	North Powder
Mercer, Helen B.	D. S.	Fr.	Salem
Merriman, Merritt B.	Agri.	Fr.	Medford
Merritt, Ina Gertrude	Com.	Spec.	Corvallis
Metzger, Floyd Sanford	Com.	Spec.	Gresham
Metzler, Ethel May	D. S.	Sr.	Corvallis
Meyers, Cornelius W.	Min.	Fr.	Portland
Meyers, J. Donald	Com.	Jr.	Salem
Michael, Edith M.	Opt.		Urbana, Ohio
Michaelbook, Roy P.	M. E.	Soph.	McMinnville
Middlekauff, Donald G.	Agri.	Fr.	Lewiston, Idaho
Middlekauff, Harold B.	Agri.	Fr.	Lewiston, Idaho
Middlekauff, Mark Humbert	Agri.	Soph.	Corvallis
Middlestadt, John F.	Agri.	Fr.	Crabtree
Milam, Lottie	D. S.	Sr.	Macon, Mo.
Miles, Frank	Com.	S. Sec.	Evans
Miller, Alice	Com.	Spec.	Corvallis
Miller, Carl N.	For.	Sr.	Indianapolis, Ind.
Miller, Eva	D. S.	Fr.	Fillmore, Ill.
Miller, Fred Merle	M. E.	Sr.	Albany

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Miller, Harry Dale	Agri.	S. Sec.	Corvallis
Miller, Harvey	Min.	Fr.	Lexington
Miller, Helen	D. S.	Fr.	Corvallis
Miller, Julia B.	D. S.	Jr.	Amity
Miller, Leo Waldemar	E. E.	Fr.	Portland
Miller, Loraine	D. S.	Sr.	Portland
Miller, Roy Edmund	Agri.	Jr.	Spokane, Wash.
Millikin, Damon E.	Agri.	Soph.	Ontario
Millikin, Stanley John	For.	Jr.	Ontario
Mills, Edna Lola	D. S.	Jr.	Forest Grove
Mills, Harold M.	Min.	Fr.	Corvallis
Minsinger, David William	Com.	Soph.	Portland
Mitchell, Grace E.	D. S.	Jr.	Medford
Mix, Ira	Com.	Fr.	Independence
Moe, Forrest Lester	Agri.	Jr.	Hood River
Moist, Charles Morgan	Com.	Fr.	Lebanon
Monger, Walter Victor	E. E.	Soph.	Parkplace
Moore, Carroll Lester	C. E.	Fr.	Sparta, Ill.
Moore, Frank W.	Com.	Spec.	Newberg
Moore, Jesse W.	Agri.	Jr.	Harrisburg
Moore, Leland Bernard	Agri.	Fr.	Gresham
Moore, Merle	M. E.	Jr.	Corvallis
Moore, Willetta	D. S.	Fr.	Eugene
Moore, Wm. Tracy	C. E.	Sr.	Oak Grove
Moreland, Julius C.	Min.	Soph.	Portland
Morfitt, Neil Lewis	Min.	Fr.	Baker
Morgan, Beulah	D. S.	Fr.	Corvallis
Morgan, Ralph	Agri.	Fr.	Corvallis
Morgan, Victor	Agri.	Fr.	Edenbower
Morgan, Walter John	Agri.	Fr.	Portland
Morgan, Annes	D. S.	Fr. Sec.	Roseburg
Morris, Sarah	D. S.	Jr.	Rainier
Morrison, Eugene Franklin	Agri.	S. Sec.	Williams
Morse, John J.	Agri.	Sr.	San Francisco, Calif.
Morse, Wilmetta	D. S.	Fr.	West Lafayette, Ind.
Mosby, David Clayborn	C. E.	Soph.	Cottage Grove
Moses, Everett A.	Com.	Spec.	Portland
Motley, Jesse William	Ind. Arts	Jr.	Cove
Motz, Frederick Allen	Agri.	Fr.	Rock Island, Ill.
Moznette, George Franklin	Agri.	Sr.	Vancouver, Wash.
Muck, John Edgar	M. E.	Jr.	St. Johns
Mudd, Vivian	D. S.	S. Sec.	Hammond
Mulkey, Oren	E. E.	Soph.	Myrtle Creek
Mumpower, Genevieve Ruth	Opt.		Clackamas
Munford, Ruby	D. S.	Fr.	Vancouver, Wash.
Murch, George S.	E. E.	Soph.	Marshfield
Murneck, Andrew E.	Agri.	Fr.	Talsen, Russia
Murphy, Clara May	D. S.	Fr.	Portland

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Murphy, Donald Ridgway	Agri.	Fr.	Des Moines, Iowa
Murphy, Foster McKinley	Agri.	Jr.	Evanston, Ill.
Murphy, Lester L.	Phar.	Fr.	Hood River
Myers, Clarence W.	Agri.	Soph.	Moneta, Calif.
Myers, Francis Parker	M. E.	Fr.	Corvallis
Naito, Tadasu	Agri.	Soph.	Tokyo, Japan
Nash, Jack Walker,	C. E.	Soph.	Albany
Neale, Aubrey R.	Agri.	Jr.	Willow Point, B. C.
Neale, Eric W.	For.	Soph.	Willow Point, B. C.
Neer, Francis Edwards	Agri.	Sr.	Pasadena, Calif.
Needham, Ray Albert	Agri.	Sr.	Tracy, Calif.
Nehl, Helen Elizabeth	Agri.	Spec.	Woodburn
Neil, Angeline	D. S.	Fr.	Ashland
Nelson, Kenneth	Agri.	Sr.	Eugene
Nelson, Willard Y.	C. E.	Soph.	Lafayette
Nesbit, William Frazier	Agri.	Fr.	Pomona, Calif.
Newell, Joseph Webster	Agri.	Fr.	Portland
Newins, Geraldine	D. S.	Soph.	Patchogue, N. Y.
Newmeyer, Ruth	D. S.	Soph.	Salem
Nichols, Rudolph	Phar.	Fr.	Corvallis
Nichols, Tressa Elizabeth	Opt.		Corvallis
Nicholson, Ray	Agri.	Sr.	Hood River
Nicolay, Harold	Agri.	Fr.	Seattle, Wash.
Niederer, Carl Emil	M. E.	Sr.	Summerville
Nitsos, Nicholas D.	Agri.	Fr.	Patras, Greece
Nixon, Clara M.	Agri.	Sr.	Trumansburg, N. Y.
Nobel, Milton George	M. E.	Fr.	Oregon City
Nolan, Edward Victor	Com.	Fr.	Corvallis
Nordling, David N.	M. E.	Fr.	Mulino
Noren, Carl Albin	Agri.	Sr.	Reedley, Calif.
Norgren, Olga Otelia	Opt.		Vancouver, Wash.
Norris, William Thomas	Agri.	Fr.	Ft. Klamath
Norton, James Emmet	Com.	Sr.	Airlie
Norton, Lola	D. S.	Fr.	Corvallis
Norton, Mabel M.	D. S.	Fr.	Corvallis
Norton, Walter Bert	Agri.	Fr.	Corvallis
Norton, Wenny Leonard	Agri.	Fr.	Corvallis
Nott, Edwin Sylvester	Com.	Fr.	Ilwaco, Wash.
Oakes, Mary	D. S.	Soph.	Grants Pass
Oberdorfer, Harold	Com.	Soph.	Portland
Odeen, Henry	C. E.	Sr.	Portland
Olcott, Wiley Herbert	E. E.	Soph.	Canyonville
Olmsted, Aaron Lemuel	Agri.	Sr.	Enterprise
Olmsted, Irl Louis	E. E.	Jr.	Enterprise
Olsen, Jens	Agri.	Jr.	Milwaukie
Olsen, Ruby Irene	Com.	Spec.	Corvallis
O'Neil, William James	For.	Fr.	Chippewa Falls, Wis.
Ono, Robert Tokiro	Agri.	Fr.	Oakland, Calif.

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Orem, Elsie	D. S.	Fr.	Klamath Falls
Orford, Christine	D. S.	Sr.	DeLamar, Idaho
Ostien, Tom L.	For.	Fr.	Monmouth
Otis, Laurene	D. S.	Spec.	Newberg
Otis, Ralph Gray	Agri.	Soph.	Newberg
Overholser, Leroy Leighton	Com.	Soph.	Albany
Overton, James	M. A.	S. Sec.	Astoria
Padgham, Henry Irving	Agri.	Sr.	Santa Ana, Calif.
Paeschke, Ernest Edgar	Com.	F. Sec.	Junction City
Page, Charles Culver	Opt.		Crookston, Minn.
Paine, Edward Allen	E. E.	Fr.	Portland
Paine, J. Howard	Agri.	Jr.	Portland
Palmer, Emmet Nathan	Agri.	Sr.	Central Point
Parcel, Albert	Phar.	Soph.	Corvallis
Parcel, Roscoe Abraham	Opt.		Corvallis
Parelius, Ethel	D. S.	Spec.	Portland
Parker, Lorene	D. S.	Jr.	Salem
Parpala, Taimie Armas	Agri.	Fr.	Nasel, Wash.
Parr, Fern	D. S.	Fr.	Woodburn
Parrish, Fairfax Hayes	M. E.	Jr.	Roseburg
Parrish, Philip	Agri.	Fr.	Kawanee, Ill.
Parrish, Robert Arthur	Agri.	Fr.	Kawanee, Ill.
Parsley, Vineta	D. S.	S. Sec.	Riddles
Partin, Rae	D. S.	F. Sec.	Summer Lake
Passmore, Dorothy	D. S.	Fr.	Tualatin
Pathik, Sohandal	Opt.		Patti, India
Paton, Bernadetta	D. S.	Fr.	Sutherlin
Patterson, Winifred	D. S.	Jr.	Corvallis
Patton, Harry Clifford	For.	Fr.	Macleay
Paulsen, Edward M.	For.	Soph.	Portland
Payne, Nola	D. S.	Sr.	Woodburn
Payne, Richard Raymond	Agri.	Fr.	McMinnville
Peabody, Natalie	Opt.		Castlerock, Wash.
Pearcy, Harry Leland	Agri.	Soph.	Portland
Pearson, Roderic	C. E.	Soph.	Portland
Pechin, William G.	Com.	Fr.	Forest Grove
Peck, Robert	For.	S. Sec.	Redlands, Calif.
Peery, Wilson Kimsey	Agri.	Sr.	Dayton
Pelland, Gerald	E. E.	Jr.	Corvallis
Peninger, Mary A.	Com.	Soph.	Medford
Peterson, Carl Edward	E. E.	Fr.	Portland
Peterson, Fred O.	Agri.	Soph.	Bard, Calif.
Peterson, Inez M.	D. S.	F. Sec.	Mist
Peterson, Ira H.	Agri.	F. Sec.	Mist
Peterson, Nels Theodore	Agri.	Spec.	North Bend
Pettibone, Dwight Crockett	Agri.	Fr.	Bellingham, Wash.
Phetteplace, Edwin Erastus	E. E.	Fr.	The Dalles
Philippi, Leora	D. S.	Jr.	Early

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Piatt, Mildred Elizabeth	D. S.	Soph.	Berkeley, Calif.
Pierce, Loyd Byran	Agri.	Fr.	La Grande
Pietzker, Henry F.	E. E.	Fr.	Portland
Pilkington, John Clarke	Opt.		Portland
Pimm, Charles	M. E.	Fr.	Corvallis
Pinckney, Dunbar,	Agri.	Fr.	Aberdeen, Wash.
Pinn, Fred E.	E. E.	Soph.	White Salmon, Wash.
Piper, Dean	E. E.	Fr.	Myrtle Creek
Pirtle, Mary Louise	Opt.		Albany
Pitman, John Elijah	Agri.	Fr.	Moneta, Calif.
Plank, Esther	D. S.	Fr.	Woodburn
Platt, Dwight Gilbert, Jr.	M. E.	Fr.	Idaho Falls, Idaho
Plue, Vilas Leone	Com.	Fr.	Rainier
Polk, Clifford G.	C. E.	Jr.	Corvallis
Porter, Clifford	M. E.	Fr.	Hood River
Porter, Harry Baxter	M. E.	Soph.	Corvallis
Post, Clara Olga	Com.	Fr.	Blachly
Post, Elmer Oren	Agri.	Fr.	Blachly
Potter, Genevieve	D. S.	Fr.	Salem
Poulson, Charles Norris	Agri.	Fr.	Baker
Powell, Charles Kelly	Agri.	Soph.	Payette, Idaho
Powell, Frank Braxton	Agri.	Fr.	Monmouth
Powell, Walter Irving	Com.	F. Sec.	Bellingham, Wash.
Powell, Wilmer Dwight	Agri.	Fr.	Monmouth
Powell, Wm. Lester	For.	Soph.	Azusa, Calif.
Powers, Fred C.	Opt.		Oakland
Prentice, Hubert Spencer	M. A.	S. Sec.	Madison, Ohio
Pribble, Roland Carson	M. E.	Soph.	Portland
Price, Lloyd D.	M. E.	Jr.	Scappoose
Price, Raymond Eugene	Phar.	Fr.	Corvallis
Prill, Alice	D. S.	Fr.	Corvallis
Prill, Arabella	Opt.		Corvallis
Prill, George	Phar.	Fr.	Corvallis
Prindle, Roy	E. E.	Fr.	Payette, Idaho
Proebstel, John	Agri.	F. Sec.	Corvallis
Pugh, James Elza	Com.	Soph.	Corvallis
Raber, Clifford Wayne	Com.	Soph.	Corvallis
Raber, Morris Lester	Com.	F. Sec.	Corvallis
Rackleff, Sylvia Lee	Com.	Fr.	Myrtle Point
Ralston, Ella	Com.	Spec.	Corvallis
Ramsdell, George V. J.	Agri.	Fr.	Portland
Rand, Earl	Agri.	Fr.	Irrigon
Rasmussen, Gordon	Com.	Sr.	Marshfield
Ratliff, Elsie	Com.	Fr.	Scottsville, Kan.
Rawlings, Ellen	D. S.	Fr.	Albany
Rawson, Virgil Arthur	M. E.	Sr.	The Dalles
Redmond, Agnes	D. S.	F. Sec.	Portland
Reed, Maurice Albert	Agri.	Fr.	Fresno, Calif.

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Reetz, Wilbur G.	M. E.	Fr.	Junction City
Reeves, Orvill Greenleaf	M. E.	Sr.	Pendleton
Reichart, Emanuel	C. E.	Soph.	Corvallis
Reichart, Robert Roy	Com.	Fr.	Corvallis
Retzloff, Walter E.	M. A.	F. Sec.	Orland, Calif.
Reynolds, Hugh Milton	Agri.	Fr.	Pasadena, Calif.
Reynolds, Lee Edwards	Agri.	Jr.	LaGrande
Rice, Gladys	D. S.	Fr.	Corvallis
Rice, Thomas Alfred	Min.	Sr.	Portland
Richards, Dale E.	Agri.	Soph.	Kalispell, Mont.
Richards, Lorene	Com.	Fr.	Corvallis
Richards, Thomasyne	D. S.	Jr.	Salem
Richardson, Lucy Kent	Com.	S. Sec.	Forest Grove
Richey, Lester C.	For.	S. Sec.	Portland
Richman, Parnell	E. E.	Fr.	Sutherlin
Ridehalgh, Walter	Com.	Soph.	Portland
Rigdon, Harriet	D. S.	Fr.	Salem
Riley, Chester Arthur	Com.	Soph.	Enterprise
Riley, George N.	For.	F. Sec.	Menlo Park, Calif.
Riley, Lorene	Opt.		Baker
Rinearson, Meldrum	For.	S. Sec.	Portland
Rinearson, Peter Melvin	C. E.	Sr.	Milwaukie
Rinehart, Audra Anna	D. S.	Soph.	Corvallis
Rippen, Cecil V.	Agri.	S. Sec.	Portland
Roake, L. Verne	M. E.	Soph.	Oregon City
Robbins, Charles W.	E. E.	Fr.	Corvallis
Robbins, George Percy	Agri.	Fr.	Warm Springs
Robbins, Urban G.	Agri.	Fr.	Warm Springs
Roberts, Glenn H.	Agri.	Jr.	Cove
Roberts, John Irving	C. E.	Sr.	Sandy
Roberts, Melvin Parker	Agri.	S. Sec.	Arcata, Calif.
Robertson, Alonzo D.	Agri.	Jr.	Columbus, Ky.
Robertson, Benjamin Harold	C. E.	Jr.	Portland
Robey, Gladys	D. S.	Sr.	Corvallis
Robins, Charles V.	Com.	Soph.	Turner
Robinson, Charles L.	Agri.	Sr.	Forest Grove
Robinson, Ennis	Agri.	F. Sec.	Wilderville
Robinson, Lucius	Agri.	Fr.	Wilderville
Robinson, Mable	Com.	Spec.	Corvallis
Robinson, Paul	Phar.	Fr.	Medford
Robinson, Radburn	M. E.	Fr.	Wilderville
Robson, Allan Edwin	M. E.	Soph.	Corvallis
Rochester, Wm. Beatty	Agri.	Fr.	Santa Ana, Calif.
Rockhill, Ferne	Com.	First Sec.	Riddles
Rodgers, Marie	D. S.	Jr.	Portland
Roe, George Ray	Agri.	Soph.	Pomona, Calif.
Rogers, Wilbur Leslie	M. E.	Fr.	Corvallis
Rohde, George	Phar.	Fr.	Portland

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Rohr, Frank Charles	M. E.	Soph.	Astoria
Rollins, John C.	E. E.	Fr.	Corvallis
Rollins, Ralph Thurston	Com.	Fr.	Corvallis
Romig, Frank Vernon	M. E.	Soph.	McCoy
Rondeau, Ruth Luella	Opt.		Corvallis
Roseman, Charles Hammer	Agri.	Fr.	Corvallis
Roseman, Edw. D.	Agri.	Fr.	Corvallis
Rosenthal, Bertrand	M. E.	Soph.	Portland
Ross, Clifford Coleman	Com.	Spec.	Hood River
Rothenberg, Paul Wm.	Agri.	S. Sec.	Pasadena, Calif.
Rowe, Andrew Carl	M. A.	S. Sec.	Edgewood, Calif.
Ruppa, Wainard	Min.	Fr.	Portland
Rush, Benjamin F.	C. E.	Soph.	Elgin
Rush, Daisy D.	D. S.	Fr.	South Bend, Ind.
Russell, Anna B.	D. S.	Jr.	Portland
Russell, Frank	For.	Soph.	Portland
Russell, Henry Woodruff	Com.	Jr.	Beaver Hill
Rutledge, Anna	D. S.	Jr.	Corvallis
Rutledge, Ralph Merrill	Agri.	Sr.	Corvallis
Sailor, Christine	D. S.	S. Sec.	Portland
Salomon, Wilda	D. S.	Sr.	Salem
Samuelson, Carl	M. A.	F. Sec.	Colton
Sanders, George F.	Agri.	Sr.	The Dalles
Sanders, Lewis Claude	Ind. Arts	Fr.	Corvallis
Sanderson, Maysel	D. S.	Fr.	Klamath Falls
Sant, W. S.	Com.	Soph.	Akola, India
Santee, Joseph Frederick	Com.	Soph.	Corvallis
Santine, Joseph	M. E.	Spec.	Fairbanks, Alaska
Sather, John Adolph	Com.	Soph.	Bend
Sato, Juemon	Agri.	Soph.	Sado, Japan
Savage, Henry Isaac	Agri.	Sr.	Seattle, Wash.
Savage, Robert H.	M. E.	Jr.	Salem
Schaff, Nicholas	Agri.	Jr.	Medford
Schaffer, Charles William	Agri.	Fr.	Auburn, Penn.
Schiewe, L. George	M. E.	Soph.	Portland
Schiffmann, Hazel	Opt.		Bay City
Schmidt, Ella	D. S.	Spec.	Flatbush, N. Y.
Schneider, Edmund	Agri.	S. Sec.	Portland
Schneider, Nicholas	Agri.	S. Sec.	Portland
Schooley, Paul	Agri.	Fr.	Santa Ana, Calif
Schoth, Harry August	Agri.	Sr.	Oregon City
Schreiber, Fred Wm.	Agri.	Sr.	McMinnville
Schreiber, Herbert G.	M. E.	Soph.	McMinnville
Schreiber, Martin Andrew	Agri.	Soph.	McMinnville
Schrepel, Oliver Henry	Agri.	Soph.	Le Sueur, Minn.
Schrodt, Philip J.	Agri.	F. Sec.	Vancouver, B. C.
Schubert, Ben	For.	Soph.	Silverton
Schultz, Elsie	D. S.	Fr.	Gresham

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Schuster, Carl E.	Agri.	Sr.	Corvallis
Schuster, Earl	Phar.	Fr.	Corvallis
Scotfield, Amos	Agri.	Fr.	Azusa, Calif.
Scott, Albert Miles	Agri.	Fr.	Ada
Scott, Alfred Merle	M. E.	Fr.	Scotts Mills
Scott, Leo M.	Agri.	Fr.	Irricana, Alta.
Scott, Loyal Edgar	Phar.	First Yr.	Creswell
Scrivner, Ina	D. S.	Soph.	Boise, Idaho
Scudder, Joy Wm.	Agri.	Sr.	Seattle, Wash.
Sears, Briton W.	M. E.	Fr.	Portland
Seehafer, Emilie	Opt.		Corvallis
Seeley, Elmer	Agri.	Fr.	Wilsonville
Seeley, June	D. S.	Fr.	Independence
Seeley, Lynn Victor	E. E.	Fr.	Independence
Seibert, Harry	E. E.	Soph.	Pendleton
Seim, C. B.	M. A.	S. Sec.	Astoria
Selby, Halbert E.	Agri.	Fr.	Bellingham, Wash.
Sendlinger, William	Agri.	F. Sec.	Mosier
Serfling, Ira B.	M. E.	Fr.	Thomas
Sessions, Philip Roddis	Agri.	Fr.	Portland
Shaver, Leo Arthur	C. E.	Soph.	Mollala
Shaw, Edith	D. S.	Sr.	Salem
Shaw, James Niven	Agri.	Jr.	White Bluffs, Wash.
Shelley, Ellen Kathleen	Opt.		Hood River
Shepard, Ruth Juanita	D. S.	Soph.	Roosevelt, Wash.
Sherman, George Edgar	Agri.	Spec.	Pendleton
Sherwood, Rose	D. S.	Fr.	Portland
Shields, Harley R.	Phar.	Fr.	McCoy
Shields, Winnie Catharine	D. S.	Sr.	Milton
Shindler, Page	E. E.	Fr.	Portland
Shinn, Robert Ervin	Agri.	Sr.	Albany
Shirley, James Carlton	Phar.	Sr.	McMinnville
Shoemaker, Glenn	Agri.	Fr.	Hood River
Shurtliff, Frank Edmond	Opt.		Ogden, Utah
Siebert, Adolph	Com.	Fr.	Portland
Siefert, Herbert Wm.	Agri.	Sr.	Pasadena, Calif.
Sigfrit, Edwin Lee	M. A.	F. Sec.	Mitchell
Sinclair, Freeman W.	Agri.	Fr.	Pasadena, Calif.
Sinks, Victor H.	E. E.	Soph.	Portland
Skelton, Albert Gordon	C. E.	Fr.	Corvallis
Skelton, Mary Vernon	D. S.	Jr.	Corvallis
Slippern, Arild Cato	M. E.	Soph.	Ruby, Alaska
Sly, Amy Ethel	D. S.	Fr.	Corvallis
Smart, Wm. Anderson	Agri.	Sr.	Santa Ana, Calif.
Smock, John C.	For.	Fr.	Portland
Smyth, Darius H.	Phar.	Soph.	Burns
Smith, Basil B.	C. E.	Fr.	St. Johns
Smith, Clifton F.	Min.	Soph.	Salem

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Smith, Dexter Ralph	C. E.	Sr.	St. Johns
Smith, Esther R.	D. S.	Sr.	Corvallis
Smith, Howard Parvin	Agri.	Fr.	Gardena, Calif.
Smith, John M.	Agri.	Spec.	Blalock
Smith, Kathryn Matilda	D. S.	Spec.	Marshfield
Smith, Lela Belle	Opt.		Aurora
Smith, Mildred	D. S.	Jr.	Portland
Smith, Simeon C.	Phar.	Fr.	Portland
Soden, Mildred	D. S.	Jr.	Portland
Sodhi, Cham Singh	Com.	Fr.	Punjab, India
Solovioff, Alexander	Agri.	Spec.	Saratav, Russia
Somers, Eugenia	Agri.	Fr.	Corvallis
Soo, Taki Herbert	Agri.	Soph.	Hong Kong, China
Sosey, Paul E.	Phar.	First Yr.	Hood River
Soth, Rodney	Agri.	Fr.	Pendleton
South, Esther Margaret	Opt.		Juntura
South, Lawrance Gardiner	Com.	F. Sec.	Juntura
Southwick, Ralph Harrison	Com.	Fr.	Wallowa
Southwick, Ralph W.	Phar.	Fr.	Salem
Spalding, Donald P.	For.	Fr.	Lowell, Mass.
Spalding, Herbert Alvin	Agri.	Fr.	Portland
Spaulding, H. Clifford	For.	Soph.	Salem.
Spencer, Evelyn	D. S.	Sr.	Portland
Spencer, Robinson	Agri.	Spec.	Cincinnati, Ohio
Spindler, Walter Arthur	Agri.	Fr.	Portland
Sprague, Harry John	Com.	Fr.	Corvallis
Sprague, Hazel	D. S.	Fr.	Corvallis
Stambach, G. Mahlon	Agri.	Jr.	Pasadena, Calif.
Starker, Carl Allison	Agri.	Sr.	Portland
Stauff, Oscar Brent	Agri.	Sr.	Cooston
Stauff, Victor Hugo	Agri.	Sr.	Cooston
Steele, James Ernest	Agri.	Fr.	Parkdale
Steiner, John Godfrey	M. E.	Soph.	Portland
Steinmetz, Avery Harold	Agri.	Jr.	Portland
Stenson, Ernestine Frances	Com.	S. Sec.	Corvallis
Steusloff, L. May	D. S.	Jr.	Salem
Stevens, Horace J.	Agri.	Soph.	Fustin, Calif.
Stevens, Virgil E.	For.	Fr.	Scappoose
Stewart, Roy Cleveland	E. E.	Fr.	Albany
Stewart, William Halbert	For.	Jr.	Fossil
Stidd, Charles Leland	For.	Fr.	Corvallis
Stidd, Erma Phoebe	Opt.		Corvallis
Stirling, Janet	D. S.	Jr.	Burns
Stokes, Iva	D. S.	Jr.	Eugene
Stoppenbach, Donald Chapman	E. E.	Soph.	Portland
Storm, Earl Vasberg	For.	Fr.	Milton
Story, Carl Leverne	Com.	Soph.	Airlie
Storz, Charles W.	Phar.	Fr.	Portland

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Stout, Ena May	D. S.	Spec.	Corvallis
Stover, Allan James	Agri.	Fr.	Oregon City
Strain, Clayton	Agri.	Jr.	Pendleton
Straughan, James A.	M. E.	Jr.	Pendleton
Streiff, Albrecht	E. E.	Fr.	Hillsdale
Strome, Carey L.	Agri.	Spec.	Corvallis
Strong, Georgia	D. S.	Fr.	Portland
Struble, Frank Howard	Opt.		Corvallis
Struve, Hans	Agri.	Sr.	Pendleton
Stryker, Gordon David	Com.	F. Sec.	Portland
Stubblefield, Nellie	D. S.	Jr.	Enterprise
Stull, B. L.	E. E.	Soph.	Medford
Stuwe, Herman Carl	M. A.	F. Sec.	Aurora
Suffron, Fay Oakley,	C. E.	Jr.	Dent, Minn.
Sult, Michael C.	For.	Fr.	Summer Lake
Summers, Mylius	D. S.	Sr.	Fresno, Calif.
Sunderlin, Rose Minnie	D. S.	F. Sec.	Sheridan
Supple, Joe	Agri.	Fr.	Portland
Sutherland, Frank G.	Agri.	Soph.	Honolulu, Hawaii
Sutherland, May	D. S.	Soph.	Honolulu, Hawaii
Sutton, George W.	Agri.	Fr.	Port Orford
Sutton, Harry Allen	Min.	Soph.	Aumsville
Swafford, Georgia	D. S.	Sr.	San Luis Obispo, Calif.
Sweeney, Anna Grace	D. S.	Jr.	Grants Pass
Tadlock, Hubert	E. E.	Jr.	Corvallis
Tagg, Elvia	D. S.	Jr.	Warrenton
Tagg, Lystra Alice	Opt.		Warrenton
Tagg, Verna	Com.	Jr.	Warrenton
Tamerlane, Rex	M. E.	Soph.	Portland
Tartar, Lena Belle	Opt.		Corvallis
Tartar, Nicholas Linn.	Phar.	Jr.	Corvallis
Taylor, Armond	For.	Soph.	Medford
Taylor, Everett A.	M. E.	Fr.	Corvallis
Taylor, Geo W.	Agri.	Soph.	Corvallis
Taylor, Harold Roy	Agri.	Fr.	Baker
Taylor, Jesse LaVerne	C. E.	Jr.	Oregon City
Telford, Wilbur Linden	M. E.	Soph.	Klamath Falls
Thayer, Gilbert	M. E.	Sr.	Portland
Theobald, Wanda M.	D. S.	Soph.	Silverton
Thomas, Elmer G.	For.	Spec.	Portland
Thomas, George Randolph	E. E.	Jr.	Portland
Thomas, Ralph Wm.	C. E.	Soph.	Corvallis
Thomas Robert	Agri.	Fr.	Anlauf
Thompson, Agnes	D. S.	Soph.	Albany
Thompson, Earl Harstad	Agri.	Soph.	Pasadena, Calif.
Thompson, Emma	Com.	S. Sec.	Roseburg
Thompson, Letitia	D. S.	Fr.	Union
Thordarson, Lillian	D. S.	Sr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Thrift, Theresa Belle	D. S.	Jr.	Coquille
Throne, Robert	M. E.	Fr.	Ashland
Tidball, Lynn Hudson	M. E.	Fr.	Corvallis
Tillery, Merle L.	Com.	Fr.	Corvallis
Tilley, Walker B.	For.	Fr.	Arcata, Calif.
Tinker, George, Jr.	Com.	Fr.	Corvallis
Tinker, Harold Wm.	Agri.	Jr.	Corvallis
Tomlinson, Arthur R.	C. E.	Soph.	Albany
Towne, Elbert Louis	Agri.	S. Sec.	Carrollton, Wash.
Tracy, Merle	D. S.	Fr.	Salem
Tremp, Jess Clarence	E. E.	Fr.	Portland
True, Elsie G.	Opt.		Sherwood
Trusler, Ivan	Opt.		Emporia, Kan.
Tschirgi, Lillian Anna	Com.	Fr.	Oregon City
Tucker, Elmer	Phar.	Jr.	Weston
Tucker, John Edward	Agri.	Soph.	Portland
Tulley, Stewart W.	Agri.	Fr.	Wallowa
Turlay, Marian	D. S.	Fr.	Astoria
Turnbull, James Lockhart	Min.	Fr.	Mooreville
Turner, Arthur Edward	E. E.	Soph.	Corvallis
Turner, Jesse Oland	Agri.	Fr.	Heppner
Turner, Winnifred	D. S.	Soph.	Corvallis
Turnidge, Clement	E. E.	Fr.	Crabtree
Tuttle, Everett	E. E.	Fr.	Boulder, Mont.
Tuttle, Lulu Oleta	D. S.	Soph.	Boulder, Mont.
Tweed, Robert L.	Agri.	Fr.	Ashland
Ueland, Cora Lorraine	Opt.		Roseburg
Underwood, Edw. F.	Agri.	Soph.	Boyd
Underwood, Zetta	Com.	Jr.	Lebanon
Ura, Sensuke	Agri.	Spec.	Alameda, Calif.
Uyei, Nao	Agri.	Soph.	Ohyodo, Japan
Vanderpool, John	Agri.	F. Sec.	Dufur
Vanderwall, Roy E.	Agri.	Soph.	Haines
VanOrsdol, Roscoe Lytton	Opt.		McMinnville
VanWaters, Sherwood P.	Agri.	Fr.	Rensselaer Falls, N. Y.
Vedder, Harold Troxell	M. A.	F. Sec.	Murphy
Venner, Levana	Opt.		Brownsville
Venstrand, Carl P.	Min.	Sr.	Portland
Vestal, Edgar	Agri.	Soph.	Payette, Idaho
Vilas, George Warren	Com.	Fr.	Medford
Vilas, Ned Platt	Agri.	Soph.	Medford
Vincent, Geo. Sylvester	C. E.	Soph.	Sherwood
Vincent, Oliver	Agri.	Fr.	Corvallis
Vineyard, Sarah	D. S.	Sr.	Boise, Idaho
Visel, Nelson S.	Agri.	Fr.	Santa Ana, Calif.
Von Borstel, Frank	Agri.	F. Sec.	Kent
Von Lehe, Herbert H.	Agri.	S. Sec.	Corvallis
Waddle, Robert L.	Agri.	Jr.	Aurora, Nebr.

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Wade, Tracy William	E. E.	Jr.	La Grande
Wahlberg, Elizabeth	D. S.	Spec.	San Francisco, Calif.
Wahlberg, Leif E.	Agri.	Sr.	San Francisco, Calif.
Wakeman, Louis Kenneth	Agri.	Fr.	Portland
Wakeman, William James	Agri.	Fr.	Portland
Walker, Byron Bentley	Agri.	Sr.	Halifax, Nova Scotia
Walker, Eva Estelle	D. S.	Fr.	Mapleton
Walling, Ethel Lucile	Com.	Sp.	Salem
Walls, Olive Kimberlin	Opt.		Corvallis
Walters, Harry Sidney	Agri.	Sr.	Corvallis
Walton, Estey	Agri.	Sr.	Sanger, Calif.
Walton, Fremont Winston	Agri.	Fr.	Salem
Warner, Douglas Holmes	Agri.	Jr.	Portland
Wascher, Frank E.	Agri.	Fr.	Portland
Washburne, James W.	Agri.	S. Sec.	Junction City
Waterfall, Charles Hardy	Com.	Spec.	Vancouver, B. C.
Waterman, Fay E.	Phar.	Fr.	John Day
Watson, Clifton H.	M. E.	Soph.	Portland
Watson, Hal Lincoln	M. A.	S. Sec.	Bellfountain
Watters, William Harp	Min.	Fr.	St. Helens
Waugh, Elma Elizabeth	Opt.		Toledo
Weaver, Clifford	Phar.	Fr.	Springfield
Weaver, Harold	Ind. Arts	Jr.	Enterprise
Webb, Robert Guy	Com.	Jr.	Spirit Lake, Idaho
Weber, Victor Eugene	E. E.	Sr.	Brownsville
Wedel, Mary E.	Opt.		Aberdeen, Idaho
Weller, Stanley M.	Agri.	Fr.	Corvallis
Weller, Theodore Warford	Agri.	Jr.	Corvallis
Wendover, Royce F.	For.	Soph.	Stockton, Kan.
Weniger, Wanda	D. S.	Jr.	Corvallis
Werner, Richard John	Agri.	Fr.	Los Angeles, Calif.
Werth, Conrad	E. E.	Fr.	Newberg
West, Ralph L.	Agri.	Soph.	Westport
Westerfield, Lillian	D. S.	F. Sec.	Oregon City
Wetteland, Rolf Theodore	M. E.	Soph.	Camas, Wash.
Whealdon, Alfred N.	Com.	Soph.	The Dalles
Wheeler, Alvin Wilbur	Agri.	Fr.	Ashland
Wheeler, Lincoln Ward	Agri.	Spec.	Portland
Whitby, Harold R.	Agri.	Jr.	Corvallis
Whitby, J. Harris	Com.	Soph.	Corvallis
White, Cleo Oneeta	D. S.	Soph.	McMinnville
White, Mary Jane	D. S.	Soph.	Corvallis
White, William C.	For.	Fr.	Albany
Whitehill, Ellen	D. S.	Fr.	Portland
Whitehouse, Walter Robert	Agri.	Fr.	Somerville, Mass.
Whitehouse, William Edwin	Agri.	Jr.	Somerville, Mass.
Whiteley, Flora	D. S.	Sr.	Corvallis
Whiteley, Jack Martin	C. E.	Fr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Wicks, Forrest Thrift	M. E.	Fr.	Albany
Wiest, Margaret C.	D. S.	Jr.	Bend
Wiglesworth, Myra	Com.	Fr.	Union
Wiken, Hazel	D. S.	S. Sec.	McGowan, Wash.
Wilcox, Chester Manning	Agri.	Sr.	Portland
Wilcox, Donald Fred.....	Agri.	Spec.	LaManda Park, Calif.
Wilcox, George Burrell	Agri.	Spec.	Almont, Mont.
Wilcox, Lyle P.	Agri.	Fr.	Milton
Wilcox, Ralph M.	Com.	Soph.	Portland
Wilkes, Clair	Agri.	Fr.	Hillsboro
Wilkes, Rhea	D. S.	Fr.	Hillsboro
Wilkes, Ward	E. E.	Fr.	Hillsboro
Wilkins, Grace	Opt.		Coburg
Wilkins, Lester	Com.	F. Sec.	Clem
Wilkins, Mitchell	Agri.	Jr.	Coburg
Willett, Errol William	Min.	Fr.	Portland
Williams, John Floyd	Agri.	Jr.	Cove
Williams, John R.	Com.	Sr.	Portland
Williams, Miriam B.	D. S.	Spec.	Fort Landerdale, Fla.
Williams, William	E. E.	Soph.	Portland
Williamson, Charles Jacob	Com.	Jr.	Corvallis
Williamson, Mary	Opt.		Corvallis
Williamson, Pearl Frances.....	D. S.	Soph.	Albany
Wilson, Bessie Alice	Opt.		North Powder
Wilson, David McKinnon	For.	Soph.	Linnton
Wilson, Isaac James	Agri.	Soph.	Lewiston, Calif.
Wilson, James Albert	Agri.	Jr.	North Powder
Wilson, John	Agri.	Fr.	Corvallis
Wilson, Lois	D. S.	Sr.	Salem
Wilson, Mildred	D. S.	Sr.	Salem
Wilson, Nora	Com.	Soph.	Oregon City
Wilson, Olive	D. S.	Fr.	Yoncalla
Wilt, Clarence Oliver	M. A.	F. Sec.	Sisters
Wingert, Arthur Jacob	Agri.	F. Sec.	Harstine Is., Wash.
Wiren, Loyal	M. A.	S. Sec.	Bandon
Wisdom, Everett Stanton	Agri.	Sr.	Portland
Wise, Clarence	Com.	S. Sec.	Pittsburg, Kan.
Wise, Curtis L.	Com.	F. Sec.	Portland
Wittstruck, Frank Agustave.....	Com.	S. Sec.	Mitchell, S. Dak.
Witzig, Ivy Emma	D. S.	Fr.	Corvallis
Wolff, Garland	Min.	Soph.	Mollala
Wong, Frank	Min.	F. Sec.	Portland
Wood, Florence Edith	Opt.		Corvallis
Wood, John Rollo	M. A.	S. Sec.	Arlington
Wood, Robert J.	Agri.	Jr.	Cottage Grove
Woodburn, Howard	For.	Fr.	Portland
Woodcock, Carl Wesley	M. E.	Fr.	Kerby
Woodcock, Edwin	Com.	Sr.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Rank</i>	<i>Home Address</i>
Woodruff, Herbert M.	E. E.	Soph.	Smith River, Calif.
Woodruff, Milton B.	Agri.	S. Sec.	Smith River, Calif.
Woods, Lee Roy, Jr.	For.	Soph.	Cottage Grove
Woodworth, D.	Agri.	Soph.	Portland
Woodworth, Gladys	D. S.	Spec.	Portland
Woodworth, Grace	D. S.	Spec.	Portland
Wootan, Wm. Barker	M. E.	Fr.	Astoria
Wortman, Everett	Com.	Fr.	Portland
Wright, Byron C.	Agri.	Jr.	Portland
Wright, Lena	D. S.	Fr.	Gresham
Wright, Mark	For.	Fr.	Forest Grove
Wright, Minnie	D. S.	Fr.	La Grande
Wright, Ralph Van Fossen....	Agri.	Jr.	Croton, Ohio
Yamamoto, Francis	E. E.	Fr.	Seattle, Wash.
Yates, Ethel	D. S.	Fr.	Salem
Yates, Lloyd D.	For.	Fr.	Milton
Yates, Richard B.	Agri.	Fr.	Dee
Yeager, Francis DeWitt	Agri.	Fr.	Centralia, Wash.
Yeatman, Sara	D. S.	Fr.	Oakland, Cal.
Young, Earl	M. E.	Jr.	Portland
Young, Faith	D. S.	Jr.	Boring
Young, Fred Byron*	M. E.	Sr.	Portland
Young, Marian D.	D. S.	Sr.	Woodburn
Zimmerman, Edward	Min.	Jr.	Yamhill
Zimmerman, Wm. Earl	M. E.	Fr.	Portland
Zimmerman, Wilson Stuart	Opt.		Portland
Zwicker, Arthur E.	Agri.	Jr.	Portland

*Deceased.

SUMMER SCHOOL STUDENTS

(Abbreviations indicate major courses as follows: Coll., College, including agriculture, domestic science and art, manual training, etc.; Meth., methods in teaching industrial and other subjects in public schools; Prep., preparation for teachers examinations; Super., methods in supervision and high school branches. Most students were registered in two or more of these courses.)

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Abbott, Helen Z.	Meth.	Bandon
Adams, Belva Lee	Coll.	Corvallis
Alexander, George	Coll.	Oakland, Calif.
Allen, Bertha	Coll.	Grants Pass
Allison, Mrs. Nannie	Meth.	Walla Walla, Wn.
Anderson, Verlie	Coll.	Corvallis
Applewhite, Mrs. Alice Hill	Coll.	Corvallis
Atherton, Leona Crawford	Coll.	Heppner
Atherton, Rae Margaret	Meth.	Heppner
Bahr, Mrs. Alice Jenkins	Meth.	Grande Ronde
Bahr, J. A.	Meth.	Grande Ronde
Bailey, Mrs. Hattie L.	Meth.	Parkdale
Baird, Alice	Coll.	Portland
Baird, Mary	Coll.	Portland
Ballhorn, Otto	Coll.	Woodland, Wn.
Banks, Emmeline Frances	Prep.	Portland
Banks, Marguerite Jessie	Prep.	Portland
Barrett, Alice Hilda	Meth.	Eugene
Bates, Margaret F.	Prep.	Redmond
Blaylock, Thos. R.	Meth.	Newberg
Boies, John	Coll.	Harlan
Boies, Thurza	Coll.	Harlan
Bones, D. Chesley	Super.	Taft
Bonner, Sadie	Meth.	Corvallis
Botts, Dysart	Prep.	Lancaster, Mo.
Botts, Minerva	Meth.	Lebanon
Bowers, Ether I.	Prep.	Wendling
Brewer, Grace M.	Meth.	Oregon City
Butler, Alice	Coll.	Mapleton, Iowa
Calvin, Mrs. D. M.	Meth.	Touchet, Wn.
Carlson, Evelyn	Coll.	Corvallis
Carlson, Ruth	Coll.	Corvallis
Carlson, Vida	Coll.	Corvallis
Carr, Mrs. Mattie	Meth.	Yoncalla
Cask, Regina	Coll.	Portland
Cate, Mary Enid	Meth.	Newberg
Cheney, Maribel Whitman	Coll.	Corvallis
Christenson, Josephine	Meth.	Baker
Compton, Ada Leona	Coll.	Crabtree

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Coon, Abbie	Coll.	Corvallis
Copeland, Mildred	Coll.	Astoria
Corbett, Ruth Lillyn	Meth.	Corvallis
Cowgill, Helen Julia	Meth.	Corvallis
Cunning, Jennie M.	Meth.	Baker
Davis, Mrs. Margaret	Coll.	Newport
Dickey, Chester Allan	Coll.	Molalla
Doolittle, Lydia	Coll.	Corvallis
Doty, Mable	Prep.	Redmond
Duncan, Ruth Pauline	Coll.	Scappoose
Edwards, Bertie Belle	Meth.	La Grande
Enright, Levi Herr	Meth.	Eugene
Enright, Mrs. L. H.	Meth.	Eugene
Estes, Marie	Coll.	San Francisco, Calif.
Feathers, Mable	Prep.	Corvallis
Filler, Elizabeth	Meth.	Vancouver, Wn.
Ford, William Allen	Prep.	Pendleton
Freeman, Agnes Ruth	Meth.	Harrisburg
Gardner, Mable	Meth.	Corvallis
Garvin, Coral Lillian	Coll.	Corvallis
Garvin, Pearle Ethelyn	Coll.	Corvallis
Gastrock, Louise Anna	Coll.	Aurora
Gellatly, Nellie Lyle	Coll.	Corvallis
Gilbert, Mahlon Bruce	Coll.	Woodburn
Godbersen, Anna C.	Meth.	Mosier
Goodall, Fannie Amelia	Prep.	Corvallis
Gray, June	Meth.	Eugene
Hardman, Eleanor	Coll.	Corvallis
Hardman, Sylvia	Coll.	Portland
Harmon, Mrs. Grace G.	Coll.	Corvallis
Hash, Zella Mae	Prep.	Ashland
Hawley, Erma	Meth.	Baker
Hemmings, Flora M.	Super.	Portland
Hill, Mable	Meth.	Junction City
Hirst, Bernard	Coll.	Sitka, Alaska
Hobbs, Grace E.	Meth.	Eugene
Holmes, Marguerite	Coll.	Central Point
Holt, Hazel	Coll.	Corvallis
Huff, Charlotte B.	Meth.	Enterprise
Hughes, Winfield Scott	Super.	Los Angeles, Calif.
Irwin, Zoa	Coll.	Burns
Jackson, Leona	Meth.	Monmouth
Jordan, Mrs. Lena	Coll.	Corvallis
Jordan, Melvin Harold	Coll.	Corvallis
Johnston, Agnes	Meth.	Oregon City
Keefover, Mrs. Daisy	Prep.	Corvallis
Keelan, Frank B.	Meth.	Deer Island
Keller, Mrs. Myrtle A.	Coll.	Redmond, Wn.

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Keller, Ralph Walter	Coll.	Redmond, Wn.
Kerr, Lynette	Coll.	Corvallis
King, Bertha Anna	Prep.	Corvallis
Lane, Dorothy	Coll.	Corvallis
Laman, Maude	Prep.	La Fayette
Landers, Mrs. J. S.	Coll.	Pendleton
Lapham, Ethel	Meth.	Corvallis
Lovett, Bert P.	Super.	Waldport
Lyster, Kathleen	Coll.	Gardiner
Lytle, Grace	Coll.	Bonanza
Mason, Joy	Coll.	Hood River
McConnell, A. P.	Meth.	Vancouver, Wn.
McKee, Adelia Hazel	Coll.	Corvallis
McMillan, M. Estella	Coll.	Lorane
McReynolds, Esta	Meth.	Eugene
Melendy, Mrs. I. A.	Coll.	Portland
Miller, Helen	Coll.	Corvallis
Mitchell, Ethel	Meth.	Wallowa
Monroe, Helen S.	Meth.	Long Beach, Calif.
Morris, Nellie	Coll.	Salem
Mosken, Tilda	Coll.	Houston, Minn.
Murphey, Foster	Coll.	Evanston, Ill.
Nedry, Earl B.	Super.	Neskowin
Paine, J. Howard	Coll.	Portland
Patterson, Neva	Prep.	Portland
Payne, Nola	Coll.	Woodburn
Peavy, Bradley	Coll.	Corvallis
Philpott, June	Coll.	Corvallis
Pimm, Alice	Meth.	Philomath
Pimm, Carrie M.	Meth.	Eugene
Reed, Gellesie Bobbie	Prep.	Corvallis
Richardson, Mrs. Lucinda	Meth.	Springfield
Richardson, Lucy Kent	Coll.	Forest Grove
Ridenour, Elinor	Coll.	Corvallis
Roberts, Gladys	Prep.	Marshfield
Rogers, Mary	Coll.	Corvallis
Rosenthal, Elizabeth	Meth.	Seattle, Wn.
Russ, Edna Mae	Meth.	Corvallis
Ryan, J. C.	Super.	Forest Grove
Savage, Grace Sylvia	Coll.	Grants Pass
Sevy, Isaac Berton	Super.	Milton
Sexton, Ellen E.	Meth.	Pendleton
Sexton, Margaret T.	Coll.	Portland
Sloan, William Finley	Super.	Camp Crook, S. D.
Smith, Esther	Coll.	Corvallis
Smith, Simeon	Coll.	Portland
Stratton, Arletta	Meth.	Yoncalla
Stone, Mrs. Andie	Prep.	Beaver

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Stutz, Lelia Bertha	Coll.	Corvallis
Sunderland, Mary	Meth.	Portland
Tadlock, Kate	Meth.	Corvallis
Thompson, Alice	Meth.	Ashland
Thordarson, Franklin	Super.	Lebanon
Tillery, Genevieve	Meth.	Corvallis
Turlay, Maude J.	Coll.	Corvallis
Turnidge, Cora Lenore	Coll.	Sheridan
Ueland, Emma	Meth.	Roseburg
Vancouvering, Martin	Coll.	Brawley, Calif.
Veit, Louise M.	Coll.	Corvallis
Veit, Mathilda	Coll.	Corvallis
Wallan, Clara Elsie	Meth.	Hermiston
Weaver, Effie	Coll.	Myrtle Creek
Weniger, Wanda	Coll.	Corvallis
White, Albert	Prep.	Milton
Williams, Miriam Blanche	Coll.	North Bend
Wilson, Nora Mary	Coll.	Oregon City
Woodcock, Milton Edwin	Coll.	Corvallis

BOYS' AGRICULTURAL COURSE, 1913

Abegg, Fred	Portland
Ball, Dewey	Eugene
Buxton, Oliver	Forest Grove
Coleman, Maynard Andrew	Corvallis
Connett, Darwin	Lebanon
Cowan, John	Portland
Davis, Don D.	Newport
Donnell, Merrill	The Dalles
Edwards, Floyd M.	Monroe
George, Walter Bruce	Portland
Hart, Paul Merrill	Glendale
Hemphill, John Cannon	Corvallis
Hillibrand, Gail	Suver
Holmes, Eugene	Shedds
Hostellar, Wilbur	The Dalles
Johnson, Frank	Corvallis
Jones, Gordon	Gervais
Kern, Frederic	Portland
Kuck, Ernest A.	The Dalles
Lambirth, James	Eugene
Montgomery, Harold	Crabtree
Morris, Alfred Huff	Portland
Osborn, Grant	Roseburg
Redford, Edwin	Dorena
Reed, Russell	Estacada
Rhea, Hugh	Echo
Riddle, Mathew	Grants Pass
Robbins, John	Canby
Scroggin, Ralph	Lebanon
Smith, Lynde C.	Wasco
Swartz, Guy	Amity
Turtledove, Harry	Portland
Vial, Robert	Portland
Willoughby, Ralph	Harrisburg
Woodward, Percy	Roseburg

SPECIAL MUSIC STUDENTS

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Barfoot, Florence Marion	Voice	Corvallis
Bednyk, John P.	Violin	Corvallis
Bednyk, Mary Elizabeth	Piano	Corvallis
Bent, Anna Elizabeth	Piano	Corvallis
Blackledge, Janet Ann	Voice	Corvallis
Blackstone, Mrs. Paul	Piano	Albany
Blair, Bernard Claude	Voice	Seattle, Wn.
Broders, Chester Ogburn	Piano	Corvallis
Broders, Roy Raymond	Piano	Corvallis
Buxton, Vera Pearl	Piano	Corvallis
Churchman, Tressa	Piano	Corvallis
Darst, Susie	Piano	Corvallis
Davis, Leonard Smith	Clarinet	Corvallis
Davis, Norma	Piano	Corvallis
Edwards, Mrs. J. H.	Voice	Corvallis
Fischer Aleece Wilma	Piano	Corvallis
Glaser, Frederick Liveright	Cornet	Lebanon
Gray, Joseph Glen	Violin	Corvallis
Grimm, Hazel Florence	Voice	Tacoma, Wn.
Haight, Rachel Webb	Voice	Corvallis
Hamlin, Louis Willard	Violin	Corvallis
Hamlin, Lucile Anna	Voice, Piano	Corvallis
Hardman, Eleanor Christine	Piano	Corvallis
Harper, George	Clarinet	Corvallis
Hartsock, Mrs. Samuel	Piano	Corvallis
Herse, Rosa Marie	Voice	Corvallis
Hooper, Hazel Margaret	Harmony	Elgin
Hout, Frank	Piano	Corvallis
Howard, Robert Madison	Trapps	Corvallis
Johnson, Warren	Cornet	Corvallis
Jones, Frieda Buryl	Piano	Corvallis
Kerr, Marion	Violin	Corvallis
Kuhlman, Mrs. D.	Voice	Corvallis
McGinnis, Alice	Voice	Corvallis
McGinnis, Iva Belle	Voice	Corvallis
Mixer, Vera May	Piano	Albany
Moore, Dorothy	Piano	Corvallis
Morgan, Irene	Voice	Corvallis
Myers, Maurice	Violin	Corvallis
Osborne, James Bezelah	Voice	Corvallis
Payne, Rita Regina	Piano	McMinnville
Pelland, Helen	Voice	Corvallis
Pierce, Fred Owen	Piano	Corvallis
Porter, Mildred	Piano	Corvallis
Pugh, Rhoda Sarah	Piano	Corvallis

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<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Rogers, Elma Ola	Piano	Corvallis
Sandon, Helen Beatrice	Piano	Corvallis
Schrepel, Oliver Henry	Cornet	Philomath
Severt, Theron Charleston	Voice, Piano	Yamhill
Sheak, Edith	Voice	Philomath
Skipton, Lawrence	Violin	Corvallis
Story, Frank	Cornet	Airlie
Thompson, Doris Weller	Piano	Corvallis
Turlay, Mabel	Piano	Corvallis
Turlay, Maude Josephine	Voice	Corvallis
Watson, Margaret Bourne	Piano	Corvallis
Welch, Litta	Piano	Corvallis
Williams, Arda Mae	Piano	Corvallis
Wilson, John	Voice	Corvallis

WINTER SHORT COURSE STUDENTS

(The following abbreviations are used to indicate the course in which the student registered: Agri., General Agriculture; Agron., Agronomy; A. H., Animal Husbandry; Bus. Meth., Business Methods; D. H., Dairy Husbandry; D. S., Domestic Science and Art; Hort., Horticulture; Mech. Arts, Mechanic Arts; P. H., Poultry Husbandry.)

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Abbe, John	Agri.	Corvallis
Adams, A. Stanley	Hort.	Albany
Alexander, J. E. H.	Hort.	Sheridan
Anderson, Rachel Sarah	D. S.	Drewsey
Archibald, A. D.	Agri.	Corvallis
Armstrong, Charles H.	Hort.	Keremos, B. C.
Armstrong, Edward Cargill	Hort.	Keremos, B. C.
Arnold, Hosmer K.	Hort.	Portland
Atwater, Philip D.	A. H.	Hood River
Atwood, J. R.	P. H.	Chicago, Ill.
Bailey, C.	Agri.	Corvallis
Baker, Chas. L.	Agri.	Corvallis
Baker, Mrs. J. B.	D. S.	Corvallis
Bane, S. B.	Agri.	Corvallis
Banner, Mrs. T. R.	D. S.	Corvallis
Boyer, Mrs.	D. S.	Corvallis
Beardsley, Bessie M.	D. S.	Corvallis
Burnett, M. P.	Agri.	Corvallis
Barns, R. C.	Agri.	Ashland
Barr, Mrs. W. A.	D. S.	Corvallis
Batchelor, F. M.	Hort.	Yoncalla
Beedle, John Raymond	Hort.	Salem
Belle, Gene	Music	Salem
Berman, D. D.	Agri.	Corvallis
Bevens, F. D.	Agri.	Corvallis
Black, A. L.	Agri.	Mt. Vernon
Blackler, Perry	P. H.	Oroville, Wash.
Blevins, Alfred	Hort.	Tangent
Bliss, J. A.	D. H.	Corvallis
Bolhin, Harry	Agri.	De Forest, Wis.
Borovicka, Joe	D. H.	Crabtree
Boyce, Henry Francis	Agron.	San Francisco, Calif.
Boys, Mrs. H. F.	D. S.	San Francisco, Calif.
Bradburn, Geo. A.	Hort.	Roseburg
Bradford, Miles T.	Agri.	Salem
Branthoover, F. F.	Com.	Payette, Idaho
Briedwell, Adeline	D. S.	Amity
Briedwell, C. E.	A. H.	Amity
Brower, Mrs. B. G.	D. S.	Corvallis
Brown, Clara	D. S.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Brown, R. W.	Agri.	Shedds
Brown, Thomas	Com.	Yankton
Brunquist, Miss Lee	D. S.	Hood River
Bryant, Ed. H.	Mech. Arts	Toledo
Bryant, Frank W.	Agron.	Albany
Bryant, Henry H.	Agron.	Albany
Brydon, James M.	Hort.	Victoria, B. C.
Buchanan, Mrs. J. E.	D. S.	Corvallis
Buchanan, J. F.	Agri.	Corvallis
Buff, F. W.	Hort.	Hood River
Bundy, Lyman A.	Agri.	Corvallis
Burnham, Wm. Ross	D. H.	Hood River
Butler, Tessie	D. S.	Portland
Calderwood, Mrs. Laura	D. S.	Astoria
Card, C. S.	Hort.	White Salmon, Wn.
Carrington, Willis E.	P. H.	Portland
Carter, Mrs. R. Bell	D. S.	Corvallis
Chapman, Mrs. Florence J.	P. H.	Corvallis
Charley, F. S.	Com.	Brownsboro
Christen, Theodore	Com.	Hubbard
Clark, Donald S.	Hort.	Medford
Clarke, Herbert F.	A. H.	Portland
Clarke, H. H.	Hort.	Portland
Coburn, Arthur D.	Hort.	Seattle, Wash.
Coffey, Jay R.	Hort.	Portland
Coleman, Mrs. J. B.	D. S.	Corvallis
Colvin, H. P.	Agron.	Haines
Cone, F. M.	A. H.	Gaston
Cook, Thomas L.	Hort.	Palisades, Wash.
Cooley, Edwin R.	A. H.	Hood River
Cooley, Mrs. E. R.	P. H.	Hood River
Coon, W. W.	Agri.	Corvallis
Cooper, T.	Agri.	Corvallis
Cramer, S. R.	Agri.	Corvallis
Creese, Harold H.	Hort.	Vancouver, B. C.
Daly, R. C.	Agri.	Corvallis
Davis, Mrs. W. G.	D. S.	Corvallis
Denison, John	Agri.	Troutdale
Devein, Frank P.	Com.	Forest Grove
Doerfler, Alexander	Agri.	Silverton
Doerfler, Frank	Com.	Silverton
Donaldson, J. W.	Agri.	Salem
Dorr, George	Hort.	Albany
Dorsey, Edw. B.	Hort.	White Salmon, Wn.
Edelman, Archie N.	Hort.	Camas, Wash.
Edgell, Corbin	Hort.	Eagle Point
Edmonds, James	Hort.	Keremeos, B. C.

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Edwards, Marion A.	Hort.	Camas, Wash.
Elam, W. R.	Agri.	Corvallis
Engeman, J. H.	Agri.	Silverton
Euwer, Eugene C.	Hort.	Parkdale
Fargo, Mrs. George K.	D. S.	Portland
Fargo, George K.	Hort.	Portland
Fay, Charles D.	Com.	Aurora
Ferguson, D. W.	Hort.	Salem
Fox, Roy M.	D. H.	Silverton
French, Mrs. H. T.	D. S.	Corvallis
Fryer, Roy	Hort.	Yamhill
Gabriel, O. E.	Agri.	Corvallis
Gates, Daniel S.	Agri.	Corvallis
Gates, Robt. D.	Agri.	Corvallis
Gellatly, Robert Holmes	Agri.	Philomath
Gentlem, James	Agri.	Independence
Gibson, Joseph B.	Agri.	Ashland
Gibson, Mrs. Vane G.	D. S.	Corvallis
Goetz, Leonard	Com.	Albany
Goldsbury, John	A. H.	Parkdale
Goodenough, W. H. Jr.	D. H.	Hood River
Gorham, Rollin F.	D. H.	Josephine
Gottlieb, Wm.	Com.	Hillsboro
Gould, George W.	Hort.	Caldwell, Ida.
Graham, S. C.	Hort.	White Salmon, Wn.
Greenburg, Alfred	Agri.	Beaverton
Gruenig, Mrs. A.	D. S.	Corvallis
Greene, Robert W.	Hort.	Winthrop, Wash.
Gregg, Maude	D. S.	Gazelle, Cal.
Grell, Harvey	D. H.	Tangent
Griffin, Mrs. F. L.	D. S.	Corvallis
Guisness, O. B.	Hort.	Portland
Hall, W. R.	Hort.	Buena Vista
Hall, William H.	Hort.	White Salmon, Wash.
Hamel, Mrs. Mella	D. S.	Culver
Hammel, Mrs. Mary V.	D. S.	Corvallis
Hansen, Harry	Com.	Beaverton
Hanson, Mrs. R. K.	D. S.	Corvallis
Harmon, Mrs. Grace	D. S.	Corvallis
Harry, Mrs. T. F.	D. S.	Corvallis
Hart, Edward	Com.	Portland
Hart, W. F.	Agri.	Corvallis
Haseltine, Sarah	D. S.	Corvallis
Hartung, E. E.	Agron.	Eugene
Hays, Florence	D. S.	Corvallis
Hector, Carl	Agron.	Corvallis
Hector, Henry	Agri.	Corvallis
Hemingman, H. C.	Agri.	Corvallis

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Henderson, Mrs. S. L.	D. S.	Corvallis
Herse, Kurt F.	Com.	Corvallis
Hewett, Margaret W.	D. S.	Portland
Hinds, H. J.	Agri.	Philomath
Hinkle, Dale	Agri.	Hermiston
Holbrook, Helen Corey	D. S.	Goble
Hollister, Mrs. F. O.	Agri.	Corvallis
Hotchkiss, Mrs. Ira	D. S.	Corvallis
Howell, Mrs. Bernice Garlock	D. S.	Corvallis
Hubble, Mrs. H. H.	D. S.	Corvallis
Hughson, Mrs. Jennie	D. S.	Corvallis
Hyland, Ernest E.	Agri.	Oakridge
Irwin, Watson	Hort.	Guler, Wash.
Isom, Jeff Jr.	Mech. Arts	Albany
Jacobs, Fred	Agri.	Corvallis
Jackson, H. E.	Hort.	Albany
Jamme, Andrew	A. H.	Hood River
Jeffery, George E.	Agri.	Talent
Jeffersen, Edward	Com.	Hood River
Jernstedt, Ernest	Agri.	Carlton
Johns, Walter I.	Hort.	Myrtle Creek
Johnson, Mrs. Adell	Agri.	Corvallis
Johnston, Edith	D. S.	Corvallis
Johnston, J. V.	A. H.	Oregon City
Jones, Irving S.	D. H.	Wheeler, Ind.
Jones, George A.	D. H.	Bend
Jones, W. F.	Agri.	Looking Glass
Jones, W. M.	Agri.	Corvallis
Keiger, Deck	Agri.	Corvallis
Kellogg, Mrs. M. E.	D. S.	Corvallis
Kimball, Fordham B.	A. H.	Hood River
Kimball, Stuart E.	Hort.	Hood River
Kimball, Walter	Agri.	Hood River
King, Abe	D. H.	Corvallis
Knight, Mary Johnston	Hort.	Hood River
Koeppel, Oliver D.	Agri.	Portland
Korb, Elsie	D. S.	Salem
Lambert, Clementine	D. S.	Portland
Lane, J. H.	A. H.	Silver Lake
Lange, Henry	Mech. Arts	Scappoose
Lange, Gus	Agri.	Scappoose
Larson, Pete	Agri.	Boring
Latourette, Kenneth Scott	Hort.	Oregon City
Leibner, Alma	D. S.	Corvallis
Livingston, Bersch E.	D. H.	Richmond
Lowrey, George	Agri.	Corvallis
Loy, Fred	A. H.	Independence
Loy, John R.	A. H.	Buena Vista

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
McCormick, Joe	Agri.	West Woodburn
McCrae, P. H.	Agron.	Petersburg, N. D.
McGladley, G. S.	Agri.	Eugene
McLain, Frank E.	Agri.	Corvallis
McLaughlin, Mrs. A. M.	D. S.	Corvallis
McLaughlin, O. W.	Agri.	Independence
McKenzie, William Thomas	D. H.	Portland
Mackenzie, Joseph C.	Agri.	Corvallis
Macrum, C. A.	Hort.	Portland
Marsh, A. H.	Agri.	Looking Glass
Marsh, Donald	Agri.	Port Orford
Marsh, John R.	Agri.	Port Orford
Marston, Jason	Agri.	Myrtle Creek
Martin, Nellie	D. S.	Lafayette
Martinson, Anton	Agri.	Tidewater
Mears, Raymond J.	Agron.	Shedds
Meldrum, Miss E. S.	P. H.	Milwaukie
Mercer, Lester H.	Agri.	Stanger, Alta.
Mohr, Peter J.	Hort.	Hood River
Moody, Mrs. Charles J.	D. H.	Parkdale
Moody, Charles J.	Hort.	Parkdale
Moore, Raymond G.	Hort.	Portland
Morrison, M. M.	D. H.	William
Murphy, O. T.	Com.	Independence
Nelson, F. T.	A. H.	Keno
Nelson, Grant H.	A. H.	Keno
Nelthorpe, Harry	Hort.	Seattle, Wash.
Newhouse, Mrs. M.	D. S.	Corvallis
Nichols, Rudolph	Agri.	Corvallis
Niles, Clyde E.	D. H.	Grants Pass
Niles, Mrs. Clyde E.	D. S.	Grants Pass
Norris, Edna E.	D. S.	Fort Klamath
Odeen, Adolph	D. H.	Portland
Ogata, Rinzo	Agri.	Sunnyside, Wash.
Ollis, Fletcher	A. H.	Corvallis
Orton, Alice G.	D. S.	Battle Ground, Wash.
Orton, E. Josephine	D. S.	Battle Ground, Wash.
Parly, C. A.	Agri.	Corvallis
Park, Charles	Agri.	Corvallis
Park, Lawrence W.	Agri.	Corvallis
Park, Joseph	Agri.	Corvallis
Patterson, Stewart	Agri.	Medford
Patton, Hamilton	Hort.	Highland Park, Ill.
Peil, Mrs. F. C.	D. S.	Corvallis
Peters, Albert W.	A. H.	Hood River
Peterson, Ernest	Agri.	North Bend
Peterson, Frank J.	Agri.	Corvallis
Pfenninger, Lillian	D. S.	Milwaukie

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Phillips, Mrs. D. C.	D. S.	Corvallis
Phillips, Cecil L.	Agron.	Klamath Agency
Phillips, Mrs. Edith G.	D. S.	Corvallis
Porter, J. L.	Agri.	Silver Lake
Potter, Mrs. E. T.	D. S.	Corvallis
Prest, R.	Agri.	Corvallis
Preston, Frank	A. H.	Medford
Price, W. I.	Agri.	Corvallis
Price, Mrs. W. I.	D. S.	Corvallis
Purdy, Mrs. W. N.	D. S.	Corvallis
Quinn, Oliver R.	Hort.	Alicel
Rae, O. E.	Agri.	Corvallis
Rearden, Barton	Agri.	Corvallis
Rees, W. C.	Hort.	Friend
Richey, Charles M.	Hort.	Corvallis
Rempel, Henry D.	Hort.	Mt. Lake, Minn.
Reynolds, J. M.	Agri.	Corvallis
Robinson, Mrs. C. E.	Agri.	Corvallis
Robinson, Walter F.	Agron.	Bowdoinham, Me.
Rogers, F. R.	Agri.	Looking Glass
Root, Mrs. Eleanor H.	Hort.	Hood River
Root, Ralph	Hort.	Hood River
Rowre, Winthrop A.	Com.	Portland
Ruble, John	Agri.	Salem
Runkle, J. E.	Agri.	Corvallis
Runkle, Mrs. J. E.	D. S.	Corvallis
Ruthrock, Mrs. L. J.	D. S.	Corvallis
Samuelson, Archer	D. H.	Brownsville
Samuelson, Lemont	Agri.	Brownsville
Samuelson, Oliver	A. H.	Brownsville
Schaltenbrand, Mrs. C. A.	D. S.	Corvallis
Schaltenbrand, Otto	A. H.	Sherwood
Schiller, Albert C.	Agri.	Gresham
Schmidlin, Charles	D. H.	Buxton
Schmidt, J. H.	D. H.	Eugene
Schnyder, Walter	Hort.	Portland
Schoppert, Emma	D. S.	Hood River
Schwab, A. A.	Agri.	Gervais
Schunter, C. H.	D. H.	Newberg
Simon, R. G.	D. H.	Hillsboro
Sliperaty, Mrs. Bessie	D. S.	Corvallis
Skouboe, Adolph	Hort.	Portland
Smith, Mrs. Ed	D. S.	Corvallis
Smith, J. M.	A. H.	Blalock
Smith, V. H.	Agron.	Wasco
Strigley, H. L.	Agri.	Corvallis
Stare, Mrs. H. R.	D. S.	Corvallis
Stebbins, F. Wilmer	Hort.	Camas, Wash.

<i>Name</i>	<i>Course</i>	<i>Postoffice</i>
Steinhoff, Anna	Com.	Sherwood
Stenson, Mrs. C. R.	D. S.	Corvallis
Stenson, Maude O.	D. S.	Corvallis
Stickney, Harry F.	Agron.	Underwood, Wash.
Story, Frank	Agri.	Airlie
Stroda, Gregory	Agri.	Harrisburg
Strong, Clarence C.	Com.	Washougal, Wash.
Sunderland, Claude	Agri.	Portland
Thomas, Victor	A. H.	Anlauf
Tiff, Mrs. C.	D. H.	Portland
Truitt, Wendell George	D. H.	Oakland
Tucker, Harold F.	Agri.	Hood River
Uppendahl, Mr.	Agri.	Hubbard
Verney, Sam J.	Agri.	Corvallis
Walling, J. B.	Agri.	Corvallis
Vallstadt, William	Com.	Lebanon
Wade, Fred F.	Agri.	White Salmon, Wn.
Walker, M. L.	Agri.	Corvallis
Warford, L. E.	Com.	Albany
Warnock, Crystal	D. S.	Nortons
Watkins, J. Marshall	Agri.	Mt. Carmel, Pa.
Webster, M. A.	Hort.	Alpine
Welcher, P. H.	Agri.	Corvallis
West, Bessie A.	A. H.	McEwen
West, Karl F.	D. H.	Camas, Wash.
Wetzel, Mrs.	Agri.	Corvallis
Whiteley, Mrs. Agnes	D. S.	Corvallis
Wightman, R. C.	D. H.	Heppner
Wilcox, Neal	Hort.	Oregon City
Williams, Arda	D. S.	Corvallis
Williamson, Clyde	Agri.	Corvallis
Wilson, Lawrence	Agri.	Grants Pass
Wilson, L. F.	Agri.	Corvallis
Wingert, Arthur	Agri.	Corvallis
Wolfe, Glenn H.	Agri.	Corvallis
Wood, Douglas	Hort.	Grants Pass
Wright, J. Nash	Hort.	McMinnville
Zackrehileim, Benjamin	Agri.	Corvallis

HONOR STUDENTS

Honor students, at graduation, are selected on a basis of pre-eminence in both class work and student activities. All courses are represented by honor students, the representation being on the basis of one honor student to every ten seniors in each degree course. No student, however, will be named in the honor list whose merit grade is below seventy-five. The selection is made jointly by faculty and students.

IN AGRICULTURE

Charles Lester Hill
D. C. Howard
Frank Walter Kehrl

Albert Freeman Mason
Francis Edwards Neer
Ralph Merrill Rutledge

IN DOMESTIC SCIENCE AND ART

Alice Rosamond Butler
Esther Ruby Smith
Cordelia Hawley Goffe

Lillian Thordarson
Mildred Marie Wilson

IN ENGINEERING

Civil Engineering—Henry Odeen
Electrical Engineering—Victor Eugene Weber
Mechanical Engineering—Virgil Arthur Rawson
Mining Engineering—Thomas Alfred Rice

IN FORESTRY

Lynn Foster Cronemiller.

IN COMMERCE

Russell Marion Howard

IN PHARMACY

Rose Coffman Mason

IN MUSIC

Lena Belle Tartar

CLARA H. WALDO PRIZES

The Clara H. Waldo Prizes are awarded on a basis of both scholarship and general achievement as follows: (a) Proficiency in literary and scholastic attainments; (b) Success in student activities; (c) Qualities of womanhood; (d) Qualities of leadership. The selection is made by a joint arrangement between faculty and students. To the Senior woman selected, a prize of forty dollars is awarded; to the Junior woman, thirty dollars; to the Sophomore woman, twenty dollars; and to the Freshman woman, ten dollars. Students receiving second and third place in each class are given Honorable Mention.

SENIOR

Lillian Thordarson

JUNIOR

Abbie Coon

SOPHOMORE

Della Jackson

FRESHMAN

Lorna Collamore

The students in each class receiving second and third place, entitling them to Honorable Mention, are:

SENIORS

Mildred Wilson

Lottie Milam

JUNIORS

Inez Bozorth

Karen Hansen

SOPHOMORES

Geraldine Newins

Helen Horning

FRESHMEN

Marion Mateer

Eva Keatley

FORENSIC HONOR ROLL

INTERCOLLEGIATE ORATOR

L. P. Gambee.

INTERCOLLEGIATE PEACE ORATOR

L. P. Gambee

INTERCOLLEGIATE DEBATERS

E. H. Reichart

H. M. Currey

G. R. Hoerner

F. McCabe

R. A. Parcel, Alternate

CHAMPION INTERCLASS ORATOR

Nao Uyei, Sophomore

CHAMPION IN INTERCLASS DECLAMATION

Evelyn Spencer, Senior

CHAMPIONS IN INTERCLASS DEBATE

N. C. Jamison,

J. E. Norton,

F. W. Kehrl,

} Seniors

WINNER OF SHAKOPEAN CUP

Awarded annually to the member of the senior class having the best record in forensics for the whole College course.

L. P. Gambee

SUMMARIES*

CLASSIFIED AS TO COURSE

AGRICULTURE	
Regular 36-week courses	496
Short courses	919
FORESTRY	
Regular 36-week courses	81
DOMESTIC SCIENCE AND ART	
Regular 36-week courses	326
Short courses	183
CIVIL ENGINEERING	
Regular 36-week courses	63
ELECTRICAL ENGINEERING	
Regular 36-week courses	74
MECHANICAL ENGINEERING	
Regular 36-week courses	131
Short courses	3
MINING ENGINEERING	
Regular 36-week courses	28
COMMERCE	
Regular 36-week courses	160
Short courses	26
PHARMACY	
Regular 36-week courses	69
INDUSTRIAL ARTS	
Regular 36-week courses	6
OPTIONAL	
Regular 36-week courses	86
MUSIC ONLY	
Regular courses in music	59
SUMMER SCHOOL	
Regular courses	187
	2897
Deduct duplicates	462
Total, excluding duplicates	2435

*The enrollment statistics include those only who have pursued work at the College; correspondence students are omitted.

CLASSIFIED AS TO RESIDENCE

STATES AND TERRITORIES

Oregon	2355
Alaska	8
California	155
Colorado	3
Connecticut	1
Delaware	3
Florida	1
Idaho	43
Illinois	25
Indiana	7
Iowa	6
Kansas	9
Kentucky	4
Maine	1
Maryland	2
Massachusetts	9
Michigan	8
Minnesota	9
Missouri	4
Montana	5
Nebraska	4
New Hampshire	2
New Jersey	2
New Mexico	1
New York	15
North Dakota	1
Ohio	10
Oklahoma	2
Pennsylvania	4
Rhode Island	1
South Dakota	2
Texas	1
Utah	1
Washington	132
Wyoming	2
Wisconsin	5

FOREIGN COUNTRIES

Canada	23	
China	3	
Greece	1	
Hawaii	8	
India	6	
Japan	8	
Philippine Islands	1	
Russia	4	54
		<hr/>
Total	2897	
Duplicates	462	
		<hr/>
Total, excluding duplicates	2435	

COMPARATIVE ENROLLMENT

1888-1889	97
1889-1890	151
1890-1891	201
1891-1892	208
1892-1893	282
1893-1894	240
1894-1895	261
1895-1896	397
1896-1897	316
1897-1898	336
1898-1899	338
1899-1900	405
1900-1901	436
1901-1902	488
1902-1903	541
1903-1904	530
1904-1905	680
1905-1906	735
1906-1907	833
1907-1908	1156
1908-1909	1352
1909-1910	1591
1910-1911	1778
1911-1912	2868
1912-1913	2314
1913-1914	2435

The great difference in the total enrollment for the two years, 1910-11 and 1911-12, was due largely to the increase in the number of students registered for the winter short courses in Agriculture. The increase in the number of regular students in the 36-weeks courses was 24 per cent.

The decrease in the number of students in 1912-13 from the year 1911-12 is due to the decrease in the short course registration. The increase in the number of regular students in the 36-weeks courses was 19 per cent.

NOTE.—In addition to the above listed names, out of a total of 643 students registered in the Farmers' Week courses in Agriculture and Domestic Science and Art, the names of 346 students who were registered in these courses, but in no other College courses, do not appear.

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