Agricultural College Bulletin

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....Oregon....
Agricultural College

1905-1906.....

ANNUAL CATALOGUE

OF THE

AGRICULTURAL COLLEGE

OF THE

STATE OF OREGON

FOR

1905-1906

AND

ANNOUNCEMENTS FOR 1906-1907

CORVALLIS, OREGON

AGRICULTURAL COLLEGE PRESS
1906

Calendar--1906-1907.

SEPTEMBER.

S.	M.	T.	W.	T.	F.	S.
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OCTOBER.

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NOVEMBER.

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JANUARY.

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MARCH.

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APRIL.

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MAY.

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JULY.

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AUGUST.

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OREGON AGRICULTURAL COLLEGE

Students classified by Counties, States and Foreign Countries for four months ending January 31, 1907.

Baker	18	Union	28
Benton	116	Wallowa	7
Clackamas	39	Wheeler	3
Clatsop	11	Wasco	32
Columbia	17	Washington	33
Coos	14	Yamhill	30
Crook	6	Alaska	2
Douglas	15	Arkansas	1
Grant	3	California	9
Gilliam	6	Colorado	1
Harney	8	Columbia	1
Jackson	7	Connecticut	1
Josephine	7	India	6
Klamath	12	Idaho	3
Lake	1	Illinois	2
Lane	18	Iowa	7
Lincoln	7	Kansas	1
Linn	60	Maine	1
Malheur	23	Missouri	2
Marion	39	Montana	1
Morrow	23	Nebraska	8
Multnomah	87	Nevada	1
Polk	23	New Hampshire	1
Sherman	9	New Jersey	1
Tillamook	8	Oklahoma	1
Umatilla	23	Washington	30

Total 813

CALENDAR.

FIRST TERM.

Entrance Examinations for Freshmen, Friday and Saturday, September 14–15, 1906.

Registration, Monday, September 17, 1906.

Recitations begin Tuesday, September 18, 1906.

Final Examinations, Wednesday, Thursday and Friday, December 19–21, 1906.

SECOND TERM.

Registration, Tuesday, January 8, 1907.

Recitations begin Wednesday, January 9, 1907.

Final Examinations, Monday, Tuesday, and Wednesday, March 18–20, 1907.

THIRD TERM.

Registration, Tuesday, March 25, 1907.

Recitations begin Wednesday, March 26, 1907.

Baccalaureate Sermon, Sunday, June 9, 1907.

Final Examinations, Friday, Monday and Tuesday, June 7, 10, 11, 1907.

Commencement Day, Wednesday, June 12, 1907.

NOTE.

All absences of students who registered in the preceding term will will be charged from the first class recitation of the current term. At the close of each term of school, students will receive certificates of standing from their instructors. Standings of students will be sent to parents or guardians on application to the President or the Registrar.

BOARD OF REGENTS

OF THE

OREGON AGRICULTURAL COLLEGE

AND

EXPERIMENT STATION.

OFFICERS.

HON. J. K. WEATHERFORD, *President*.....Albany.
HON. JOHN D. DALY, *Secretary*.....Portland.
HON. B. F. IRVINE, *Treasurer*.....Corvallis.

EX-OFFICIO MEMBERS.

HON. GEORGE E. CHAMBERLAIN, *Governor of the State*.....Salem.
HON. F. I. DUNBAR, *Secretary of State*.....Salem.
HON. J. H. ACKERMAN, *Supt. of Public Instruction*.....Salem.
HON. AUSTIN BUXTON, *Master of State Grange*.....Forest Grove.

APPOINTED BY THE GOVERNOR.

	TERM EXPIRES.
MRS. CLARA H. WALDO	Macleay, 1907.
HON. JOHN D. DALY	Portland, 1907.
HON. B. F. IRVINE	Corvallis, 1907.
HON. J. T. APPERSON	Parkplace, 1910.
HON. W. P. KEADY	Portland, 1910.
HON. J. K. WEATHERFORD	Albany, 1910.
HON. JOHN D. OLWELL	Central Point, 1912.
HON. WILLIAM W. COTTON	Portland, 1912.
HON. WALTER M. PIERCE	Pendleton, 1912.

STANDING COMMITTEES

OF THE

BOARD OF REGENTS.

EXECUTIVE COMMITTEE.

J. K. Weatherford, *Chairman*, J. T. Apperson, J. D. Daly, W. W. Cotton, B. G. Leedy.

FINANCE COMMITTEE.

J. T. Apperson, *Chairman*, B. G. Leedy.

COLLEGE COMMITTEE.

B. F. Irvine, *Chairman*, W. P. Keady, Walter M. Pierce.

STATION COMMITTEE.

Walter M. Pierce, J. D. Olwell, William W. Cotton.

FACULTY AND INSTRUCTORS.

THOMAS MILTON GATCH, A. M., PH. D., President,
Political and Mental Science.

JAMES WITHYCOMBE, M. AGR.,
Professor of Agriculture.

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

MARGARET COMSTOCK SNELL, M. D.,
Professor of Household Science and Hygiene.

GRANT ADELBERT COVELL, M. E.,
Professor of Mechanics and Mechanical Engineering.

JOHN B. HORNER, A. M., LITT. D., Registrar,
Professor of History and Latin.

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

ARTHUR BURTON CORDLEY, M. S.,
Professor of Zoölogy.

EDWARD RALPH LAKE, M. S.,
Professor of Botany and Forestry.

ABRAHAM LINCOLN KNISELY, M. S.,
Professor of Chemistry.

HELEN VIRGINIA CRAWFORD, B. S.,
Professor of Elocution.

GEORGE COOTE,
Professor of Floriculture and Gardening.

JOHN FULTON B. Agr., B. S.,
Professor of Mineralogy and Geology.

THOMAS HENRY CRAWFORD, A. M.,
Commerce.

CLAUDE ISAAC LEWIS, B. S.,
Professor of Horticulture.

FACULTY AND INSTRUCTORS.

IDA BURNETT CALLAHAN, B. S.,
Assistant Professor of English.

FRED LEROY KENT, B. AGR.,
Associate Professor of Agriculture and Dairying.

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

EMILE FRANCIS PERNOT, M. S.,
Professor of Bacteriology.

CLARENCE MELVILLE McKELLIPS, PH. C.,
Assistant Professor in Pharmacy.

MAJOR FRANK EDWARDS, B. M. E.,
Instructor in Chemistry and Commandant.

WILLIAM THOMAS SHAW, B. AGR., M. S.,
Instructor in Biology.

MARK CLYDE PHILLIPS, B. M. E.,
Instructor in Mechanical Drawing and Ironwork.

AMMEE LEVERETT,
Director of the Art Department.

HELEN LUCILE HOLGATE. B. H. E.,
Stenography and Typewriting.

FLORENCE McDOWELL GREEN, MUS. B.,
Instructor in Vocal Music.

* GERARD TAILLANDIER,
Piano, and Instructor in German.

NICHOLAS TARTAR,
Instructor in Mathematics and English.

MARY ELIZABETH SUTHERLAND, B. S.,
Instructor in Dressmaking.

WILL ORIAN TRINE,
Physical Director.

* Terms for private instruction in French can be had by applying to Professor Taillandier.

FACULTY AND INSTRUCTORS.

RICHARD JEFFREY NICHOLS, B. S.,
Librarian.

JOHN HYNES McDOUGAL, A. B.,
Assistant Professor of Mechanical and Electrical Engineering.

HARRY BEARD, B. S.,
Assistant in English and Band Master.

CHESTER LLOYD PROEBSTEL, B. S.,
Assistant in Mining.

MARK DOW McCALLISTER, B. S.,
Instructor in Woodwork.

WILLIAM McCAULLY PORTER,
Instructor in Blacksmithing.

OTHER OFFICERS.

THOMAS HENRY CRAWFORD, A. M.,
Clerk and Purchasing Agent.

RICHARD JEFFREY NICHOLS, B. S.
Librarian.

GEORGE BRELSFORD KEADY,
Printer.

HELEN LUCILE HOLGATE, B. H. E.,
Station Stenographer.

JUANITA ROSENDORF, B. S.,
College Stenographer and Clerk in Department of Registration.

ARTHUR WILLIAM KEADY,
Assistant Printer.

WALTER JAMES KENT,
Foreman of the Farm.

JOHN ANDERSON SPANGLER,
Engineer.

ELLSWORTH ERWIN,
Janitor.

ROBERT CLEMENT WILLS,
Carpenter.

FACULTY COMMITTEES.

ACCREDITED SCHOOLS.—Pernot, Covell, Leverett, Proebstel.

ADVANCED STANDING.—Knisely, Kent, Shaw, Phillips.

ADVISORY COMMITTEE.—Covell, Snell, Horner, Withycombe.

ATHLETICS.—Johnson, Trine, Shaw, Fulton.

DISCIPLINE.—Skelton, Horner, Callahan.

EMPLOYMENT.—Coote, Withycombe, Knisely, Edwards.

ENTRANCE EXAMINATIONS.—Tartar, Berchtold, Helen V. Crawford, Callahan.

GRADUATES.—Berchtold, Kent, McDougal.

LECTURES AND LITERARY ENTERTAINMENTS.—Helen V. Crawford, Edwards, Horner, Shaw.

LEGISLATION.—Withycombe, Covell, Leverett.

LIBRARY.—Callahan, Withycombe, Holgate, Horner.

LITERARY SOCIETIES.—Snell, McKellips, Pernot.

MASTER'S DEGREE.—Lake, Skelton, Cordley.

MUSIC.—Thomas H. Crawford, Green, Fulton, Taillandier, Holgate.

PUBLICATIONS.—Horner, Berchtold, Lake, Cordley.

SOCIAL ENTERTAINMENTS.—Cordley, Crawford, Kent, McDougal.

TERM SCHEDULES.—Fulton, Horner, Johnson, Beard, Phillips.

THE STATION STAFF.

THOMAS MILTON GATCH, A. M., PH. D.
President.

JAMES WITHYCOMBE, M. AGR.
Director and Agriculturist.

ARTHUR BURTON CORDLEY, M. S.
Entomologist.

EDWARD RALPH LAKE, M. S.
Botanist.

GEORGE COOTE
Florist and Gardener.

ABRAHAM LINCOLN KNISELY, M. S.
Chemist.

FRANK EDWARDS, B. M. E.
Assistant Chemist.

CLARENCE MELVILLE McKELLIPS, PH. C.
Assistant Chemist.

FRED LEROY KENT, B. S., AGR.
Assistant Agriculturist and Dairy Instructor.

EMILE FRANCIS PERNOT, M. S.
Bacteriologist.

CLAUDE ISAAC LEWIS, B. S.,
Horticulturist.

THOMAS HENRY CRAWFORD, A. M.
Clerk and Purchasing Agent.

HELEN LUCILE HOLGATE, B. H. E.
Stenographer.

Oregon Agricultural College.

HISTORY.

By an act of Congress, approved by President Lincoln, July 2, 1862, a grant of land was made to each state in the Union in the amount of thirty thousand acres, or its equivalent, for each Senator and Representative 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 which was to remain forever undiminished; but interest arising from said fund, in each state which should avail itself of the benefits of the act, was to be applied inviolably 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 a 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 of 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.

In 1868 the state legislature appointed three commissioners to locate the land; and a report of the selections made, was submitted in 1870.

There were in 1868 no state colleges in Oregon, and the same legislature that provided for the selection of the land gave the use of the funds that should arise from the sale of such land to the Corvallis College, in Benton county, an institution of learning under the control of the M. E. Church, South.

None of the land of the land grant having as yet been sold, the legislature made a small annual appropriation to support the school until the fund to be derived from the grant should become adequate.

In 1885 the church voluntarily relinquished its claim on the funds of the Agricultural College, and the state assumed control vesting the full management of the college in a board of regents.

In the summer of 1887 the corner-stone of a brick structure, now known as the administration building, was laid by the Governor of Oregon amid imposing ceremonies. This building, erected by citizens of Benton county on the Agricultural College farm, was the nucleus around which eleven other buildings eventually clustered as necessity and growing interests demanded.

THE MORRILL ACT.

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 an act of Congress approved July 2, 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.

It also is provided that this money shall be "applied only to instruction in agriculture, the mechanic arts, the English language and the various branches of mathematical, physical, natural and economic sciences with special reference to their application in the industries of life, and to the facilities for such instruction." And it further provided that "no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings."

THE HATCH ACT.

In addition to the above, this college receives from the United States, under the "Hatch Bill" of 1887, the sum of $15,000 a year for conducting experiments in agriculture. With this sum it supports an agricultural experiment station in connection with the college. Although the "Hatch Fund" is used entirely for experiment work, it is exceedingly valuable to students in agriculture and horticulture.

THE ADAMS ACT.

What may be known as the "Adams Act" was passed by Congress in March last. It carries with it an appropriation to supplement the Hatch Act. It makes an initial appropriation of $5000 available next fiscal year and an annual increase of $2000 until in the aggregate it amounts to $15,000. This fund is to be under the control of the Department of Agriculture and will probably be placed under the immediate supervision of the office of Experiment

Stations. This will give the Experiment Station control of $30,000, instead of the $15,000 now at its command.

LOCATION.

The State Agricultural College is located at Corvallis, Oregon, near the head of navigation on the Willamette river and is accessible by railway from the east, west, north and south. The city, as its name indicates, is in the heart of the Willamette valley. To the east is the Cascade range with its snow-capped peaks, while to the west, and near at hand is the Coast range. Chintimini, the tallest in the range, is covered with snow for several months of the year, and, though fourteen miles away, adds beauty to the scene.

A COLLEGE TOWN WITHOUT A SALOON.

Corvallis is a city of two thousand inhabitants, many churches and *no saloons*. The city, which is situated on high ground, has never been visited by any dangerous epidemic disease. The State Board of Health and other authorities have made frequent mention of the healthfulness of Corvallis and vicinity; and have spoken of the location of the College as one of the chief causes of its rapid growth.

The Sunday Oregonian of recent date said edltorially:

"Friends and patrons of the State Agricultural College will be glad to learn that the town of Corvallis and the College campus and buildings will be amply supplied with pure water from a mountain stream fourteen miles distant before work is resumed in the College in the Fall. Pipe laying for the new system is proceeding at the rate of half a mile a day, and it is probable that students who have been kept on boiled water for months will get a chance to sample pure water direct from the city hydrants before Commencement day."

COLLEGE GROUNDS.

The College grounds cover an area of 224 acres. Of this acreage about three-fifths is devoted to croppage including

the common farm and garden crops, native pasture, orchards, small fruits and vines. The remaining two-fifths is devoted to lawns, shrubberies, athletic sports and flower-gardens. The main campus is tastefully designed for landscape effects and the ultimate purpose is to use native trees and shrubs for the body of the plantings, with a view to exhibiting the value of our native plants for ornamental and economic purposes.

BUILDINGS.

"The Administration Building was erected by the citizens of Benton County, and with 35½ acres of ground was donated to the State of Oregon, as an inducement to the people of the State to locate permanently the State Agricultural College at Corvallis. It is a three story brick building containing fourteen rooms suitably arranged and well adapted for school purposes. It is of the estimated value of $25,000.00.

The Agricultural Hall, which is a three-story Oregon gray granite and sandstone building 85x125 feet, is situated about 150 yards southeast of the Administration Building. It is intended for an assembly hall for the Agricultural and Horticultural classes, laboratories and class rooms and for all purposes connected with agriculture and chemistry, dairying and the Experiment Station. It cost about $42,000.00.

Mechanical Hall is located about 150 yards northeast of the Administration Building. It is constructed of Oregon gray granite and sandstone. It is two stories high, 90x100 feet. It is a fine substantial building, well arranged and admirably adapted for the purpose for which it is used. It is valued at $23,000.00 and contains machinery worth $12,000.00.

The Armory is situated south of the Administration Building some 200 yards. This is a large two story wooden structure 70x120 feet. It is used for public gatherings, for armory purposes, gymnasiums, etc. It is valued at $10,000.

Cauthorn Hall is a three-story wooden structure intended for a home for young men attending the College and will accommodate 100 persons. It is valued at $15,000.00.

Alpha Hall is a two-story frame building, designed as a home for young ladies attending College and will accommodate 40 persons. It is valued at $4,000.00.

Horticultural Building stands north of the Administration Building about 200 yards, and is used as class rooms and has laboratories and green houses connected therewith. It is. including laboratories, valued at $2,500.00.

The Mining Laboratory, which is situated just south of the Administration Building, is a frame building of the value of $4,000.00.

West of the Administration Building and about 200 yards distant, is located the blacksmith shop, a one story brick structure, large and roomy, valued at $6,000.00.

North of the Administration Building is the heating and power plant. The building is of brick and the plant consists of two boilers each of 75-horse power, and one of 50 horse power, of superior make and quality, also a 40 horse power engine and suitable dynamos to furnish light and power. From this plant all the buildings on the grounds are heated, by means of pipes conducting the heat underground to the various buildings. Electricity is generated by steam power and is conducted to all of the buildings belonging to the College. The building and machinery and heating apparatus are valued at $33,000.00.

The water supply is obtained from wells north and

west of the Administration Building by means of pumps operated by steam engines stationed in the pump house. The machinery, building and water tower are of the value of $2,000.00.

FARM.

The farm has also good barns, a number of silos, the usual farm machinery and is of the value of $2,500.00.

STUDENT LIFE.

CAUTHORN HALL.

Cauthorn Hall, commonly known as the Young Men's Hall, was named in honor of Senator Thomas Cauthorn, a benefactor of the Oregon Agricultural College. It was erected in 1891, for the use of young men who desire to live economically while attending school and at the same time enjoy the privileges and influences of dormitory life. The building, which is conveniently located and amply supplied with hot and cold water, bath rooms, steam heat and electric lights, is sufficiently large to accommodate one hundred persons. The dining room, kitchen, and reading room are pleasant and well furnished. Students' rooms are uniformly ten feet wide, and respectively fourteen, seventeen and twenty feet long.

Each student's room is furnished with a table, chairs, a chest with drawers; and each student is supplied with mattress, springs and a bedstead three feet wide and six feet long. The student is expected to furnish four sheets, two pillowcases, blankets, quilt, pillow, window-blind 3 x 6½ feet, towels, broom, dustpan, washbowl, pitcher, slop-pail, mirror, comb, brushes, tumblers, carpet, pictures and other ornaments that will make his room comfortable

and homelike. He should bring a dictionary and such other books as are used for study, for reference, and for profitable entertainment.

The hall is managed by Mr. and Mrs. R. L. Whitehead with Instructor Mark Dow McCallister as resident master.

To obtain a room in Cauthorn Hall it is necessary for the applicant to furnish satisfactory evidence that he does not use tobacco nor profane language, and that his conduct is gentlemanly at all times.

The cost of living at Cauthorn Hall, including rent, heat, board, etc., is $3.00 per week payable monthly, in advance. No reduction will be made during the term, save for prolonged absence caused by sickness, when one-half will be deducted.

Each student on engaging a room is required to deposit $3.00 with the manager, which amount—loss and breakage deducted—will be returned when the room is vacated.

The hall is furnished with a reading room which is supplied by the club with choice current literature.

Relatives and visiting friends will be charged 15 cents per meal and 20 cents for lodging.

Cauthorn Hall will be closed during the winter holidays. For further information send for special circular.

ALPHA HALL.

Alpha Hall is a pleasant home for young ladies who desire to live with the family of one of the Professors while attending College. Convenient to the Administration building, it is located on grounds which have been artistically decorated, and which have never been visited by typhus or other similar disorders.

The Hall is lighted with electricity, and it is furnished

with hot and cold water, bath room and other modern conveniences. The rooms are approximately 12x13 feet in size. Each suite as well as each single room has been arranged for two persons.

Each room is supplied with a stove, table, chairs, chest with drawers, bedstead with springs and mattress—single or double as desired. The student is expected to furnish sheets, pillow, pillow cases, blankets, quilts, towels, broom, dust-pan, wash-bowl, pitcher, mirror, comb, brushes, tumbler, carpet or art square, pictures and other ornaments to make her room comfortable and homelike.

The cost of living at Alpha Hall will be $3.00 per week, payable monthly in advance. A student occupying an entire room or suite will be charged fifty cents extra per week to cover fuel and other additional expenses. Those having rooms engaged in advance pay board from the beginning of the term. No reduction will be made during the term, save for prolonged absence caused by sickness, when one-half will be deducted.

Each student will be required to deposit $3.00 on engaging her room, which amount—loss and breakage deducted—will be returned when the room is vacated.

Relatives and visiting friends will be charged 15 cents per meal.

Alpha Hall will be closed during Christmas holidays, but such of the young ladies as desire to remain in Corvallis during that time will be cared for with but little if any additional expense.

For further particulars send for special circular.

SOCIAL LIFE OF THE STUDENTS.

Literary contests are common events, the societies meet-

ing in joint session, with prominent citizens as judges. The Y. M. C. A. and Y. W. C. A. hold their regular sessions at the college every Sunday afternoon throughout the school year. These gatherings aid materially in developing the social and spiritual life of the members. At the beginning of the school year these associations conduct an employment bureau also a bureau of information at their headquarters, and furnish Y. M. C. A. hand-books gratis to all students. Each year a popular course of lectures free to all students is given, under the direction of the faculty, by distinguished speakers from various parts of the state. Vocal and instrumental music intersperse various features of the college work, so that a student in a career of four years may not leave the institution without the refining influences of this important art. Physical culture is encouraged in every way at the gymnasium and on the training grounds. Bowling, fencing, Indian-club swinging, dumb-bell exercises, foot ball, basket ball, base ball, golf and lawn tennis occupy the spare moments of the students in a happy commingling of all classes. These social affairs, although under the direction of a committee of the faculty, are managed by the students who thereby acquire a training in social life destined to be of great value to them.

Corvallis is pre-eminently a college town noted for social clubs, literary societies, and active churches which vie with each other in friendly interest and hospitality toward our young people. More and more as the institution progresses patrons of the college move hither that they may be with their children and at the same time enjoy the refining influences and cultured society of a college community.

"* * * Alluding to a reference which had been made, Mr. Brown explained that he did not fully understand what

was meant by the word 'crank' and said in effect, 'I want to congratulate the people of Benton County upon the lofty character of their citizenship. I want to congratulate Benton County and her citizens upon the high reputation she carries among her sister counties. I want to add that no county in Oregon, in proportion to its population, has so little litigation in the courts, as does this county of Benton with its alleged cranks. No county in Oregon in proportion to its population has so few criminal prosecutions; no county has so few persons brought to the bar of justice; no county in the second judicial district is at so little expense in the conduct of its court as is Benton and no county anywhere is better fitted by the character of its people to be the home of a great educational institution, as is Benton County, with its so-called cranks.'"—*From an address by District Attorney George Brown before the Circuit Court of Benton.*

SOCIETIES.

The students maintain ten literary societies, five for young ladies and five for young gentlemen. These societies are of a semi-fraternal nature, offering to their members social as well as literary advantages. The exercises consist principally of essays, declamations, debates and music. Public and joint meetings are held by permission of the faculty. Many other features of college life, social and literary, are under their supervision.

The following is a list of the different literary societies now in existence:

For young ladies: Sorosis, Pierian, Feronian, Utopian, Clionian.

For young men: Amicitia, Jeffersonian, Philadelphian, Zetagathian, Athenaeum.

The membership of each of these societies is limited to forty. The other societies in the College are the Miners' Association, Engineer Association, Hindu-American Association, Agricultural, Prohibition and Camera Clubs.

BAROMETER.

In March, 1896, the literary societies of the college began the publication of a monthly periodical, the "College Barometer." The enterprise met with marked success, and the paper, controlled entirely by students, now wields a strong influence in all college affairs. During the coming year every effort will be made to improve it and make it of interest not only to those directly connected with the school, but to all who are in touch with literary, scientific and industrial education. The editors will be pleased to receive news of alumni and other persons formerly connected with the college. Brief, pointed notes, accounts of scientific experiments and discoveries, and short, well-written and instructive literary articles are also solicited.

ATHLETICS.

The Oregon Agricultural College is a member of the Northwest Intercollegiate Athletic Association. This association is composed of the leading colleges and universities of the Northwest, organized for the better control of college athletics.

The students also maintain an athletic association known as the Athletic Union of the Agricultural College of Oregon. This organization supports foot-ball, base-ball, basket-ball and track teams and has general charge of all athletics under the supervision of the athletic committee of the faculty.

The College now owns a fine athletic field properly fenced, a neat and commodious grandstand, an excellent quarter-

mile tract. The enclosed area is thoroughly drained, graded and seeded, making this one of the best athletic fields in the Pacific Northwest.

The training and the physical condition of all athletes are supervised by the Director of Athletics, W. O. Trine, who has long been recognized as one of the most efficient trainers on the coast.

GOVERNMENT.

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. Our appeal is to a proper sense of the proprieties of life and the necessity of organization on such a basis.

Established by a government that recognizes no distinction of religious belief, the Oregon Agricultural College seeks neither to promote any creed nor to exclude any; but it will always do everything in its power to promote the religious spirit and life.

Whenever the college life of any student is such that his influence, directly or indirectly, is injurious to the work of the institution, he will be relieved from further attendance at this college.

COURSE OF LECTURES.

In addition to the regular lectures given in the various departments by members of the faculty, a course of lectures by representative men, is delivered at convenient intervals during the year. These lectures bring young people in contact with leaders in the various departments of human endeavor; arouse investigation on current topics; stimulate students to emulate the achievements of specialists; give breadth of scholarship to the student and aid in developing the character of the institution. They rank among the

most attractive features of college life and are free to all students.

CONDITIONS OF ADMISSION.

All applicants for matriculation in any department except music must be at least fifteen years of age.

To enter the freshman year the applicant must be able to pass a satisfactory examination in reading, spelling, geography (physical and descriptive), arithmetic (written and mental), United States history, English grammar, and algebra to quadratics.

ADMISSION FROM OTHER COLLEGES.

Students from other colleges must show a certificate of good standing, or honorable dismissal. Such applicants will receive credit for studies pursued in any college authorized to confer degrees, so far as the two courses are equivalent, upon presenting a certificate of standing from the proper officers.

ADMISSION FROM ACCREDITED SCHOOLS.

Graduates from the following accredited high schools and academies will be admitted to the freshman year without examination, provided they have completed algebra to quadratics:

Albany,
Astoria,
Ashland.
Baker City,
Bandon (Major Course),
Bishop Scott Academy,
Burns,
Carlton,
Coquille Collegiate Institute,
Corvallis,
Cottage Grove,
Cove,
Elgin,
Lakeview,
Lebanon,
Marshfield,
McMinnville,
Medford,
Milton,
Moro,
North Yamhill,
Oregon City,
Ontario,
Parkplace,
Pendleton,
Portland,

Eugene,
Forest Grove,
Fossil,
Garland Academy,
Grant's Pass,
Gresham,
Heppner,
Hillsboro High School,
Hill's Military Academy,
Hood River,
Independence,
Jacksonville,
Klamath Falls,
Lafayette High School,
La Grande,
Prineville,
Roseburg,
Salem,
Santiam Academy,
Silverton,
Summerville,
The Dalles,
The Allen Preparatory School, Portland,
Tillamook,
Union,
Vale,
Wasco,
Woodburn.

Those completing the two-year high school course prescribed by the Oregon State Board of Education will be permitted to register as Freshmen without examination. Those completing the four-year high school course may, upon presenting their diplomas, register as Sophomorse. The heads of our various departments will give credit for equivalent work done in class or laboratory.

ADMISSION UPON CERTIFICATES AND STATEMENTS.

The holder of a certificate or statement signed by the county school board of examiners certifying that at a regular teachers' examination he received a satisfactory grade to entitle him to a teacher's certificate, may be admitted to all the freshman classes except algebra. He may remove such deficiency in algebra upon furnishing the President with a satisfactory statement from a teacher or school superintendent that the applicant is familiar with the subject of algebra to quadratics; or, upon arrival at the college, he may make good such deficiency by examination or by class recitation.

ADMISSION TO THE SUB-FRESHMAN CLASS.

The course of instruction offered under this head is intend-

ed for young people who live at considerable distance from an academy or high school, and are unable to attend such, but have finished the eighth grade in a good public school. No tuition is charged. The work is distributed in the three terms as follows:

SUB-FRESHMAN YEAR.

FIRST TERM.

English Grammar 5	English A
English Composition 5	English B
Arithmetic 5	Mathematics A
Physical Geography 5	Geography A
Reading 1, 2.	Elocution A
Military Drill 2½, 5 (young men)	Military A
Physical Culture 1½, 3 (young ladies)	Physical Culture A

SECOND TERM.

English Grammar 5	English C
English Composition 5	English D
Elementary Algebra 5	Mathematics B
U. S. History 5	History A
Elocution 1, 2	Elocution B
Military Drill 2½, 5	Military B
Physical Culture 1½, 3	Physical Culture B

THIRD TERM.

Civil Government	Civics A
English Grammar 5	English E
English Composition 5	English F
Algebra 5	Mathematics C
U. S. History 5	History B
Elocution 1, 2	Elocution C
Military Drill 2½, 5	Military C
Physical Culture 1½, 3	Physical Culture C

According to a regulation of the board of regents students shall not be admitted to this class who come from towns or cities of more than fifteen hundred inhabitants, or from such communities as are supporting good high schools.

ADMISSION OF SPECIAL STUDENTS.

None can be admitted as irregular or special students unless they belong to one of the following classes:

1. Those who desire to devote special attention to music and take at least two lessons a week in our department of music.

2. Those who on account of poor health certified by physicians cannot take a complement of studies.

3. Residents who are heads of families and have household duties to look after.

4. Residents who are engaged in a regular business or profession and have time for only one or two studies.

5. Such persons as may be permitted to take special studies by vote of the Faculty at a regular monthly meeting.

DIRECTIONS TO NEW STUDENTS.

Special students and also applicants for admission with credentials from universities, colleges, academies and high schools—graduates from accredited schools being excepted—shall report to the President.

Applicants who have previously matriculated in this College and those who hold teachers' certificates or have graduated from accredited schools and desire to enter the Academic department, also 8th grade graduates from country schools who desire to matriculate as Sub-Freshmen, should apply to the Registrar.

Unless otherwise ordered by the President, all other applicants for admission will apply to Professor Tartar, chairman of the committee on examinations, who will appoint the time and place for examination.

SCOPE OF THE INSTITUTION.

The scope of the institution, as now organized, cannot be better stated than in the comprehensive words of the act of Congress defining the duty of this and similar colleges:

"The leading object 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 legislature of the state may prescribe, *in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.*"

Based upon a broad foundation, the special work of the Oregon Agricultural College is the training of youth in those branches of learning which lie at the foundation of modern industrial pursuits. In accordance with the purposes of its founders, and the terms of its original charter, it aims to give special and prominent attention to agriculture, both theoretical and experimental; but it also provides "a liberal and practical education" in the leading branches of mathematical, natural and physical sciences, in order to prepare youth "for the several pursuits and professions of life." It has increased its subjects and courses of study, and its teaching and illustrative equipment, to such an extent that now, "without excluding classical studies," its leading object is to teach the various sciences in such a manner as to show their applications in the more important industries, and to combine with every branch of instruction such an amount of actual practice in the shop, the field, and the laboratory as will serve to illustrate and apply the theory, without subordinating it. The course in agriculture, as now arranged, conforms very closely to the recommendations of the *Association of American Agricultural Colleges and Experiment Stations*. The range of work in the various courses is shown, as far as space will allow, in the following descriptive statements and schedule. It is confidently believed that few institutions in the country furnish opportunities for obtaining advanced scientific education to an equal extent and thoroughness at so moderate a cost and with so many incidental advantages.

DEGREES AND COURSES OF STUDY.

UNDERGRADUATE WORK.

The college offers nine courses of instruction of four years each leading to the degree of Bachelor of Science, viz:—

Agriculture,
Forestry,
Household Science,
Mechanical Engineering,
Electrical Engineering,
Mining Engineering,
Civil Engineering,
Pharmacy,
Literary Commerce.

All of these require training in English, mathematics, history, elocution, drawing and such other branches as are requisite to a practical education.

In order that the college may meet the needs of a greater number of people and the students intensify along special lines, much of the work is made elective, as may be seen by reference to the courses of study published elsewhere in this catalogue.

In addition to the above courses provision has been made for courses in Vocal and Instrumental Music, a two-year course in Mining, a two-year course in Pharmacy, and short course in Agriculture and Dairying.

GRADUATES AND THESES.

Students intending to graduate must file notice of such intention accompanied with subject of thesis in the President's office on or before November 1. All theses should be ready for criticism by the Professor in English not later than April 15, and shall be neatly recopied and bound by

May 25. Applications for certificates in a two-year course shall be filed not later than June 1.

GRADUATE WORK.

That students may be encouraged to continue their college work after graduation, the board of regents has made provision for courses leading to advanced degrees.

ADVANCED DEGREES.

Advanced degrees will be given to graduates of this college, or similar approved colleges, upon the following conditions:—

DEGREES IN ENGINEERING.

Degrees in Engineering will be conferred on graduates completing the fifth or graduate year in the following courses upon the approval of their theses by the head Professors:

Agriculture,
Electrical Engineering,
Mechanical Engineering,
Mining Engineering.

MASTER'S DEGREE.

An applicant for this degree must present himself for examination in one major and at least one minor study. Major and minor courses of two years leading to the degree of Master of Science, to be selected from different departments, approved by the faculty, are provided for in the departments of Agriculture, Botany, Chemistry, Economics, Horticulture, Zoology, Mechanical and Electrical Engineering and Household Science. The minor, at the option of the student, may also be taken from the departments of Mathematics, English History or Modern Languages. The candidate must prepare a

thesis, based upon original research, which shall show scholarly acquirements of a high order. This thesis must be printed or typewritten and bound, and two copies of it left in the college library. The candidate must spend at least one academic year, or its equivalent, as a resident student at this college in preparing for this degree.

The graduate year looking to the Engineering Degree will be accepted as the residence year for the Master's Degree.

ALUMNI DIRECTORY.

Since the triennial edition of the catalogue containing the alumni directory will be issued next year, all members and friends of the alumni association are earnestly invited to forward to the Registrar prior to April 1, such information as they may have relative to the addresses and occupations of the alumni.

COURSE IN AGRICULTURE.

FRESHMAN YEAR.

FIRST TERM.

Algebra 5 ..... Mathematics I.
English Composition 5 ..... English I
General History 5 ..... History I.
* { Freehand Drawing 1½, 3 ..... Drawing I.
  { Elocution 1, 2 ..... Elocution I.
*Woodwork 2½, 5 ..... Shopwork I.
Military Drill 2½, 5 ..... Military I.

SECOND TERM.

Geometry 5 ..... Mathematics VIa.
English Composition 5 ..... English II.
* General History 5 ..... History II.
Elocution 1, 2 ..... Elocution II.
Freehand Drawing 1½, 3 ..... Drawing II.
Woodwork 2½, 5 ..... Shopwork II.
Military Drill 2½, 5 ..... Military II.
Physical Culture 1, 2 ..... Physical Culture I.

THIRD TERM.

Geometry 5 ..... Mathematics Va.
Composition and Rhetoric 5 ..... English III.
Plant Morphology 5, 7 ..... Botany I.
Breeds of Stock 5 ..... Agriculture I.
*Freehand Drawing 2½, 5 ..... Drawing III.
Military Drill 2½, 5 ..... Military III.

* Latin may be elected instead, but no credit will be given towards graduation for less than the full course of six terms.

SOPHOMORE YEAR.

FIRST TERM.

General Chemistry 5, 7 ..... Chemistry I.
Trigonometry 5 ..... Mathematics VI.
Rhetoric 5 ..... English IV.
*Plant Histology 5, 7 ..... Botany II.
Blacksmithing 1½, 3 ..... Shopwork IV.
Military Drill 2½, 5 ..... Military IV.

SECOND TERM.

Physics 3 ..... Physics I.
Physical Laboratory 2, 4 ..... Physics III
General Chemistry 5, 7 ..... Chemistry II.
Rhetoric 4 ..... English V.
Soils and Manures 2½ ..... Agriculture III.
Dairying 2½ ..... Agriculture II.
*Blacksmithing 2½, 5 ..... Shopwork V.
Military Drill 2½, 5 ..... Military V.
Physical Culture 1, 2 ..... Physical Culture II.

THIRD TERM.

*Physics 3 ..... Physics II
Physical Laboratory 2, 4 ..... Physics IV.
Qualitative Analysis 5 ..... Chemistry XV.
English Literature 5 ..... English VI.
Zoology 5, 7 ..... Zoology I.
Irrigation and Drainage 5 ..... Agriculture IV.
Military Drill 2½, 5 ..... Military VI.

JUNIOR YEAR.

FIRST TERM.

English Literature 5.....English VII
*Entomology 5, 7.....Zoology II.
Agricultural Chemistry 5.....Chemistry IV.
Dairying 5.....Agriculture V.
Military Drill 2½, 5.....Military VIII.
Military Science 1.....Military Science I.

SECOND TERM.

Plant Physiology 5, 7.....Botany III.
*Literature 5.....English VIII.
Vertebrate Anatomy 5, 7.....Zoology III.
Agricultural Chemistry 5.....Chemistry IVa.
Military Drill 2½, 5.....Military IX.
Military Science 1.....Military Science II.

THIRD TERM.

American Literature 5.....English IX.
*Surveying 5, 9.....Civil Engineering IV.
†Quantitative Chemistry 5, 7.....Chemistry V.
American Politics 5.....Political Science II.
Physiology 5, 7.....Zoology IV.
Steam Engine 1, 2.....Mechanics IV.
Military Drill 2½, 5.....Military XI.
Military Science 1.....Military Science III.

† Required of students who elect thesis work in the department of chemistry.

SENIOR YEAR.

FIRST TERM.

Economics 5 ..... Political Science I.
Geology 5 ..... Geology I.
Horticulture 2½, Hort. I, or Agrostology 2½ ..... Bot. XII.
German 5, or ..... German I.
French 5 ..... French I.
Military Drill 2½, 5 ..... Military XII.
Military Science 1 ..... Military Science IV.

†*Electives.*

Chemistry 5, 7 ..... Chemistry VI.
Mineralogy 3, 6 ..... Mineralogy I.
Forestry ..... Botany VIII.
Kitchen Gardening ..... Gardening I.
Botany 5, 7 ..... Botany IV.
Zoology 5, 7 ..... Zoology VI.
Bacteriology 5, 7 ..... Bacteriology I.

SECOND TERM.

Psychology 5 ..... Mental Science I.
Horticulture 2½ ..... Horticulture II.
Stock Feeding and Breeding 5 ..... Agriculture VI.
German, or ..... German II.
French 5 ..... French II.
Military Drill 2½, 5 ..... Military XIV.
Military Science 1 ..... Military Science V.

†*Electives.*

Botany 5, 7 ..... Botany V.
Forestry 5 ..... Botany IX.
Kitchen Gardening 5 ..... Gardening II.
Chemistry 5, 7 ..... Chemistry VII.
Zoology 5, 7 ..... Zoology VII.
Bacteriology 5, 7 ..... Bacteriology II.

Assaying 3, 6 ..... Mineralogy IV.
Elocution 1, 2 ..... Elocution V.

THIRD TERM.

Soil Physics 5, 7 ..... Chemistry XXII.
Veterinary Science 5 ..... Agriculture VII.
Horticulture 5 ..... Horticulture III.
German, or ..... German III.
French 5 ..... French III.
Military Drill 2½, 5 ..... Military XVI.
Military Science 1 ..... Military Science VI.

†*Electives.*

American Literature 5 ..... English IX.
Astronomy 5 ..... Mathematics XI.
Forestry 5 ..... Botany X.
Kitchen Gardening 5 ..... Gardening III.
Agricultural Engineering 5 ..... Civil Engineering X.
Botany 5, 7 ..... Botany VI or VII.
Zoology 5, 7 ..... Zoology VIII.
Chemistry 5, 7 ..... Chemistry VIII.
Bacteriology 5, 7 ..... Bacteriology III.
Assaying 3, 6 ..... Mineralogy IV.

†In addition to the required studies seniors must select from the electives a sufficient number of hours to form a full course of 22 hours, counting thesis five hours for last two terms.

A student may upon obtaining written consent of the heads of departments interested, substitute higher mathematics for any other branch of study.

GRADUATE YEAR.

FIRST TERM.

German 5, or ..... German IV.
French 5 ..... French IV.
Highway Construction 5, 7 ..... Civil Engineering VII.
Farm Mechanics 5 ..... Agriculture VIII.
Thesis 3

SECOND TERM.

German 5, or ..... German V.
French 5 ..... French V.
Highway Construction 5, 7 ..... Civil Engineering VIII.
Farm Management 5 ..... Agriculture IX.
Thesis 3

THIRD TERM.

German 5, or ..... German VI.
French 5 ..... French VI.
Live Stock Management 5 ..... Agriculture X.
Thesis 3

Electives.

Steam Engines and Boilers 4 ..... Mechanical Eng. VII.
Agricultural Engineering 5, or ..... Civil Engineering X.
Other Electives of Senior year 5.

COURSE IN HOUSEHOLD SCIENCE.

FRESHMAN YEAR.

FIRST TERM.

Algebra 5 ..... Mathematics I.
English Composition 5 ..... English I.
General History 5 ..... History I.
* { Freehand Drawing 1½, 3 ..... Drawing I.
  { Elocution 1, 2 ..... Elocution I.
General Hygiene ½, 1 ..... Household Science I.
Sewing 2, 4 ..... Household Science II.
Physical Culture 1½, 3 ..... Physical Culture I.

SECOND TERM.

Geometry 5 ..... Mathematics IVa.
English Composition 5 ..... English II.
*General History 5 ..... History II.
Elocution 1, 2 ..... Elocution II.
Freehand Drawing 1½, 3 ..... Drawing II.
Etiquette ½, 1 ..... Household Science III
Sewing 2, 4 ..... Household Science IV.
Physical Culture 1½, 3 ..... Physical Culture II.

THIRD TERM.

Geometry 5 ..... Mathematics Va.
Composition and Rhetoric 5 ..... English III.
Plant Morphology 5, 7 ..... Botany I.
*Freehand Drawing 2½, 5 ..... Drawing III.
Sewing 2½, 5 ..... Household Science V.
Physical Culture 1½, 3 ..... Physical Culture III.

*Latin or German may be elected instead, but no credit will be given towards graduation for less than the full course of six terms.

SOPHOMORE YEAR.

FIRST TERM.

General Chemistry 5, 7 ..... Chemistry I.
Plant Histology 5, 7 ..... Botany II.
Rhetoric 5 ..... English IV.
Dressmaking 2½, 5 ..... Household Science VI.
Elocution 1, 2 ..... Elocution III.
*Physical Culture 1½, 3 ..... Physical Culture IV.
Care of the Sick 2 ..... Household Science XV.

SECOND TERM.

*Floriculture 5 ..... Floriculture I.
History of Eastern Peoples 5 ..... History III.
General Chemistry 5, 7 ..... Chemistry II.
Rhetoric 4 ..... English V.
Dressmaking 2½, 5 ..... Household Science VII.
Physical Culture 1½, 3 ..... Physical Culture V.

THIRD TERM.

English Literature 5 ..... English VI.
Zoology 5, 7 ..... Zoology I.
Chemistry of Common Life ..... Chemistry XI.
Modern History 5 ..... History IV.
*Dressmaking 2½, 5 ..... Household Science VIII.

JUNIOR YEAR.

FIRST TERM.

Literature 5 ..... English VII.
Entomology 5, 7 ..... Zoology II.
Floriculture 5 ..... Floriculture II.
German 5, or, ... German I.
Latin 5 ..... Latin I.
Cookery 1½, 3 ..... Household Science IX.

SECOND TERM.

Plant Physiology 5, 7 ..... Botany III.
Literature 5 ..... English VIII.
German 5, or, ... German II.
Latin 5 ..... Latin II.
Vertebrate Anatomy 5, 7 ..... Zoology III.
Cookery 1½, 3 ..... Household Science X.
Physical Culture 1½, 3 ..... Physical Culture VI.

THIRD TERM.

Dairying 5, or, ... Agriculture V.
American Literature 5 ..... English IX.
German 5, or, ... German III.
Latin 5 ..... Latin III.
Physiology 5, 7 ..... Zoology IV.
American Politics 5 ..... Political Science II.
Cookery 3 ..... Household Science XI

Students desiring to elect thesis work in the department of chemistry must take Course V in chemistry during the third term of the Junior year.

SENIOR YEAR.

FIRST TERM.

Economics 5 ..... Political Science I.
Aesthetics 5 ..... Household Science XII.
German 5, or, ... German IV.
Latin 5 ..... Latin IV.

†*Electives.*

Literature 5 ..... English X.
Botany 5, 7 ..... Botany IV.
Zoology 5, 7 ..... Zoology V.
Bacteriology 5, 7 ..... Bacteriology I.
Elocution 1, 2 ..... Elocution IV.
Drawing 2½, 5 ..... Drawing IV.
Chemistry of Foods 5, 7 ..... Chemistry XII.
Geology 5 ..... Geology I.

SECOND TERM.

Psychology 5 ..... Mental Science I.
German 5, or, ... German V.
Latin 5 ..... Latin V.
Aesthetics 5 ..... Household Science XIII.

†*Electives.*

Physics 3, 7 ..... Physics I.
Physical Laboratory 2, 4 ..... Physics IV.
Chemistry of Foods 5, 7 ..... Chemistry XIII.
Zoology 5, 7 ..... Zoology VI.
Botany 5, 7 ..... Botany V.
Elocution 1, 2 ..... Elocution V.
Drawing 2½ 5 ..... Drawing V.
Bacteriology 5, 7 ..... Bacteriology II.
Literature 5 ..... English XI.

THIRD TERM.

Domestic Lectures 5 ..... Household Science XIV.
German 5, or, ... German VI.
Latin 5 ..... Latin VI.

† *Electives.*

Literature 5	English XII.
Physics 3	Physics II.
Physical Laboratory 2, 4	Physics IV.
Chemistry of Foods 5, 7	Chemistry XIV.
Zoology 5, 7	Zoology VII.
Botany 5, 7	Botany VI.
Elocution 1, 2	Elocution VI.
Drawing 2½, 5	Drawing VI.
Astronomy 5	Mathematics XI.
Bacteriology 5, 7	Bacteriology III.
Landscape Gardening 5	Floriculture IV.

† In addition to the regular studies seniors must select from the electives enough hours to form a full course of 22 hours, counting thesis 5 hours for last two terms.

A student may upon obtaining written consent of the heads of departments interested, substitute higher mathematics for any other branch of study.

COURSE IN MECHANICAL ENGINEERING

FRESHMAN YEAR.

FIRST TERM.

Algebra 5 ..... Mathematics I.
English Composition 5 ..... English I.
General History 5 ..... History I.
* { Freehand Drawing 1½, 3 ..... Drawing I.
* { Elocution 1, 2 ..... Elocution I.
Woodwork 2½, 5 ..... Shopwork I.
Military Drill 2½, 5 ..... Military I.

SECOND TERM.

Geometry 5 ..... Mathematics IV.
English Composition 5 ..... English II.
*General History 5 ..... History II.
Elocution 1, 2 ..... Elocution II.
Freehand Drawing 1½, 3 ..... Drawing II.
Woodwork 2½, 5 ..... Shopwork II.
Military Drill 2½, 5 ..... Military II.
Physical Culture 1, 2 ..... Physical Culture I.

THIRD TERM.

Geometry 5 ..... Mathematics V.
Composition and Rhetoric 5 ..... English III.
Modern History 5 ..... History IV.
*Freehand Drawing 2½, 5 ..... Drawing III.
Woodwork 2½, 5 ..... Shopwork III.
Military Drill 2½, 5 ..... Military III.

*Latin may be elected instead, but no credit will be given towards graduation for less than the full course of six terms.

SOPHOMORE YEAR.

FIRST TERM.

Trigonometry 5 ..... Mathematics VI.
Rhetoric 5 ..... English IV.
Mechanical Drawing 5, 10 ..... Mechanical Engineering I.
*Blacksmithing 2½, 5 ..... Shopwork IV.
Military Drill 2½, 5 ..... Military IV.

SECOND TERM.

Algebra 5 ..... Mathematics II.
Physics 3 ..... Physics I.
Physical Laboratory 2, 4 ..... Physics III.
Rhetoric 4 ..... English V.
*Mechanical Drawing 2½, 5 .... Mechanical Engineering II.
Blacksmithing 2½, 5 ..... Shopwork V.
Military Drill 2½, 5 ..... Military V.
Physical Culture 1, 2 ..... Physical Culture II.

THIRD TERM.

Algebra 5 ..... Mathematics III.
Physics 3 ..... Physics II.
Physical Laboratory ..... Physics IV.
English Literature 5 ..... English VI.
Mechanical Drawing 1½, 3 .... Mechanical Engineering III.
Blacksmithing 2½, 5 ..... Shopwork VI.
*Military Drill 2½, 5 ..... Military VI.

§JUNIOR YEAR.

FIRST TERM.

General Chemistry 5, 7.....Chemistry I.
*Literature 5.....English VII.
Analytical Geometry 5.....Mathematics VII.
Descriptive Geometry 5.....Mechanical Engineering V.
Machine Shop 2½, 5.....Shopwork VII.
Military Drill 2½, 5.....Military VII.
Military Science 1.....Military Science I.

SECOND TERM.

General Chemistry 5, 7.....Chemistry II.
Materials of Engineering 3...Mechanical Engineering XX.
*Descriptive Geometry 1½, 3..Mechanical Engineering VI.
Calculus 5.....Mathematics VIII.
Machine Shop 2½, 5.....Shopwork VIII.
Military Drill 2½, 5.....Military IX.
Military Science 1.....Military Science II.

THIRD TERM.

Mechanism 5, 7.....Mechanical Engineering IV.
Calculus 5.....Mathematics IX.
Steam Engines and Boilers 4, Mechanical Engineering VII.
American Politics 5.....Political Science II.
*Machine Shop 2, 4.....Shopwork IX.
Military Drill 2½, 5.....Military XI.
Military Science 1.....Military Science III.

§Students wishing to specialize in electrical engineering may elect to do so at the beginning of the junior year.

SENIOR YEAR.

FIRST TERM.

Economics 5 ..... Political Science I.
Mechanics of Engineering 5, Mechanical Engineering VIII.
Physics 5, 7 ..... Physics V.
German 5, or, ... German I.
French 5 ..... French I.
Military Drill $2\frac{1}{2}$, 5 ..... Military XII.
Military Science 1 ..... Military Science IV.

†*Electives.*

Literature 5 ..... English X.
Woodwork $2\frac{1}{2}$, 5 ..... Shopwork X.
Ironwork $2\frac{1}{2}$, 5 ..... Shopwork XI.
Mechanical Drawing $2\frac{1}{2}$, 5 ..... Mechanical Engineering X.
Mineralogy 3, 6 ..... Mineralogy I.

SECOND TERM.

Psychology 5 ..... Mental Science I.
Mechanics of Engineering 5, Mechanical Engineering XII.
German 5, or, ... German II.
French 5 ..... French II.
Military Drill $2\frac{1}{2}$, 5 ..... Military XIV.
Military Science 1 ..... Military Science V.

†*Electives.*

Literature 5 ..... English XI.
Structure of Woods and Metals 5, 7 ..... Botany XI.
Woodwork $2\frac{1}{2}$, 5 ..... Shopwork XII.
Ironwork $2\frac{1}{2}$, 5 ..... Shopwork XIII.
Mechanical Drawing $2\frac{1}{2}$, 5 ... Mechanical Engineering XIII.
Assaying 3, 6 ..... Mineralogy IV.
Elocution 1, 2 ..... Elocution V.

THIRD TERM.

Mechanics of Engineering 5 . . Mechanical Engineering XIV.
German 5, or, ... German III.
French 5 . . . . . French III.
Military Drill $2\frac{1}{2}$, 5 . . . . . Military XVI.
Military Science 1 . . . . . Military Science VI.

†*Electives.*

Astronomy 5 . . . . . Mathematics XI.
American Literature 5 . . . . . English IX.
Surveying 5, 9 . . . . . Civil Engineering IV.
Woodwork $2\frac{1}{2}$, 5 . . . . . Shopwork XIV.
Ironwork $2\frac{1}{2}$, 5 . . . . . Shopwork XV.
Mechanical Drawing $2\frac{1}{2}$, 5 . . . Mechanical Engineering XVI.
Assaying 3, 6 . . . . . Mineralogy V.

† In addition to the regular studies seniors must select from the electives enough hours to form a full course of 22 hours, counting thesis 5 hours for last two terms.

GRADUATE YEAR.

FIRST TERM.

German 5, or ..... German I
French 5 ..... French I
Hydraulic Motors 3 ..... Mechanical Engineering XXI
Thermodynamics 5 ..... Mechanical Engineering IX
Experimental Engineering 2, 4 .... Mechanical Eng. XXIV

SECOND TERM.

German 5 or ..... German II
French 5 ..... French II
Machine Design 5, 7 .... Mechanical Engineering XI
Internal Combustion Engines 3 .... Mechanical Eng. XXII
Experimental Engineering 2, 4 .... Mechanical Eng. XXV

THIRD TERM.

German 5 or, ... German III
French 5 ..... French III
Machine Design 5, 7 ..... Mechanical Engineering XV
Power Plants and Transmis. of Power 3 .. Mech. Eng. XXIII
Experimental Engineering 2, 4 ... Mechanical Eng. XXVI

JUNIOR YEAR—ELECTRICAL.

FIRST TERM.

Electricity and Magnetism 6, 9 . . . Electrical Engineering I.
Descriptive Geometry 5 . . . . . Mechanical Engineering V.
Analytical Geometry 5 . . . . . Mathematics VII.
General Chemistry 5, 7 . . . . . Chemistry I.
*Machine Shop $2\frac{1}{2}$, 5 . . . . . Shopwork VII.
Military Drill $2\frac{1}{2}$, 5 . . . . . Military VII.
Military Science 1 . . . . . Military Science I.

SECOND TERM.

Electricity and Magnetism 5, 7 . . Electrical Engineering II.
General Chemistry 5, 7 . . . . . Chemistry II.
*Descriptive Geometry $1\frac{1}{2}$, 3 . . Mechanical Engineering VI.
Calculus 5 . . . . . Mathematics VIII.
Machine Shop $2\frac{1}{2}$, 5 . . . . . Shopwork VIII.
Military Drill $2\frac{1}{2}$, 5 . . . . . Military IX.
Military Science 1 . . . . . Military Science II.

THIRD TERM.

Calculus 5 . . . . . Mathematics IX.
Electricity and Magnetism 3 . . . Electrical Engineering III.
Steam Engines and Boilers 4 . Mechanical Engineering VII.
American Politics 5 . . . . . Political Science II.
Mechanism 5, 7 . . . . . Mechanical Engineering IV.
Machine Shop 2, 4 . . . . . Shopwork IX.
Military Drill $2\frac{1}{2}$, 5 . . . . . Military XI.
Military Science 1 . . . . . Military Science III.

SENIOR YEAR.

FIRST TERM.

Economics 5 ..... Political Science I.
Mechanics of Engineering 5. Mechanical Engineering VIII.
Alternating Currents and Dynamo Design 5, 7 } .... Electrical Engineering IV.
German 5, or ..... German I.
French 5 ..... French I.
Military Drill 2½, 5 ..... Military XII.
Military Science 1 ..... Military Science IV.

†*Electives.*

Literature 5 ..... English X.
Woodwork 2½, 5 ..... Shopwork X.
Ironwork 2½, 5 ..... Shopwork XI.
Mechanical Drawing 2½, 5 ..... Mechanical Engineering X.
Mineralogy 3, 6 ..... Mineralogy I.

SECOND TERM.

Psychology 5 ..... Mental Science I.
Mechanics of Engineering 5.. Mechanical Engineering XII.
Alternating Currents and Dynamo Design 5, 7 } .....Electrical Engineering V.
German 5, or ..... German II.
French 5..... French II.
Military Drill 2½, 5..... Military XIV.
Military Science 1..... Military Science V.

†*Electives.*

Woodwork 2½, 5..... Shopwork XII.
Ironwork 2½, 5. ..... Shopwork XIII.
Mechanical Drawing 2½, 5... Mechanical Engineering XIII.

†Assaying 3, 6 ..... Mineralogy IV.
Elocution 1, 2 ..... Elocution V.
Literature 5 ..... English XI.

THIRD TERM.

Mechanics of Engineering 5 .. Mechanical Engineering XIV.
Alternating Currents and Dynamo Design 5, 7 } .... Electrical Engineering VI.
German 5, or ..... German III.
French 5 ..... French III.
‡Military Drill $2\frac{1}{2}$, 5 ..... Military XVI.
Military Science 1 ..... Military Science VI.

†*Electives.*

Astronomy 5 ..... Mathematics XI.
American Literature, 5 ..... English IX.
Surveying 5, 9 ..... Civil Engineering IV.
Woodwork $2\frac{1}{2}$, 5 ..... Shopwork XIV.
Ironwork $2\frac{1}{2}$, 5 ..... Shopwork XV.
Mechanical Drawing $2\frac{1}{2}$, 5 .. Mechanical Engineering XIV.
Assaying 3, 6 ..... Mineralogy V.

† Students electing Assaying must have previously taken Mineralogy I.
‡ Seniors who accept commissions as cadet officers are required to drill during the third term.
In addition to the regular studies seniors must select from the electives enough hours to form a full course of 22 hours, counting thesis five hours for last two terms.

GRADUATE YEAR.

FIRST TERM.

German 5 or ..... German IV
French 5 ..... French IV
Thermodynamics 5 ..... Mechanical Engineering IX
Advanced Alternat. Cur. Theory 5, 7 .. Electrical Eng. VII

SECOND TERM.

German 5 or ..... German V
French 5 ..... French V
Machine Design 5, 7 ..... Mechanical Engineering XI
Advanced Alternat. Cur. Theory 5, 7 .. Electrical Eng. VIII

THIRD TERM.

German 5 or ..... German VI
French 5 ..... French VI
Machine Design 5, 7 ..... Mechanical Engineering XV
Advanced Alternat. Cur. Theory 5, 7 ... Electrical Eng. IX

COURSE IN PHARMACY.

FRESHMAN YEAR.

FIRST TERM.

‡Algebra 5 ..... Mathematics I.
‡English Composition 5 ..... English I.
General History 5 ..... History I.
‡Latin 5 ..... Latin I.
Freehand Drawing 1½, 3 ..... Drawing I.
Elocution 1, 2 ..... Elocution I.
‡ †Military Drill 2½, 5 ..... Military I.

SECOND TERM.

Geometry 5 ..... Mathematics IVa.
‡English Composition 5 ..... English II.
‡Latin 5 ..... Latin II.
General History 5 ..... History II.
Freehand Drawing 1½, 3 ..... Drawing II.
Elocution 1, 2 ..... Elocution II.
‡Military Drill 2½, 5 ..... Military II.
‡Physical Culture 1, 2 ..... Physical Culture I.

THIRD TERM.

Geometry 5 ..... Mathematics Va.
‡Composition and Rhetoric 5 ..... English III.
‡Latin 5 ..... Latin III.
Plant Morphology 5, 7 ..... Botany I.
‡Military Drill 2½, 5 ..... Military III.

†Throughout the course young ladies take Physical Culture instead.

‡Students desiring to take a short course in Pharmacy will be given a certificate in Pharmacy after completing the studies marked (‡).

SOPHOMORE YEAR.

FIRST TERM.

‡General Chemistry 5, 7 ..... Chemistry I.
Rhetoric 5 ..... English IV.
German 5 ..... German I.
Plant Histology 5, 7 ..... Botany II.
‡Military Drill 2½, 5 ..... Military IV.

SECOND TERM.

Physics 3 ..... Physics I.
Physical Laboratory 2, 4 ..... Physics III.
Rhetoric 4 ..... English V.
German 5 ..... German II.
‡General Chemistry 5, 7 ..... Chemistry II.
‡Military Drill 2½, 5 ..... Military V.
Physical Culture 1, 2 ..... Physical Culture I.

THIRD TERM.

German 5 ..... German III.
Zoology 5, 7 ..... Zoology I.
‡Qualitative Analysis 5, 10 ..... Chemistry XV.
Physics 3 ..... Physics II.
Physical Laboratory 2, 4 ..... Physics IV.
‡Military Drill 2½, 5 ..... Military VI.

JUNIOR YEAR.

FIRST TERM.

Literature 5 ..... English VII.
‡Qualitative Analysis 5 ..... Chemistry XVI.
‡Therapeutics and Doses 2 ..... Pharmacy V.
‡Pharmacy 2 ..... Pharmacy II.
‡Nomenclature 1 ..... Pharmacy VI.
German 5 ..... German IV.
Military Drill 2½, 5 ..... Military VII.
Military Science 1 ..... Military Science I.

SECOND TERM.

‡Organic Chemistry 5, 7 ..... Chemistry XVII.
‡Pharmacognosy 2 ..... Pharmacy III.
Vertebrate Anatomy 5, 7 ..... Zoology III.
‡Pharmacy 3, 5 ..... Pharmacy IV.
Literature 5 ..... English VIII.
German 5 ..... German V.
Military Drill 2½, 5 ..... Military IX.
Military Science 1 ..... Military Science II.

THIRD TERM.

‡Quantitative Analysis 5, 10 ..... Chemistry V.
Physiology 5, 7 ..... Zoology IV.
Plant Classification 5, 7 ..... Botany VII.
‡Pharmacognosy 2 ..... Pharmacy I.
‡Pharmacy 3, 5 ..... Pharmacy VII.
German 5 ..... German VI.
Military Drill 2½ 5 ..... Military XI.
Military Science 1 ..... Military Science III.

SENIOR YEAR.

FIRST TERM.

‡Materia Medica and Therapeutics 3.....Pharmacy VIII.
‡Operative Pharmacy 4, 6.....Pharmacy IX.
‡Pharmaceutical Analysis 5, 10.....Chemistry XVIII.
Bacteriology 5, 7.....Bacteriology I.
Military Drill 2½, 5.....Military XII.
Military Science 1.....Military Science IV.

SECOND TERM.

‡Materia Medica and Therapeutics 3.....Pharmacy XIV.
‡Prescription Practice 4½, 7.....Pharmacy X.
‡Pharmaceutical Analysis 5, 10.....Chemistry XIX.
Bacteriology 5, 7.....Bacteriology II.
Military Drill 2½, 5.....Military XIV.
Military Science 1.....Military Science V.

THIRD TERM.

‡Pharmacognosy and Synonyms 3.....Pharmacy XI.
‡Prescription Practice 5½, 8.....Pharmacy XV.
‡Toxicology 1.....Pharmacy XIII.
‡Pharmaceutical Analysis 5, 10.....Chemistry XX.
Bacteriology 5, 7.....Bacteriology III.
Military Drill 2½, 5.....Military XVI.
Military Science 1.....Military Science VI.

‡A student may upon obtaining written consent of the heads of departments interested, substitute higher mathematics for any other branch of study.

COURSE IN CIVIL ENGINEERING.

FRESHMAN YEAR.

FIRST TERM.

Algebra 5 ..... Mathematics I
English Composition 5 ..... English I
General History 5 ..... History I
*Freehand Drawing 1½, 3 ..... Drawing I
*Elocution 1, 2 ..... Elocution I
Woodwork 2½, 5 ..... Shopwork I
Military Drill 2½, 5 ..... Military I

SECOND TERM.

Geometry 5 ..... Mathematics IV
English Composition 5 ..... English II
*General History 5 ..... History II
Freehand Drawing 1½, 3 ..... Drawing II
Elocution 1, 2 ..... Elocution II
Woodwork 2½, 5 ..... Shopwork II
Military Drill 2½, 5 ..... Military II
Physical Culture 1, 2 ..... Physical Culture I

THIRD TERM.

Geometry 5 ..... Mathematics V
Composition and Rhetoric 5 ..... English III
Modern History 5 ..... History III
*Freehand Drawing 2½, 5 ..... Drawing III
Woodwork 5 ..... Shopwork III
Military Drill 2½, 5 ..... Military III

*Latin may be elected instead, but no credit will be given toward graduation for less than the full course of six terms.

SOPHOMORE YEAR.

FIRST TERM.

General Chemistry 5, 7 ..... Chemistry I
Trigonometry 5 ..... Mathematics VI
Rhetoric 5 ..... English IV
*Mechanical Drawing 5, 10 ..... Mechanical Engineering I
Blacksmithing 2½, 5 ..... Shopwork V
Military Drill 2½, 5 ..... Military IV

SECOND TERM.

Physics 3 ..... Physics I
Physical Laboratory 2, 4 ..... Physics III
Algebra 5 ..... Mathematics II
General Chemistry 5, 7 ..... Chemistry II
*Mechanical Drawing 2½, 5 ..... Mechanical Engineering II
Surveying 5, 7 ..... Civil Engineering I
Military Drill 2½, 5 ..... Military V
Physical Culture 1, 2 ..... Physical Culture II

THIRD TERM.

Physics 3 ..... Physics II
Physical Laboratory 2, 4 ..... Physics IV
*Algebra 5 ..... Mathematics III
Surveying 5, 10 ..... Civil Engineering II
Qualitative Analysis 5, 10 ..... Chemistry XV
Military Drill 2½, 5 ..... Military VI

*Latin may be elected instead, but no credit will be given toward graduation for less than the full course of six terms.

JUNIOR YEAR.

FIRST TERM.

Surveying 3, 6 ..... Civil Engineering III
Analytical Geometry 5 ..... Mathematics VII
*Descriptive Geometry 5 ..... Mechanical Engineering V
Machine Shop 1½, 2½ ..... Shopwork VII
Geology 5 ..... Geology I
Military Drill 2½, 5 ..... Military VII
Military Science 1 ..... Military Science I

SECOND TERM.

Railroads 5, 7 ..... Civil Engineering V
Geology 5 ..... Geology II
*Descriptive Geometry 1½, 3 .. Mechanical Ennineering XI
Calculus 5 ..... Mathematics VIII
Machine Shop 2½, 5 ..... Shopwork VIII
Military Drill 2½, 5 ..... Military IX
Military Science 1 ..... Military Science II
Materials of Engineering 3 ... Mechanical Engineering XX

THIRD TERM.

Calculus 5 ..... Mathematics IX
Steam Engines and Boilers 4 . Mechanical Engineering VII
*American Politics ..... Political Science II
Railroads 5, 8 ..... Civil Engineering VI
Military Drill 2½, 5 ..... Military XI
Military Science 1 ..... Military Science III

*Latin or German may be elected instead, but no credit will be given toward graduation for less than the full course of six terms.

SENIOR YEAR.

FIRST TERM.

German 5 or ..... German I
French 5 ..... French I
Mechanics of Engineering 5. Mechanical Engineering VIII
Highway Construction 5, 7 ..... Civil Engineering VII
Physics 3½, 7 ..... Physics V
Military Drill 2½, 5 ..... Military XII
Military Science 1 ..... Military Science IV

SECOND TERM.

German 5 or ..... German II
French 5 ..... French II
Highway Construction 5, 9 ..... Civil Engineering VIII
Psychology 5 ..... Mental Science I
Mechanics of Engineering 5 .. Mechanical Engineering XII
Military Drill 2½, 5 ..... Military XIV
Military Science 1 ..... Military Science V

THIRD TERM.

Mining Engineering 5 ..... Mathematics XV
German 5 or ..... German III
French 5 ..... French III
Mechanics of Engineering 5. Mechanical Engineering XIV
Masonry Construction and Foundations 5 ... Civil Eng. IX
Military Drill 2½, 5 ..... Military XVI
Military Science 1 ..... Military Science VI

GRADUATE YEAR.

FALL TERM.

Roofs and Bridges 5, 7 ..... Civil Engineering XI
German 5 or ..... German IV
French 5 ..... French IV
‡ Thesis 3; † Electives 5

WINTER TERM.

Roofs and Bridges 5, 7 ..... Civil Engineering XII
Sanitary Engineering 4, 7 ..... Civil Engineering XVI
German 5 or ..... German V
French 5 ..... French V
‡ Thesis 3; † Electives 2

SPRING TERM.

Water Supply Engineering 5, 8 ... Civil Engineering XVII
German 5 or ..... German VI
French 5 ..... French VI
Contracts and Specifications 2 ... Civil Engineering XVIII
‡ Thesis 3; † Electives 3

‡ Subject for thesis to be chosen by student and approved by the head of the Department of Civil Engineering not later than October 1.

† To be selected from the Mechanical, Electrical or Mining Courses subject to the approval of the Professor of Civil Engineering.

‡ COURSE IN MINING.

FRESHMAN YEAR.

FIRST TERM.

†Algebra 5 ..... Mathematics I.
†English Composition 5 ..... English I.
†General History 5 ..... History I.
*Freehand Drawing 1½, 3 ..... Drawing I.
*Elocution 1, 2 ..... Elocution I.
†Woodwork 2½, 5 ..... Shopwork I.
†Military Drill 2½, 5 ..... Military I.

SECOND TERM

Geometry 5 ..... Mathematics IV.
†English Composition 5 ..... English II
General History 5 ..... History II.
*Freehand Drawing 1½, 3 ..... Drawing II.
Elocution 1, 2 ..... Elocution II.
†Woodwork 2½, 5 ..... Shopwork II.
†Military Drill 2½, 5 ..... Military II.
†Physical Culture 1, 2 ..... Physical Culture I.

THIRD TERM.

Geometry 5 ..... Mathematics V.
†Composition and Rhetoric 5 ..... English III.
Modern History 5 ..... History III.
*Freehand Drawing 2½, 5 ..... Drawing III.
Woodwork 5 ..... Shopwork III
†Military Drill 2½, 5 ..... Military III.

‡ Students desiring to take a short course in mining will be given a certificate in mining after completing the studies marked [†].

* Latin may be elected instead, but no credit will be given toward graduation for less than the full course of six terms.

SOPHOMORE YEAR.

FIRST TERM.

General Chemistry 5, 7 ..... Chemistry I.
Trigonometry 5 ..... Mathematics VI.
†Rhetoric 5 ..... English IV.
*Mechanical Drawing 5, 10 ..... Mechanical Engineering I.
†Blacksmithing 2½, 5 ..... Shopwork IV.
†Military Drill 2½, 5 ..... Military IV.

SECOND TERM.

Physics 3. ..... Physics I.
Physical Laboratory 2, 4 ..... Physics III.
Algebra 5 ..... Mathematics II.
General Chemistry 5, 7 ..... Chemistry II.
*Mechanical Drawing 2½, 5 ..... Mechanical Engineering II.
†Surveying 5, 7 ..... Civil Engineering I
†Military Drill 2½, 5 ..... Military V.
Physical Culture 1, 2 ..... Physical Culture II.

THIRD TERM.

Physics 3 ..... Physics II.
Physical Laboratory 2, 4 ..... Physics IV.
*Algebra 5 ..... Mathematics III.
Surveying 5, 10 ..... Civil Engineering II
Qualitative Analysis 5, 10 ..... Chemistry XV.
†Military Drill 2½, 5 ..... Military VI.

*Latin may be elected instead, but no credit will be given toward graduation for less than he full course of six terms.

JUNIOR YEAR.

FIRST TERM.

Surveying 3, 6	Civil Engineering III.
Analytical Geometry 5	Mathematics VII.
*Descriptive Geometry 5	Mechanical Engineering V.
†Machine Shop 1½, 2½	Shopwork VII.
†Geology 5	Geology I.
Military Drill 2½, 5	Military VII.
Military Science 1	Military Science I.

SECOND TERM.

Metallurgy of Iron 5	Metallurgy I.
†Geology 5	Geology II.
*Descriptive Geometry 1½, 3	Mechanical Engineering XI.
Calculus 5	Mathematics VIII.
†Machine Shop 2½, 5	Shopwork VIII.
Military Drill 2½, 5	Military IX.
Military Science 1	Military Science II.

THIRD TERM.

Calculus 5	Mathematics IX.
Steam Engines and Boilers 4	Mech. Engineering VII.
*American Politics 5	Political Science II.
†Mineralogy 5, 7	Mineralogy I.
Military Drill 2½, 5	Military XI.
Military Science 1	Military Science III.

*Latin or German may be elected instead, but no credit will be given toward graduation for less than the full course of six terms.

SENIOR YEAR.

FIRST TERM.

†Mineralogy 5, 7 ..... Mineralogy II.
Mechanics of Engineering 5. Mechanical Engineering VIII.
Economics 5 ..... Political Science I.
German 5 or ..... German I.
French 5 ..... French I.
Military Drill 2½, 5 ..... Military XII.
Military Science 1 ..... Military Science IV.

SECOND TERM.

Mineralogy 5, 7 ..... Mineralogy III.
†Assaying 3, 6 ..... Chemistry IX.
German 5 or ..... German II.
French 5 ..... French II.
Mechanics of Engineering 5. Mechanical Engineering XII.
Military Drill 2½, 5 ..... Military XIV.
Military Science 1 ..... Military Science V.

THIRD TERM.

Mining Engineering 5 ..... Mining Engineering XV.
†Assaying 3, 6 ..... Chemistry X.
Mechanics of Engineering 5. Mechanical Engineering XIV.
German 5 or ..... German III.
French 5 ..... French III.
Military Drill 2½, 5 ..... Military XVI.
Military Science 1 ..... Military Science VI.

GRADUATE YEAR.

FIRST TERM.

German 5 or ..... German IV
French 5 ..... French IV
Physics 5 ..... Physics V
General Metallurgy 5 ..... Metallurgy I
Thesis 2.

SECOND TERM.

German 5 or ..... German V
French 5 ..... French V
Psychology 5 ..... Mental Science I
Special Processes 5 ..... Metallurgy II
Thesis 2.

THIRD TERM.

German 5 or ..... German VI
French 5 ..... French VI
Metallurgy of Iron and Steel 5 ..... Metallurgy III
Metallurgical Practice 5 ..... Metallurgy IV
Thesis 2.

LITERARY COMMERCE COURSE.

FRESHMAN YEAR.

FIRST TERM.

General History 5 ..... History I.
English Composition 5 ..... English I.
Commercial Arithmetic 5 ..... Arithmetic I.
Algebra 5 ..... Mathematics I.
Elocution 1, 2 ..... Elocution I.
Military Drill 2½, 5 ..... Military I.
Physical Culture 1½, 3 ..... Physical Culture I.

SECOND TERM.

General History 5 ..... History II.
English Composition 5 ..... English II.
Commercial Arithmetic 5 ..... Arithmetic II.
Geometry 5 ..... Mathematics IV.
Elocution 1, 2 ..... Elocution II.
Military Drill 2½, 5 ..... Military II.
Physical Culture 1½, 3 ..... Physical Culture II.

THIRD TERM.

Modern History 5 ..... History IV.
Composition and Rhetoric 5 ..... English III.
Commercial Arithmetic 5 ..... Arithmetic III.
Geometry 5 ..... Mathematics V.
Penmanship 3 ..... Penmanship I.
Military Drill 2½, 5 ..... Military III.
Physical Culture 1½, 3 ..... Physical Culture III.

SOPHOMORE YEAR.

FIRST TERM.

Bookkeeping 5 ..... Bookkeeping I.
Latin 5 or ..... Latin I.
German 5 ..... German I.
Rhetoric 5 ..... English IV.
Penmanship 3 ..... Penmanship II.
Floriculture 2, 3 ..... Floriculture I.
Military Drill 2½, 5 ..... Military IV.
Physical Culture 1½, 3 ..... Physical Culture IV.

SECOND TERM.

Bookkeeping 5 ..... Bookkeeping II.
Latin 5 or ..... Latin II.
German 5 ..... German II.
Rhetoric 5 ..... English V.
Penmanship 3 ..... Penmanship III
Algebra 5 ..... Mathematics II.
Military Drill 2½, 5 ..... Military V.
Physical Culture 1½, 3 ..... Physical Culture V.

THIRD TERM.

Bookkeeping 5 ..... Bookkeeping III.
Latin 5 or ..... Latin III.
German 5 ..... German III.
Penmanship 3 ..... Penmanship IV.
Algebra 5 ..... Mathematics III.
Physiology 5, 7 ..... Zoology IV.
Military Drill 2½, 5 ..... Military VI.
Physical Culture 1½, 3 ..... Physical Culture VI.

JUNIOR YEAR.

FIRST TERM.

Bookkeeping 3.....Bookkeeping IV.
Latin 5, or,.....Latin IV.
German 5.....German IV.
English 5.....English VII.
Penmanship 3.....Penmanship V.
Stenography 4.....Stenography I.
Typewriting 4.....Typewriting I.
Military Drill 2½, 5.....Military VII.
Military Science 1.....Military Science I.
Physical Culture 1½, 3.....Physical Culture VII.

SECOND TERM.

Bookkeeping 3.....Bookkeeping V.
Latin 5, or,.....Latin V.
German 5.....German V.
Penmanship 3.....Penmanship VI.
Stenography 4.....Stenography II.
Typewriting 4.....Typewriting II.
English 5.....English VIII.
Military Drill 2½, 5.....Military VIII.
Military Science 1.....Military Science II.
Physical Culture 1½, 3.....Physical Culture VIII.

THIRD TERM.

Bookkeeping 3.....Bookkeeping VI.
Latin 5, or,.....Latin VI.
German 5.....German VI.
Penmanship 3.....Penmanship VII
American Politics 5.....Civics I.
Stenography 4.....Stenography III.
Typewriting 4.....Typewriting III.
Military Science 1.....Military Science III.
Military Drill 2½, 5.....Military IX
Physical Culture 2½, 5.....Physical Culture IX.

SENIOR YEAR.

FIRST TERM.

Economics 5.....Political Science I.
Commercial Law 3.....Commercial Law I.
English 5.....English X.
Aesthetics 5.....Household Science XII.
Military Science 1.....Military Science IV.
Military Drill 2½, 5.....Military X.
Physical Culture ¾, 1½.....Physical Culture X.

SECOND TERM.

Commercial Law 3.....Commercial Law II.
English 5.....English XI.
History of Eastern Nations 5.....History III.
Psychology 5.....Mental Science I.
Military Science 1.....Military V.
Military Drill 2½, 5.....Military XI.
Physical Culture ¾, 1½.....Physical Culture XI.

THIRD TERM.

Stenography 3.....Stenography IV.
Typewriting 2.....Typewriting IV.
Plant Morphology 5, 7.....Botany I.
English 5.....English IX.
Military Science 1.....Military Science VI.
Military Drill 2½, 5.....Military XII.
Physical Culture 2½, 5.....Physical Culture XII.

A student may upon obtaining written consent of the heads of departments interested, substitute higher mathematics for any other branch of study.

COURSE IN FORESTRY.

FRESHMAN YEAR.

Forestry I throughout the year.

FIRST TERM.

Algebra 5 ..... Mathematics I
English Composition 5 ..... English I
Bookkeeping 5 ..... Bookkeeping I
Woodwork 2½, 5 ..... Shopwork I
Freehand Drawing 2½, 5 ..... Drawing I
Declamation 2 ..... Elocution I
Military Drill 2½, 5 ..... Military I

SECOND TERM.

Geometry 5 ..... Mathematics IV
English Composition 5 ..... English II
Bookkeeping 5 ..... Bookkeeping II
Woodwork 2½, 5 ..... Shopwork II
Freehand Drawing 2½ ..... Drawing II
Declamation 2 ..... Elocution II
Military Drill 2½, 5 ..... Military II

THIRD TERM.

Geometry 5 ..... Mathematics V
Composition and Rhetoric 5 ..... English III
Plant Morphology and Ecology 5, 7 ..... Botany I
Woodwork 2½, 5 ..... Shopwork III
Breeds of Stock 5 ..... Agriculture I
Military Drill 2½, 5 ..... Military III

SOPHOMORE YEAR.

Forestry I throughout the year.

FIRST TERM.

Rhetoric 5 ..... English IV
Trigonometry 5 ..... Mathematics VI
Inorganic Chemistry 5, 7 ..... Chemistry I
Plant Histology 6 ..... Botany II
Sylviculture 1 ..... Forestry IV
Woodwork 2½, 5 ..... Shopwork IV
Military Drill 2½, 5 ..... Military IV

SECOND TERM.

Rhetoric 5 ..... English V
Inorganic Chemistry 5, 7 ..... Chemistry II
Surveying 10 ..... Civil Engineering I
Plant Physiology 6 ..... Botany III
Sylviculture 1 ..... Forestry IV
Woodwork 2½, 5 ..... Shopwork V
Military Drill 2½, 5 ..... Military V

THIRD TERM.

Qualitative and Technical Chemistry 5, 7 . Chemistry III, IV
Surveying 10 ..... Civil Engineering II
Plant Classification and Phyto-geography 6 .... Botany IV
Invertebrate 5, 7 ..... Zoology I
Sylviculture 1 ..... Forestry IV
Woodwork 2½, 5 ..... Shopwork VI
Military Drill 2½, 5 ..... Military VI

JUNIOR YEAR.

Forestry II throughout the year.

At the close of the third term all students report for assignment to "Summer Camp" work.

FIRST TERM.

German 5 or ..... German I
French 5 ..... French I
Forest Entomology 5, 7 ..... Zoology II
The Forest 2 ..... Forestry V
Surveying 6 ..... Civil Engineering III
Mechanical Drawing 2 ..... Drawing IV
Typewriting 3 ..... Typewriting I
Military Drill $2\frac{1}{2}$, 5 ..... Military VII
Military Science 1 ..... Military Science I

SECOND TERM.

German 5 or ..... German II
French 5 ..... French II
Vertebrate Anatomy 5, 7 ..... Zoology III
Elements of Physics 5, 7 ..... Physics I
Physiography 5 ..... Geography I
Typewriting 3 ..... Typewriting II
Military Drill $2\frac{1}{2}$, 5 ..... Military VIII
Military Science 1 ..... Military Science II

THIRD TERM.

German 5 or ..... German III
French 5 ..... French III
Physiography and Climatology 5 ..... Geography II, III
Elements of Physics 5, 7 ..... Physics II
Dendrology 5 ..... Forestry VI
Soils and Waters $2\frac{1}{2}$ ..... Agriculture IV
Military Drill $2\frac{1}{2}$, 5 ..... Military IX
Military Science 1 ..... Military Science III

SENIOR YEAR.

Forestry III throughout the year.
At the close of the third term all students report for assignment to "Summer Camp" work.

FIRST TERM.

German 5, or ..... German IV
French 5 ..... French IV
Economics 5 ..... Political Science I
Cryptogamic Botany 5, 7 ..... Botany V
Forest Finance 3 ..... Forestry VII
Elements of Geology 5 ..... Geology I
Military Drill 2½, 5 ..... Military X
Military Science 1 ..... Military Science IV

SECOND TERM.

German 5, or ..... German V
French 5 ..... French V
Technical; Forest By-products 5, 7 ..... Chemistry XXX
Plant Pathology 5 ..... Botany V
Forest Industries 5 ..... Forestry VIII
Psychology 5 ..... Mental Science I
Military Drill 2½, 5 ..... Military XI
Military Science 1 ..... Military Science V

THIRD TERM.

German 5, or ..... German VI
French 5 ..... French VI
American Politics 5 ..... Political Science II
Physiology 5, 7 ..... Zoology IV
Forest Economics 2½ ..... Forestry IX
Stock Breeding 4 ..... Agriculture VI
Enginery and Quarrying 4 . Mechanical Engineering XVII
Military Drill 2½, 5 ..... Military XI
Military Science 1 ..... Military Science VI

GRADUATE YEAR.

Forestry III throughout the year.

FIRST TERM.

Technical Reading 5 ..... Language VII
Road Construction 5, 9 ..... Civil Engineering VII
Timber Technology 5 ..... Forestry X
Original Investigation 5, 7 ..... Research I
Commercial Law 3 ..... Law I

SECOND TERM.

Technical Reading 5 ..... Language VIII
Highway Construction 5, 9 ..... Civil Engineering VIII
Industries and Commerce 5 ..... History VI
Lumbering 5 ..... Forestry XI
Original Investigation 5, 7 ..... Research II
Civic Actions 1 ..... Law II

THIRD TERM.

Forest Policy and Protection 5 ..... Forestry XII
Veterinary 5 ..... Agriculture IX
Original Investigation 5, 7 ..... Research III
Land Records 3 ..... Business III
Fish and Game 4 ..... Zoology V

DEPARTMENTS OF INSTRUCTION.

MENTAL AND POLITICAL SCIENCE.
AGRICULTURE.
HISTORY AND LATIN.
HOUSEHOLD SCIENCE.
MODERN LANGUAGES.
MECHANICAL AND ELECTRICAL ENGINEERING
CHEMISTRY AND PHARMACY.
ENGLISH LANGUAGE AND LITERATURE.
MATHEMATICS AND ENGINEERING.
ZOOLOGY.
BOTANY AND FORESTRY.
ELOCUTION.
FLORICULTURE AND GARDENING.
HORTICULTURE.
BACTERIOLOGY.
DRAWING.
MILITARY.
PHYSICAL CULTURE.
MINING.
LITERARY COMMERCE.
MUSIC.

MENTAL AND POLITICAL SCIENCE.

THOMAS M. GATCH, A. M., PH. D.

Course I.—*Economics.*—Senior year; first term. During the first part of the term our aim is to familiarize the student with the principles of the science. The last part of the term is devoted principally to debates, informal discussions and theme work. Our library is well supplied with reference books in this department. Students are encouraged in original investigation. The labor question, socialism, taxation, money and tariff receive attention. Five hours a week. Fetter, with Lectures.

Course II.—*American Politics.*—Junior year; third term. The construction of various articles and clauses of the Constitution of the United States has led to party differences. The Constitution can be best studied when taken in connection with the history of political parties. The study, thus conducted, approaches the laboratory method, the most practical and satisfactory of all methods, where it can be employed. It is of interest to the whole republic that young citizens should be able to learn that true national party differences have a history and a recognized basis of existence, and should be prevented from following factitious party differences, contrived for personal objects of selfish men. Five hours a week. Johnston's "History of American Politics," with lectures.

Course III.—*Psychology.*—Senior year; second term. This study presupposes a considerable acquaintance with the structure and functions of the brain and nervous system. Students acquire this knowledge in the laboratory under the direction of the professor of zoology. The intellectual faculties, the sensibilities and the will are carefully studied; the various schools of philosophy are criticised and compared and themes are often required from members of the class. Five hours a week. Lectures principally, with Buell's "Essentials" as a guide.

AGRICULTURE.

JAMES WITHYCOMBE, M. Agr., Professor of Agriculture.
F. L. KENT, B. Agr., Associate Professor of Agriculture.
W. J. KENT, Foreman.

The object sought throughout the entire agricultural course is to familiarize the student with the art and science of agriculture. This embraces the study of zoology, botany, chemistry and bacteriology, the sciences related to agriculture; and the supplementary studies of mathematics, economics, physics, history, language and other cultural branches, all of which broaden the course of study and tend to elevate the educated farmer to the intellectual level of other professions.

The college laboratories are strictly modern in their appointments and are supplied with the latest equipments, which afford the student unusual opportunities for making a thorough study of all the sciences related to agriculture.

While the theory of agriculture, as based upon the sciences, is taught, the industrial side is not overlooked. Instruction is given in wood and iron work in the carpenter and blacksmith shops under competent supervision. The student is also taught how to handle and care for steam machinery, and is made thoroughly familiar with the mechanism of the farm traction engine.

The instruction given in the class-room is directly supplemented by actual demonstrations of the best agricultural practice on the college farm, thus giving to the student an

opportunity to observe the methods employed, and enabling him to note from time to time the results of the practical applications of science to agricultural methods.

The college and station farm consists of 220 acres, 140 of which are devoted to farm crops, pasture, and experimental purposes. The farm is equipped with dairy building, horse-barn, cattle-barn, silos, piggery, tool-house, engine-house, and with typical specimens of several breeds of stock.

Students laboring on the farm and in the gardens, receive from 12½ to 20 cents per hour. Only comparatively few persons can be so employed, as the amount of work to be done is limited. Those only who by their work prove to be valuable laborers will be employed.

DAIRYING.

One of the purposes of the Oregon Agricultural College is to advance the business industries of the state. It is believed that dairying is one of the most important lines of work that can now be undertaken in Oregon. There are large bodies of land in the state which are especially adapted to this industry. For this reason dairying has been introduced as a branch of study in the agricultural course. Modern laboratories have been provided for such instruction and fitted up with all the necessary machinery for carrying on the work in the most approved way. An expert dairyman is in charge of this work.

All students in the agricultural department will be required to study dairying not only as a science but as an art. Those taking the household science course will have the same opportunities as the agricultural students.

This is a line of practical work which, it is believed, will prove of great advantage both to the student and to the

state. The practical instruction includes both butter and cheese making.

A short course has been provided, as described elsewhere in the catalogue, whereby practical instruction in dairying may be obtained by those who can not avail themselves of a college course.

The instruction in applied agriculture extends through the freshman, sophomore, junior and senior years, as shown in the following synopsis of courses:

Course I.—*Breeds of Stock.*—Freshman year; third term. The study of the history of the different classes of farm stock, their origin and characteristics. By means of charts, in the class-room the student is made familiar with the different points of animal form preparatory to the use of the score-card system for judging farm animals. This is followed by a practical application of this system in judging dairy cows, beef cattle, mutton sheep and swine. In this manner the student obtains useful information relative to animal form and function, and thus becomes acquainted with the points of excellence in the typical pure bred, as well as the points of merit in the animal designed for the butcher's block. Five hours a week. Brooks' "Agriculture," Vol. III.

Course II —*Theoretical Dairying.*—Sophomore year; second term. The principles of modern dairy practice will be taught in the classroom. Instruction will be given by text-book and lectures. Five hours a week for one half term.—Snyder's "Dairy Chemistry."

Course III.—*Soils and Manures.*—Sophomore year; second term. The origin and formation of soils; soil tillage; management and application of manures; green manuring; organic and mineral manures; soil exhaustion; rotation of crops, and methods of improving worn-out soils. Five

hours a week for one half term. Brooks' "Agriculture," Vol. I.

Course IV.—*Irrigation and Drainage.*—Sophomore year; third term. In the discussion of this subject it will be the aim to deal with those relations of water to soils and to plants which must be grasped in order to permit of a rational practice of applying, removing or conserving soil moisture in crop production. The subject will be considered from the standpoints of the farmer, the fruit grower and the gardener rather than from that of the engineer. The various methods of applying water; the laying out and construction of farm drains; and the effect of irrigation and drainage on the chemical and physical conditions of the soil will be considered. Five hours a week.

Course V.—*Dairying.*—Junior year; first term. (*a*) Practical work in the dairy for agricultural students. The principles taught in the sophomore year will be put into practice in the actual work of the manufacture of butter and cheese. The Babcock test, rennet tests, and curd tests, as well as the subjects of creamery accounting will receive due attention. Five hours a week.

(*b*) Practical work in the dairy for household science students. This work is essentially the same as above. Wing's "Milk and its Products" will also be used as a text during a portion of the term. Five hours a week throughout the third term.

Course VI.—*Stock Feeding and Breeding.*—Senior year; second term. Stock feeding covers the subject of rations for milk and meat production; how best balanced for economical feeding. Stock breeding covers the subjects of atavism, heredity, in-and-in-breeding, variation, prepotency and care

of breeding animals. Opportunity is given for judging and scoring live stock, and for studying the essential points of breeds adapted to different purposes. Four hours a week. Shaw, Animal Breeding.

Course VII—*Veterinary Science.*—Senior year; third term. This subject will be taught by lectures covering the anatomy of the horse, and taking up the diseases most common to domestic animals, giving causes, symptoms, and treatment for the same. Special stress is placed upon proper treatment to prevent disease in domestic animals. Five lectures a week. Reynold's "Veterinary Studies."

Course VIII.—*Farm Mechanics.*—Graduate year; first term. The location and arrangement of farm buildings, their cost and construction. The different kinds of fences, their cost, construction, and desirability. The construction, efficiency and durability of various field tools and machinery. Also a study of the principles involved in the operation of gasoline engines, windmills, pumps, feed cutters, grinders and other farm machinery operated by other power than horses.

Course IX.—*Farm Management.*—Graduate year; second term. A study of the different systems of diversified farming; the application of business methods to farm operations; division of the farm into fields, and crop management; executive and commercial problems on large and small farms; the management of farm help; number and character of live stock as affecting the economic management of the farm; relation of farming to other occupations; qualifications and requirements for the farm manager. Five hours a week.

Course X.—*Live Stock Management.*—Graduate year; third term. General management of the various classes of live stock, including a careful study of pedigrees of some

leading families of the different breeds; requirements for advanced registration; comparative stock judging in groups, similar to state and county fair work; also comparison of methods of handling live stock in various parts of the state, in various states and foreign countries. Five hours a week.

Instruction is given largely by lectures, suitable books being selected for reference. Miles' book on drainage. Curtis' "Horses, Cattle, Sheep, and Swine." Warfield's "Cattle Breeding," Stewart's "Stock Feeding." Armsby's Manual of Cattle Feeding. Shaw's "Study of Breeds." "Soil," King. "Physics of Agriculture," King. "Feeds and Feeding," Henry.

HISTORY AND LATIN.

J. B. HORNER, A. M., LITT. D., Professor.
HARRY BEARD, B. S., Instructor in General History.
MARK D. MCCALLISTER, B. S., Instructor in U. S. History.

HISTORY.

Course I.—*Greek and Roman History.*—Freshman year; first term. Includes the study of general Hellenic development; the Athenian leadership; the Hellenistic or Alexandrian conquests and kingdoms. The political organizations of republican Rome in the prae- and post-Punic periods. Study of the pagan empire; Teutonic migrations. The Christian empire under Roman control. Five hours a week.

Course II.—*Mediæval History.*—Freshman year; second term. A study of social and political institutions of the fifth to the fifteenth centuries. Five hours a week.

Course III.—*History of Eastern Peoples.*—Sophomore year; second term. A survey of the history of China, Japan and India. Religion, arts and general culture of Egypt, Chaldæa, Assyria, Babylonia, Persia. Five hours a week.

Course IV.—*Modern History.*—Sophomore year; third term. This is a study of the era of the reformation and renaissance. (1453-1648). A general study of the age of Louis XIV., Frederick the Great, Anne and the Georges, Maria Theresa, and Peter the Great. The great French revolution and the wars of Napoleon. The states-general of 1789 to the congress of Vienna, 1815. German and Italian freedom and unity. Discussions touching the material progress of the age; famous works of art; foundations, inventions, discoveries, enterprises, improvements and investigations. Five hours a week.

The college is supplied with maps, charts, and a good working library of historical reference books.

In addition to the individual work of the student, as outlined above, lectures are given on the more important periods, such as the great reformation, thirty years' war, the English reformation, and the French revolution. Textbook, Myers' Ancient History in Courses I and III, Myers' Medæval and Modern History in Courses II and IV.

LATIN.

Course I.—Freshman year; first term. First eighty-five pages of Collar & Daniel's "First Year Latin," also synopsis of regular verb in each of the four conjugations.

Course II.—Freshman year; second term. Same textbook continued to page 151 with frequent reviews; also exercises in composition.

Course III.—Freshman year; third term. Irregular verbs. Conditional sentences. Periphrastic conjugation, etc. Caesar—Book II.

Course IV.—Sophomore year; first term. Caesar—Book I.—Roberts' edition. Allen & Greenough's Latin Grammar.

Course V.—Sophomore year; second term. Cicero's Orations. Allen & Greenough's Grammar.

Course VI.—Sophomore year; third term. Aeneid—Collar's edition. Allen & Greenough's Grammar.

If at any time there is a demand, classes desiring to pursue the study of Latin beyond Course VI may do so upon making application. The first year's instruction is largely grammatical, prominence being given to Latin writing as the best method of acquiring a mastery of the language, Latin composition is eminently helpful in scientific research, and it is suggestive to the student of English. This preliminary work done, the student is then trained to appreciate the literature. Attention is called, during the reading of various authors, to those numerous problems in the history, thought and institutions of the Romans which illustrate similar phenomena noticeable among ourselves. The contribution of the Romans to the language, literature, and institutions of our time is so great that a thorough acquaintance with their life is of the highest educational value.

HOUSEHOLD SCIENCE.

MARGARET C. SNELL, M. D., Professor.
MARY SUTHERLAD, B. S., Assistant in Sewing.

Self interest and public interest make it apparent to every intelligent person how greatly in need are subjects pertaining to the home of being "touched to fine issues;" hence their introduction as studies into college curricula.

We have been reviled as "the most common schooled, and least cultivated, among all civilized nations," and this largely through our deplorable indifference to, and ignorance of, the common facts and necessities of life.

"The home as we find it to-day has scant warrant that anything born of its teaching is worth while to impart, yet the problem grows of how to get better results, how to lessen the labor of the farmer's wife, the washer-woman, the cook, the boarding-house keeper, the city missionary, the school teacher, the woman of fashion."

The solution requires something more than the knitting of the brow over theories; there must be actual testing of these theories by practice in the college laboratory, if they are to have value and permanence. The precious acquisition of the scholar who *knows*, must be further supplemented by that of the artist who *does*.

The various subjects pertaining to home life are taught under the following heads:

Course I.—*General Hygiene.*— Freshman year; first term. Good health is acknowledged as one of the prime factors of success in life; lectures and talks on this important subject are not neglected. The amenities of home, and readings on kindred topics, give mental occupation to the sewing hour. One hour a week.

Courses II, IV, V.—*Sewing.*—Freshman year. During the first term there are sewing lectures and practice work, one hour a day, on sewing samples. Here are acquired and strengthened those invisible impulses: industry, dexterity, patience, exactness. Five hours a week.

Second term, sewing continued. Five hours a week.

During the third term sewing is combined with the making of simple garments. Readings, conversation.

Courses VI, VII, VIII.—*Dressmaking.*—Sophomore year. Cleverness with scissors, tape line, and needle finds in dressmaking, millinery, home furnishing, a large field for the application of art principles to the living, moving canvas of actual life.

Instruction in dressmaking is an important branch of domestic science. Lectures will be given on the following subjects: The methods of manufacturing thread, cloths and other dressmaking material; hygienic principles of dressmaking; study and sketching of drapery; history of costume, etc.

During the first term the work includes draughting and making simple skirts, cutting, fitting and making lined waists from patterns; a study of the texture of goods. Five hours a week.

Throughout the second and third terms instruction is given in draughting and making lined waists, matching stripes and plaids, study of woolen textiles. Five hours a week. Home Sanitation and kindred topics one hour a week.

Courses IX, X, XI.—*Cookery.*—Junior year. The first term's work includes instruction in canning of fruits, one-half term; three lectures; one hour a week practice work in the kitchen laboratory; technological cookery; preparatory

work in chemistry of foods. Two hours a week. Laboratory fee, $1.50

The second term—practice in cookery, two hours per week, fee $1.50.

The third term—practice in cookery, two hours per week, fee $1.50

Course III.—*Etiquette.*—Freshman year; second term. Lectures and talks on social forms and usages; the art of entertaining.

Course XII.—*Aesthetics.*—Senior year; first term. Lectures and recitations on the subject of aesthetics. "Aesthetics," Day.

This term is given to the general subject of aesthetics in its relations to the subjective and objective world; the kinds and laws of beauty; class readings from various authors on aesthetics; the application of aesthetic principles to discourse as we find it illustrated in the great master pieces of literature. Five hours a week.

Course XIII.—*Aesthetics.*—Senior year; second term. Application of aesthetic principles to the remaining fine arts, with a study of the best authors on these varied subjects. The three arts receiving especial attention during the coming year will be discourse, architecture and painting. Five hours a week.

Course XIV.—*Domestic Lectures.*—Senior year; third term. The term's work will include lectures on the following subjects: Special hygiene, including parentage, care of children, heredity, etc.; sanitation of the home; home furnishing; emergency lectures; fireside practice, etc. Five hours a week.

Course XIV—Helen Campbell's "Household Economics," and Pomeroy's "Ethics of Marriage." Five hours a week must be given to reading aloud, in class room, the best literature. Lectures will be given on poultry raising and bee keeping.

GERMAN.

GERARD TAILLANDIER.

Opportunity to study German is offered throughout the different courses and is compulsory in the course in pharmacy during the sophomore and junior years. We teach in a large measure by the conversational method, and aim to bring the student so far that he can read with ease and facility, and understand so much of the language as will be most helpful to him in practical life. A knowledge of German is a business possession of undoubted value for any young man, or young woman.

Courses I, II, III.—*Elementary German.*—Collar's Eysenbach—German grammar; First German Reader, Muller and Wenckebach's Glück Auf. Hewett's German Reader.

Courses IV, V and VI.—*Advanced German*; Jagemann's German Syntax, Bronson's Colloquial German, Hewett's German Reader. Selection from Schiller's Dramas Wilhelm Tell and Maria Stuart. Selected prose works of modern writers.

Courses VII and VIII—Scientific German Reader. Works on scientific subjects.

MECHANICAL AND ELECTRICAL ENGINEERING.

GRANT A. COVELL, M. E., Professor.
JOHN HYNES MCDOUGAL, A. B., Assistant.
M. CLYDE PHILLIPS, B. M. E., Instructor in Ironwork and Drawing.
MARK DOW MCCALLISTER, B. S., Instructor in Woodwork.
WILLIAM MACAULY PORTER, Instructor in Blacksmithing.

Students in this department are allowed to choose either the course in mechanical engineering or the course in electrical engineering. Each course leads to the degree of Bachelor of Science, and the two courses are identical until the beginning of the junior year.

The course in mechanical engineering is intended especially for young men who expect to choose an industrial vocation and for those who are already, or expect to be, connected with some of the manufacturing establishments of the country.

The course in electrical engineering is designed to meet the needs of those who desire to turn their attention towards electrical science, the designing, the installation and the management of electric light and power plants, etc.

The shops are well equipped with tools and machinery from the best makers in the country; the idea being not only to have the shops well supplied with the necessary tools but also to make each shop a model as regards quality of equipment and systematic arrangement.

The uses of the various tools in the shop are taught by a series of exercise pieces which the student is required to make. After completing the exercises, the regular work consists in building and repairing machinery in the machine shop, mending farm implements. and making tools in the blacksmith shop, and other useful articles in the wood shop. So far as possible, all work in the shops is executed from drawings and blue prints, which must be followed accurately.

In the drafting room the student begins with linear drawing and follows a progressive course until he is able to make complete working drawings of whole machines, and finally he is encouraged to produce designs of his own and to make complete drawings and blue prints of them.

The scientific principles involved in machines and mechanical movements are taught in the class-room, as well as the application of mathematics to problems in mechanical engineering. The student is required to solve original problems and to depend upon his own judgment and ingenuity as far as possible.

EQUIPMENT.

The machine shop is equipped with one 24″ x 24″ iron planer, one universal milling machine, one universal tool grinder, one radial drill, one 20″ drill press, one 20″ engine lathe, one 16″ engine lathe, three 14″ engine lathes, one 15″ shaper, one emery grinder, two 10″ speed lathes, twelve bench vises, and numerous small tools, such as hammers, chisels, drills, reamers, taps and dies.

The blacksmith shop contains twenty stationary forges operated by an electric motor fan. Each forge is provided with anvil, hammers and tongs. The shop also contains two vises, a swedge block and a full set of swedges, fullers, and heading tools.

The woodshop contains one 4″ four-sided moulder, one 24″ surface planer, one iron saw table with rip and cut-off saws, one band saw, one jig saw, one 20″ pattern-maker's lathe, one post boring machine, four 12″ wood-turning lathes, and twenty hand benches, each equipped with a set of tools consisting of saws, planes, chisels and other small tools. Power is supplied by a 10 horse power electric motor.

The power house is combined with the heating plant and contains one 54 inch and two 60 inch tubular boilers with pumps, injectors and feed water heater. The electrical equipment consists of two 12½ kilowatt direct current generators and one 30 kilowatt alternator, all driven by a 40 horse power, high speed, automatic engine. The direct current generators operate the motors in the several shops and laboratories, while the alternator furnishes lights for the College buildings and grounds.

The steam, electrical and heating plants of the college furnish opportunity for much valuable experimental work in engineering, such as tests of boilers, engines, dynamos, motors, fans, pumps and injectors. The department is supplied with indicators, gauges, planimeters and other instruments to facilitate this work.

A Riehle testing machine of 50,000 pounds capacity, operated by an independent motor, affords means of testing the strength of metals, woods, stones or brick.

The following is an outline of the work done in the mechanical department:

SHOPWORK.

Courses I, II and III.—*Woodwork.*—Freshman year. A course in woodwork which includes carpentery, joinery and wood-turning, also the care and use of tools. Five hours a week throughout the year.

Courses IV, V and VI.—*Blacksmithing.*—Sophomore year. In this course the student is taught how to make and manage a forge fire; to shape iron by bending, drawing, upsetting and welding, and finally to make and temper cutting tools for the shops. Five hours a week.

Course VII.—*Machine Shop.*—Junior year; first term.

This course is devoted principally to chipping, filing, polishing and hand work. Five hours a week.

Courses VIII and IX.—*Machine Shop.*—Junior year; second and third terms. These include a series of exercise pieces in turning, shaping, milling and drilling which the student is required to make from drawings. Five and four hours a week respectively.

Courses X, XII and XIV—*Woodwork.*—Senior year. These courses are elective and are intended for students who desire to specialize in this branch. Particular attention is given to the care and management of wood-working machines and to pattern-making. Five hours a week throughout the year.

Courses XI, XIII and XV.—*Ironwork.*—Senior year. These are elective courses and follow course IX. The work consists of constructing parts of machines, repair work, and making tools for the shops. Five hours a week throughout the year.

MECHANICAL ENGINEERING.

Courses I, II and III.—*Mechanical Drawing.*—Sophomore year. In these courses the student begins at once to make mechanical drawings of simple objects and finally makes sketches of machines from which working drawings are made. Ten hours, the first term; five hours the second term and three hours the third term.

Course IV.—*Mechanism.*—Junior year; third term. This course treats of the motion of machine parts, and is introductory to the course in machine design. Seven hours a week.

Courses V and VI.—*Descriptive Geometry.*—Junior year; first and second terms. The work in these courses is largely drawing. It involves the solution of problems in projection and intersection of lines, surfaces and solids. Five and three hours a week respectively.

Course VII.—*Steam Engines and Boilers.*—Junior year; third term. A study of the construction, care and operation of steam engines and boilers; recitations and lectures. Four hours a week.

Course IX.—*Thermodynamics.*—Graduate year; first term. Steam and other engines considered as heat engines. Five hours a week.

Courses VIII, XII and XIV.—*Mechanics of Engineering.*—Senior year. A course in applied mechanics. The first two terms are occupied with a discussion of statical and dynamical problems. During the last term the strength of materials is studied with special reference to beams, girders and trusses; also the mechanics of fluids relating to pressure, flow and carrying capacity of pipes and open ditches. Open only to those who have completed Mathematics VIII and IX. Five hours a week throughout the year.

Courses XI and XV.—*Machine Design.*—Graduate year; second and third terms. A course applying the principles brought out in the courses in mechanism and mechanics to the design and construction of machine parts. Numerous practical problems are solved, the data for many of them being taken from machines used in the college, so that the student may compare his results with those used in practice. Considerable draughting is done in connection with this course. Seven hours a week.

Course XX.—*Materials of Engineering.*—Junior year. A study of the materials used in engineering structures. Lectures and recitations upon the manufacture and physical properties of iron, steel, brick and cement, and their adaptability to the purposes of engineering construction. Timber and stone are also discussed with reference to their uses as materials of engineering. Three hours a week.

Course XXI.—*Hydraulic Motors.*—Graduate year; first term. Lectures and recitations on the leading types of turbines and other motors; also including centrifugal pumps Three hours a week.

Course XXII.—*Internal Combustion Engines.*—Graduate year; second term. Lectures and recitations upon gas, gasoline and oil engines. Three hours a week.

Course XXIII. *Power Plants and Transmission of Power.* —Graduate year; third term. Lectures and recitations on the mechanical engineering of central power plants and power transmission. Three hours a week.

Courses XXIV, XXV and XXVI.—*Experimental Engineering.*—Graduate year. A course in mechanical laboratory work extending through the year.

During the Fall term the work consists in calibrating instruments and testing materials in tension, compression, flexure, torsion and shearing; also testing of oils and lubricants.

During the Winter term the work consists in calorimeter tests for determining the quality of steam, steam boiler tests to determine evaporative efficiency, steam engine tests with indicator and brake to determine horse power and mechanical efficiency; also tests of steam gauges, pumps and injectors.

In the Spring term dynamometer tests will be made to determine the power required to drive different machines under working conditions, as well as tests of fans, blowers and motors. Six hours a week.

PHYSICS.

Courses I and II.—*Elementary Physics.*—Sophomore year; second and third terms. These courses cover the usual topics of mechanics, heat, electricity and magnetism, sound

and light. Instruction is given by means of lectures and recitations. Three hours a week.

Courses III and IV.--*Elementary Laboratory Work.*—Sophomore year; second and third terms. These are laboratory courses required in conjunction with courses I and II. Students are required to perform a series of experiments in the laboratory, draw their own conclusions and submit a written report to the instructor. Four hours a week.

Course V.—*Physics.*—Senior year; first term. A laboratory course, which is a continuation of the preceding courses, and deals more especially with experiments in heat, light, sound and electricity. Six hours a week.

ELECTRICAL ENGINEERING.

Courses I, II and III.—*Electricity and Magnetism.*—Junior year; first, second and third terms. Dealing with the general theory of electricity and magnetism and their most common application; such as the telephone, telegraph, electro-plating, electric lighting, etc. Special attention is given to the study of the physical theory, actions and reactions in the armature, magnetic principles, and winding of continuous current dynamos and motors. Considerable time is spent in the calculation of low tension distributing systems. During the last term of laboratory work considerable time will be spent on the calibration and use of ammeters, voltmeters and wattmeters, and in running factory and laboratory tests on direct current dynamos and motors. Seven hours a week first and second terms; three hours a week third term.

Courses IV, V and VI.—(a) *Alternating currents.*—Senior year; first term. Being a brief development of the elemen-

tary theory of alternating currents, using both the graphical and analytical methods of calculation. A continuation of courses I, II and III. Open only to those who have completed Mathematics VIII and IX. Lectures and recitations. Three hours a week.

(b) *Dynamo Design.*—Second term.—Theory and practice of the design of direct and alternating current dynamos and motors, including calculation and construction of field magnets, armatures, commutators, etc. Lectures and recitations, supplemented by the making of models in the laboratory. Three hours a week.

(c) *Practical Electrical Engineering.*—Third term.—Considerable time will be devoted to practical engineering problems, such as the calculation of circuits, installation of lighting and power plants, power transmissions, etc. Three hours a week.

(d) *Laboratory.*—Systematic tests on alternators, synchronous motors, rotaries, transformers, and induction motors. Laboratory and factory methods of taking and recording results. Four hours a week throughout the year.

Courses VII, VIII and IX.—*Advanced Alternating Current Theory.*—Dealing with the theory of alternating current dynamos, motors, transformers, polyphase systems, long-distance line problems, etc. Courses I, II, III, IV, V, VI prerequisite. Seven hours a week throughout the year.

TEXT BOOKS.

BOOKS.	AUTHOR.	PUBLISHER.
Physical Laboratory Manual	Chute	D. C. Heath
High School Physics	Carhart & Chute	Allyn & Bacon
Technical Mechanics	E. R. Maurer	Wiley & Son
The Strength of Materials	Merriman	Wiley & Son
Descriptive Geometry	Ferris	Americ'n Book Co.
A Practical Course in Mechanical Drawing	Fox & Thomas	Van Nostrand Co.
Machine Design, Part I	Jones	Wiley & Son
Electricity and Magnetism	Sylvanus Thompson	MacMillan
Dynamo Electric Machinery	Sheldon,	
Alternating Current Machines	Sheldon & Mason	Van Nostrand Co.
Elements of Electrical Engineering	Steinmetz	McGraw Pub. Co.

CHEMISTRY AND PHARMACY.

A. L. KNISELY, M. S., Professor.
JOHN FULTON, B. S., Associate Professor.
C. M. MCKELLIPS, PH. G., PH. C., Instructor.
FRANK E. EDWARDS, B. M. E., Instructor.
CHESTER LLOYD PROEBSTEL, B. S., Assistant.

EQUIPMENT.

The Department of Chemistry occupies the entire south wing of Agricultural Hall. The various laboratories, lecture and recitation rooms are equipped for thorough, accurate work.

On the first floor are located the storeroom for chemicals and apparatus, and the laboratory for general and qualitative chemistry. This laboratory is supplied with gas, water and sinks to accommodate 100 students. A series of hoods extend along one side of the laboratory so as to keep the air in the room free from noxious gases and fumes.

The laboratory for careful quantitative analysis is located on the second floor. This laboratory is completely equipped for the work intended. A chemical library and balance room joins this laboratory. The chemical department of the college is equipped with two torsion balances, two high grade assay balances and four analytical balances.

On the third floor is located the lecture and recitation room for general chemistry; this room is provided with raised seats and has a seating capacity for 150 students. The lecture table in this room is supplied with gas, water and electric wires of sufficient size for a stereopticon or electric furnace. On this floor are also two small recitation rooms, each capable of accommodating 20 to 25 students.

A dark room is available whenever work is being carried on with the polariscope or spectroscope.

One room on the third floor is available when the subject of gas analysis is being studied.

All recitation and lecture rooms are supplied with desks, gas and water so that at all times the instructor in charge can fully illustrate the subject under consideration.

CHEMISTRY.

The study of chemistry is begun in the first term of the sophomore year. Prerequisite, Freshman mathematics.

Course I.—*General Inorganic Chemistry.*—Non-metals.—Sophomore year; first term. A daily exercise throughout the first term is devoted to recitations, lectures and laboratory practice. In this course special attention is given to the fundamental principles of the science, which are suitably illustrated either by experiments performed by the student in the laboratory, or, when too intricate and expensive of time, by the instructor before the class in the lecture room. The elements are discussed individually as well as their more important compounds.

The *practicum* of this course consists of a series of laboratory exercises dealing with the elements studied and is designed to introduce the student to chemical manipulation. Seven hours a week.

Course II.—*General Inorganic Chemistry.*—Sophomore year; second term. The study of the metals is entered upon in the second term and is conducted similarly to the study of the non-metals. The more important metals are individually discussed under the following heads: history, occurrence in nature, properties, preparation, uses, tests, and compounds. Special attention is given to metals and their compounds which are of industrial importance.

The laboratory work of the second term consists of a study of the properties of the metals, being an introduction to qualitative analysis. This course must be preceded by Chemistry I. Seven hours a week.

Course XXV.—*Stoichiometry.*—A course in chemical arithmetic designed for students who take analytical chemistry. This course is given at irregular intervals.

Course IV.—*Agricultural Chemistry.*—Junior year; first term. This course deals with the more intimate relation of the science to agriculture. Such topics as soil composition, elements essential to plant growth, soil exhaustion, fertilizers; chemistry of cattle foods, nutrition, dairy products and food adulteration are dealt with as fully as time permits. Prerequisites, Chemistry I, II and III. Seven hours a week.

Course XXI.—*Agricultural Chemistry.*—Junior year; second term. This is a continuation of course IV and extends through the second term. Seven hours a week.

CourseV—*Elementary Quantitative Analysis.*—Junioryear; third term. The student is required to make the ordinary fundamental determinations of moisture, aluminum, calcium, magnesium, copper, lead, potash, sulfuric acid, phosphoric acid, chlorine, and carbonic acid by gravimetric processes; estimations by volumetric methods including alkalimetry, acidimetry, precipitation, and oxidation will be undertaken. The work is so planned as to familiarize the student with the standard gravimetric and volumetric methods. This is a required course for all pharmacy students and is elective for students who have completed chemistry I, II and XV. Ten hours a week.

Courses VI, VII, VIII.—*Advanced Quantitative Analysis.*—Senior year; first, second and third terms. A continua-

tion of course V. This work extends throughout the senior year and is arranged especially for students electing theses in the department of chemistry. Elective. Ten hours a week.

Course IX.—*Technical Analysis.*—Arranged for fifth year students, This course extends throughout the year, and consists of such subjects as gas analysis, iron and steel analysis; also the chemistry of manufacturing processes.

Prerequisites VI, VII, VIII.—Fifteen hours a week.

Course X.—*Technical Chemistry.*—Arranged for students in forestry. Consists of chemistry of various woods. Products of the destructive distillation of wood and kindred topics.

Prerequisite Course V. Ten hours a week.

Course XI.—*Chemistry of Common Life.*—Sophomore year; third term. This is a course treating of organic compounds of common life. This work is required of all students in household science course. Prerequisites chemistry I. II. Seven hours a week.

Courses XII, XIII and XIV.—*Chemistry of Foods.*—Senior year. An elective extending through the senior year in the household science course. It is an expansion of the work in course XI, but limited to a study of foods from a chemical and scientific standpoint. This work must be preceded by chemistry V. Seven hours a week.

Course XV.—*Qualitative Analysis.*—Sophomore year; third term. This course is designed for students in pharmacy, mining and agriculture. It gives practice in the analysis of unknown mixtures and chemical compounds for bases. Prerequisites chemistry I, II. Ten hours a week.

Course XVI.—*Qualitative Analysis.*—Junior year; Fall term. A continuation of course XV, consisting of analysis

of unknown mixtures and chemical compounds for acids and bases. Ten hours a week.

Course XVII.—*Organic Chemistry.*—Junior year; second term. This subject is designed for students of the pharmacy course. Prerequisites I, II, XV, XVI. Seven hours a week.

Courses XVIII, XIX, XX.—*Pharmaceutical Analysis.*—Senior year; first, second and third terms. This work consists of advanced qualitative and quantitative analysis, both organic and inorganic. Under this head are taken up the separation, identification and determination of the active constituents of alkaloidal drugs and galenical preparations. During the spring term practical laboratory work in Toxicology is given. Ten hours a week.

Course XXII.—*Soil Physics.*—Senior year; third term. The work will include a study of various types of soils as to their mechanical structure and analysis; of conditions influencing temperature, capillary action and water-holding capacity of soil; effects of drainage and cultivation upon the conservation of moisture in soils; the texture of soils; the use of fertilizers and amendments and their effects on soils. Class room and laboratory work, seven hours a week.

THESES.

Undergraduates desiring to elect theses in the department of chemistry and pharmacy must have passed in one course of quantitative analysis.

GRADUATE ELECTIVES.

Elective work in chemistry is offered as a major or a minor subject for two years to candidates for the degree of Master of Science.

Advanced Analysis.—This course is intended for those who may desire to specialize in chemical work. It provides a greater variety of analytical work than can be given in courses V, VI, VII, VIII. It offers the following: analysis of limestone, coal, iron ores, milk, butter, cheese, water, urine, sugar, and various other materials. A student desiring to investigate along any particular line, as mineral, sanitary, or agricultural chemistry, may do so. This course is open as a major subject to students who have completed courses I, II, III or XV and V, VI, VII and VIII. In addition, a parallel course of reading must be taken, upon which the student will be required to pass a satisfactory examination at the end of the year. The work of the last year will be left largely to the student's choice, subject to the approval of the head of the department, and will serve as the basis for a graduation thesis. Hours to be arranged with the instructor.

PHARMACY.

In addition to the ordinary equipment in constant use in the pharmaceutical laboratory—mortars, percolators, evaporation dishes, graduates, beakers, pilltiles, spatulas, etc., the department is supplied with suppository moulds, compressors, drug mills, tablet triturate moulds, cachet and soft capsule filling and sealing apparatus, pill machine, pharmaceutical stills, etc.

Courses I and III.—*Pharmacognosy.*—Junior year; second and third terms. In these courses are considered both the gross structure and characteristics of the crude drugs and chemicals. The student is taught the appearance, taste, color, odor, fracture and habitat of the various crude drugs, and also receives careful drill on their Latin and English names. Special attention is directed toward the learning of the scientific classification of the vegetable drugs. The

student has access to the specimens for study, and special effort is made to train the senses to the recognition of each of the drugs considered.

The pharmacognosy of the senior year consists in a thorough review of the work of the junior year and practice in the recognition of powders, liquids, chemicals, and pharmaceutical preparations. Two hours a week, Spring term.

Courses II, IV and VII.—*Pharmacy.*—Junior year. By means of a series of lectures and recitations during the first term, the student is made familiar with the nature and objects of the practice of pharmacy, as well as with the scientific principles underlying it. His attention is directed particularly to the various classes of Pharmacopœial preparations, beginning with those of the more simple character and gradually advancing until a thorough understanding is acquired concerning those of the most complex formulae.

Definitions are introduced wherever admissible, being supplemented by descriptive and theoretical considerations when necessary for a better understanding of the subject.

The work of the second and third terms is devoted largely to laboratory practice, during which time the student has ample opportunity for the practical application of the knowledge gained in the lecture room, and in the acquirement of pharmaceutical technique.

The preparations of the Pharmacopœia receive special attention, each student being required to make, independently, a sufficient number of these preparations to insure a thorough understanding of the processes and manipulations involved in their manufacture. Various unofficial preparations are also considered from time to time, especially those of the National Formulary.

The laboratory work is under the direct supervision of an

experienced pharmacist and each student receives personal attention. The character of the instruction is such as will be of much practical benefit to the student in the subsequent event of his becoming a dispensing pharmacist. Two hours a week, first term, and five during second and third.

Course V.—*Therapeutics and Doses.*—Junior year; first term. The therapeutical uses of medicines serve as a basis for classifying them in a manner which will facilitate study. The definitions of medical terms are given special attention in the junior year. In this connection the student also learns the minimum and maximum doses of all remedial agents in active use in the modern practice of medicine. Two hours a week.

Course VI.—*Nomenclature.*—Junior year. In this connection the student is shown the practical application and use of the Latin language in the professions of medicine and pharmacy.

The Latin titles of the Pharmacopœia, National Formulary and the more common terms that occur in the prescription are made the subject of a series of recitations. One hour a week, first term.

Courses VIII and XIV.—*Materia Medica and Therapeutics.* —Senior year; first and second terms. All substances which find use in medicine are here studied one by one as to source, Latin and English names, formulae (in the case of chemicals), compounds and preparations, properties, method of preservation, industrial and domestic use, impurities and adulterations, antidote (in case of poisons) and dose.

In the consideration of crude organic drugs, attention is especially directed to the constituents responsible for the medicinal activity of the drug, e. g., alkaloids, glucosides, volatile oils, etc. Three hours a week.

Course IX.—*Operative Pharmacy.*—Senior year; first term. This course is a continuation of that of the junior year and includes such preparations of the Pharmacopœia and of the newer classes of remedies as were not considered in the junior year. Attention is given to the manufacture of the more difficult preparations, both galenical and toilet, and to the correct methods of manipulation involved in preparing medicines for dispensing in cachets, soft capsules, etc.

The composition of the more important Pharmacopœial preparations, and of the percentage strength of the active constituents of each, are made the subject of close study. The work of the term ends with a final review of the entire subject of pharmacy. Six hours a week.

Courses X and XV.—*Prescription Practice.*—Senior year. The recitation work consists of reading, interpreting, criticising prescriptions and calculating doses. During the third term a series of general quiz recitations is held. This is preparatory to the State Board examination. Special attention is given to incompatibilities and to the solubility of chemicals. Unsightly, dangerous and explosive mixtures are also considered under this head. In this laboratory course and that of operative pharmacy the student gains experience for the prescription counter, learning the difficulties there met with and how best to overcome them. He also gains in manipulative skill in making extemporaneous preparations.

Each student is required to personally perform the operations under the direct supervision of the instructor. The student works not from book prescriptions, but from prescriptions written in the ordinary practice of physicians and found on file in the drug stores. Seven hours a week second term and eight hours a week third term.

Course XI.—*Pharmacognosy and Synonyms.*—Senior year; third term. The pharmacognosy of the senior year consists in a thorough review of the work of the junior year and practice in the recognition of powders, liquids, chemicals, and pharmaceutical preparations.

In addition to the knowledge of the scientific classifications of the medicines already considered up to this time, the student is further instructed regarding many "common names," or synonyms, in general use in the ordinary practice of pharmacy. Three hours a week.

Course XIII.—*Toxicology.*—Senior year; third term. The important active poisons—both mineral and vegetable—are studied. Their physiological action, characteristic symptoms that follow their use, treatment and antidote are noted and commented upon. Attention is directed to the conditions and regulations provided by the Oregon Pharmacy law for the handling and sale of poisons within the state. One hour a week.

From time to time special lectures are given on hygiene, pharmaceutical jurisprudence, etc.

STATE EXAMINATION AND REGISTRATION.

At its meeting held on December 14, 1898, the Oregon State Board of Pharmacy passed the following resolutions endorsing the course here offered:

WHEREAS, The Oregon State Agricultural College has established a course in pharmacy and chemistry that meets with the hearty approval of this Board, inasmuch as it offers a large proportion of practical work; therefore, be it

Resolved, That the Oregon State Board of Pharmacy acting in accordance with Sections 5 and 6 of the Oregon Pharmacy Law as amended, grant to students of the Oregon Agricultural College, who complete the full course and hold a diploma from said institution, after they shall have been subjected to such examination, at Corvallis, Oregon, as this Board may approve, on the completion of the senior year, a certificate to act as a registered pharmacist in this state.

Provided, That any student who may have taken the last two years of the course only and who does not hold the regular diploma from the said institution, on passing the examination aforesaid shall only be granted the certificate of a registered assistant.

The training in the pharmaceutical course is largely conducted in the laboratory for it is only by this means that the student can form an intimate personal acquaintance with the material and the best methods of manipulation. Thus it is that he receives systematic practice in dispensing, in the examination of drugs as to identity, purity, and strength, and in the manufacture of various preparations from crude drugs. The requirements of the U. S. Pharmacopœia are always kept in mind, and the student is always held strictly responsible for the purity of his preparations and the accuracy of his work. The course aims to teach students facts and principles of immediate use in the drug store, adapting the work to the needs of the practical pharmacist and manufacturing chemist. It is, however, further recognized that a thorough foundation must be laid for this work, and in view of this, two years of preparatory work are required in the college, or its equivalent in some other school. Students who have had equivalent work elsewhere can complete the course in pharmacy in two years.

EXPENSES IN CHEMISTRY AND PHARMACY.

Tuition is free at this institution, but to cover the cost of material used and wasted in the laboratories a small laboratory fee and a deposit for breakage will be charged in the chemical and pharmaceutical laboratories as is the custom in all institutions. These fees are payable each term strictly in advance.

Chemical laboratory: Courses I, II, III.

Material	$2.00
Deposit for breakage	1.00

Qualitative Analysis XV or Quantitative Analysis:

Material	$3.00
Deposit for breakage	2.00

Pharmaceutical Laboratory, per term:

Material	$3.00
Deposit for breakage	2.00

Laboratory work accompanying theses, per term:

Material	$3.00
Deposit for breakage	2.00

Text and reference books in chemistry: General Chemistry, Bradbury, Newell, Smith; Qualitative Analysis, Johnson and Prescott, Dennis and Whittlesey; Quantitative Analysis, Talbot, Smith and Cheever; Agricultural Chemistry, Johnson; Organic Chemistry, Remsen; Roscoe and Schorlemmer, Watt's Dictionary of Chemistry, Thorpe's Dictionary of Applied Chemistry, Thorpe's Industrial Chemistry, Wiley's Principles of Agricultural Chemistry; Fresenius, Crooke's Select Methods, Sutton's Volumetric Analysis, Stillman Engineering Chemistry; Technology of Paint and Varnish, Sabin; Chemistry of Manufacturing Processes, Blount and Bloxam; Food Inspection and Analysis, Leach; Microscopy of Vegetable Foods, Winton; Official Methods, etc.

Text and reference books in pharmacy and materia medica: Handbook of Pharmacy, Coblentz; Practice of Pharmacy, Remington; Quantitative Analysis, Sturmer and Vanderkleed; Organic Analysis, Prescott; The Art of Compounding, Scoville; Medical Chemistry, Bartley; Materia Medica, Culbreth; Morris, Hatcher and Sollmann, White and Wilcox; Dose Book, Hoak; U. S. Dispensatory; King's Dispensatory; U. S. Pharmacopœia; same, of Homœopathy; National Formulary. Numerous other books and trade journals are to be found in the college library and are accessible to students.

NOTE.—Students from other institutions will be given advanced credit as follows:

Bradbury General Chemistry, or its equivalent	Two terms
Williams General Chemistry, or its equivalent	One term
Dennis and Whittlesey Qualitative, or its equivalent	Two terms

ENGLISH LANGUAGE AND LITERATURE.

F. BERCHTOLD, A. M., Professor.
IDA B. CALLAHAN, B. S., Assistant Professor.
HARRY BEARD, B. S., Instructor.
JUANITA ROSENDORF, B. S., Reader.

English as a required study is found extending in most of our courses to, and including part of, the junior year. It is offered as an elective in two terms of the junior year, and in the senior year.

Courses S., B., F.—The course in preparatory English is designed to secure accuracy and freedom in expression. There is work in spelling, writing and simple grammatical constructions. Written exercises prepared under rules of form are constantly required, to obtain practice and secure confidence in expression. Whitney and Lockwood's English Grammar. "Kimball's Business Speller," "Elementary English Composition," "Practical Exercises in English," Huber G. Buehler.

It is well understood that the art of using one's native tongue correctly and forcibly is acquired for the most part through imitation and practice, and is not so much a matter of knowledge as of habit. To become familiar with good use, we must read the best literature; a student familiar with the best language of reputable writers and speakers will use good English without conscious effort. Indeed, good reading is indispensable to good speaking or writing; and rules and dictionaries are of little benefit without it.

Throughout the courses, therefore, there is required an amount of collateral reading equivalent to two books per term, or six per scholastic year. The student prepares

condensive abstracts of these books, and supplements this work by selecting and memorizing from each book six short quotations embodying general truths.

The books to be read and studied in the subfreshman year are: Defoe's "Robinson Crusoe;" Bunyan's "Pilgrim's Progress;" Hughes' "Tom Brown's School Days;" Edward Everett Hale's "The Man Without a Country;" R. D. Blackmore's "Lorna Doone;" G. W. Cable's "The Cavalier."

Courses I, II, III.—*Composition and Rhetoric.*—Freshman year; first, second and third terms. Review of English grammar; review of punctuation. Daily practice in spelling. Description; narration. Collection of material for a theme. The study of words, the sentence, the paragraph. Figures of speech. The burden of these courses is description and narration. Extracts from classic literature are read and analyzed in class. Written reports are handed in, giving distinctive features in the description or method of movement in the narration. Short descriptions and narrations are written on demand in the class under limit. There are also constant recitations and exercises under grammatical rules and constructions to secure order and accuracy. The work, here as well as in all other courses in English, is done with a view to the increase of the student's vocabulary, and to develop ease and exactness of expression in his compositions. Lockwood and Emerson's "Composition and Rhetoric." Collateral reading. Books to be read and studied in the freshman year:

"The Sketch Book," Washington Irving.

"Sir Roger De Coverley," Joseph Addison.

"Silas Marner," George Eliot.

"The Merchant of Venice," William Shakespeare.

"Julius Cæsar," William Shakespeare.

Courses IV, V.—*Rhetoric.*—Sophomore year; first and second terms. This course is carried on co-ordinately with Baldwin's College Manual of Rhetoric. It emphasizes Criticism, Exposition and Argument.

A number of formal papers are required during the year. The subjects are assigned and the methods follow principles laid down by Baldwin, and Lockwood. Much attention is given to definition of terms and to making clear expositions of ideas contained in paper.

By way of review, many short exercises are also written under the simple fundamentals of composition and in study of sentence and paragraph structure. Collateral reading.

Course VI.—*English Literature.*—Sophomore year; third term. The long course of English literature necessitates the division of it into a number of periods marked by the presence of new and weighty influences. In each period there are a few writers that stand, by reason of their ability and enduring work, in positions of recognized preeminence. We aim to extend the study of the works of such writers —our classic authors—sufficiently far to include considerable fulness of biographical and critical detail.

Formative Period.—Chaucer, "Canterbury Tales:" Prologue and Knight's Tale.

First Creative Period.—Spencer, "Faery Queene." Cantos I and II. Bacon, Essays. Shakespeare, "Hamlet," "King Lear," "Henry V." Collateral reading.

Courses VII and VIII.—*English Literature.*—Junior year; first and second terms. Civil War Period: Of Milton's minor poems: "L'Allegro" and "Il Penseroso." The Restoration: Dryden, selections. Queen Anne Period: Addison. Pope, selections. Age of Johnson: Burns, selections. Goldsmith, "The Deserted Village." The Nineteenth Cen-

tury: Scott, Byron, Wordsworth, Tennyson. Selections from each. Collateral reading.

Courses IX, and X.—*American Literature.*—Junior year; third term, and senior year, first term. A study of the leading periods and principal writers of American literature, with particular emphasis of what is usually termed the First National Period, representing such authors as Irving, Cooper, Bryant, Poe, Emerson, Hawthorne, Longfellow, Lowell, Whittier and Holmes. Collateral reading as in other courses in English.

Courses XI and XII.—*Elective Courses in English Literature.*—Senior year; second and third terms. A critical study of four or five representative plays of Shakespeare and selections from Wordsworth, Tennyson and Browning. Papers on assigned topics and reports upon collateral reading are required throughout the courses.

MATHEMATICS, CIVIL AND MINING ENGINEERING

GORDON V. SKELTON, C. E., Professor.
CHARLES L. JOHNSON, B. S., Assistant Professor.
NICHOLAS TARTAR, Instructor.

MATHEMATICS.

The course in Mathematics includes such of its branches as the distinctive aims of this institution require, and conforms itself, in general, to that in use in the most successful agricultural colleges.

That the study may to the fullest extent strengthen and discipline the mind for connected, logical thought, thoroughness and accuracy are insisted upon at all times. In the class-room all principles and demonstrations must be presented in an orderly and logical manner. The constant aim is to cultivate the powers of insight, judgment, and originality.

Course I—*Algebra*.—Freshman year; first term. From quadratic equations on. This course is open to students who have completed the sub-freshman work and to new students who can satisfy the department that they are prepared for the work. A review of about ten days will be devoted to the topics that precede quadratic equations. Five hours a week.

Course II—*University Algebra*.—Sophomore year; second term. From ratio and proportion to theory of numbers. This course is open to all students who have successfully passed course I. Five hours a week.

Course III—*University Algebra*.—Sophomore year; third term. Form the theory of numbers on. This course is open

to students who have had courses I and II or their equivalent. Five hours a week.

Course IV—*Plane Geometry*—Freshman year; second term. This course includes all that is found in the first four books of plane geometry in any standard text, as Wentworth's. Special emphasis is laid upon definitions and principles. Original demonstrations are given and much time is devoted to "original" theorems and problems and at all times proofs and demonstrations are freely criticised and discussed in the class-room. Five hours a week.

Course V—*Plane, Solid and Spherical Geometry.*—Freshman year; third term. This course includes book V of plane geometry and all of solid and spherical geometry. Students must have had course IV before taking this. Five hours a week.

Course VI—*Trigonometry.*—Sophomore year; first term. Students must have had courses I, IV and V before taking this. Only enough time is given to spherical trigonometry to enable the student to solve the spherical triangle. Much time is devoted to practical triangulation and measurements. The department is supplied with all the necessary instruments which the students use under the direction of the instructor. Five hours a week.

Course VII—*Plane Analytical Geometry.*—Junior year; first term. This work is required of all students taking the mechanical, electrical, mining and civil engineering courses. The work embraces the subjects treated in Ashton's Analytic Geometry. Five hours a week.

Course VIII—*Differential Calculus.*—Junior year; second term. This course is required of the same students as is course VII. Among the topics considered are differentiation and applications, evaluation of indeterminate forms, ex-

pansion 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. Five hours a week.

Course IX—*Integral Calculus.*—Junior year; third term. Among the topics considered are direct integration, definite integrals and applications, integration of rational fractions, integration by rationalization, 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 VIII, great stress is laid upon practical applications, and a large number of practical problems are solved. Five hours a week.

Course XI.—*Astronomy.*—Senior year; third term. That this most elevating and refining subject may be open to a greater number of students, it will be confined to descriptive astronomy and may be taken by students who have completed courses I to V, inclusive. Much time will be devoted to uranography. Five hours a week.

CIVIL AND MINING ENGINEERING.

Course I.—*Plane Surveying.*—Sophomore year; second term. This course includes recitations, lectures, field and office work in the theory and practice of plane surveying. Proper emphasis will be given to chain and tape 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. Form of field notes, method of balancing and plotting surveys, computing area, etc., will have due consideration. Students must have had

Courses in Mathematics from 1 to 5, inclusive, before taking this course. Three recitations and four hours office and field practice per week.

Course II.—*Plane Surveying.*—Sophomore year; third term. This course is a continuation of Course I, except that nearly the entire time will be spent in field practice making surveys, relocating lost corners, making surveys from given descriptions, subdividing land, city work, etc. Students must have had Course I before taking this. Ten hours per week.

Course III.—*Topographical Surveying.*—Junior year; first term. This course will include the execution of a complete topographical survey of a selected tract, including the office work such as the calculations, checks, platting and finishing the map. Prerequisites Courses I and II. Six hours per week; mainly field and office.

Course IV.—*Plane Surveying.*—Spring term; Junior year. This course is a condensation of Courses I and II and is designed for students pursuing the Agricultural course and for those of the Mechanical and Electrical courses who desire to elect it. The greater part of the time is spent by the student in the field with the various instruments. He is required to make surveys from descriptions given him as well as to write descriptions from surveys made by himself. In all cases notes must be carefully kept and worked up in the office.

Course V.—*Railroads.*—Junior year; second term. The theory of curves including the transition curve, earthwork computations, economic location, maintenance, etc. Three recitations and four hours office and field practice.

Course VI.—*Railroads.*—Junior year; third term. This course is a continuation of Course V and must be preceded

by it. During this term the reconnaissance and location of a line several miles in length will be made and maps and profiles constructed and estimates, etc. formed. The field work will be arranged as far as possible for Saturdays. Two hours recitation and six hours field and office.

Course VII.—*Highway Construction.*—Senior year; fall term. This course includes a consideration of the elementary principles of location, construction and maintenance of roads including a consideration of the materials used in road and street building. Three hours recitation and four hours office and field.

Course VIII.—*Highway Construction.*—Senior year; winter term. Continuation of Course VI. This course will include the surveys, location, estimates of cost and preparation of plans, specifications and contract for a section of road involving the usual engineering difficulties. One hour recitation and eight hours office and field.

Course IX.—*Masonry Construction and Foundations.*—Senior year; third term. This course includes a consideration of stone, brick, lime and cement, and estimates and specifications for their use, also the theory of the arch, retaining walls and foundations of various classes. This course must be preceded by courses VIII and XII in mechanics and must be preceded by or accompany course XIV in mechanics. Five hours a week.

Course X.—*Agricultural Engineering.*—Senior year; third term. This course is open to students who have completed course IV. Instruction will be giyen in designing, locating and constructing agricultural drainage systems; laying out farm buildings, etc. Five hours per week.

Course XI.—*Roofs and Bridges.*—Graduate year; Fall term. Both analytical and graphical methods will be ap-

plied to the determination of stresses in roof trusses under static and wind loads and in bridges under static and moving, concentrated and distributed load. Three hours recitations and four hours drawing and computing room.

Course XII.—*Roofs and Bridges.*—Graduate year; Winter term. This is a continuation of course X and will take up design of such structures. Courses X and XI must be preceded by mechanics VII, XII and XIV. One hour recitation and six hours drawing and computing room.

Course XV.—*Mining Engineering.*—Senior year; third term. The subjects treated embrace preparatory and exploratory work, methods of mining, hoisting machinery, hoisting operations and conveyances, steam, water and electric power, underground traffic, pumping, ventilation, illumination, etc. Five hours a week.

Course XVI.—*Sanitary Engineering.*—Graduate year; Winter term. Drainage systems for populous districts including chemical and bacteriological purification of sewage, collection and destruction of garbage, street cleaning, etc. Prerequisites, courses I, II, III and VIII civil engineering, hydraulics and mechanical drawing. Two recitations and lectures and four hours computing and drawing room per week.

Course XVII.—*Water Supply Engineering.*—Graduate year; Spring term. Water supply for municipal and irrigation purposes, storage, purification, distribution and management of plant will be considered. Two hours recitation and six hours computing and drawing room. Prerequisites same as course XVI.

Course XVIII.—*Engineering Contracts and Specifications.*—Graduate year; Spring term. The general principals governing engineering contracts and specifications including

preparation, careful criticism and study of several specifications and contracts in connection with courses V to XVIII. Two hours recitation and lectures per week.

TEXT BOOKS.

Arithmetics—Higher Arithmetic; Wentworth.
The New Business Arithmetic—Powers & Lyon.
Algebra—Essentials of Algebra; Wells.
Advanced Algebra—Hawkes.
Geometry—Plane and Solid Geometry (Revised Edition); Wentworth.
Trigonometry—Plane and Spherical Trigonometry; Ashton & Marsh.
Analytic Geometry—Plane and Solid Analytic Geometry; Ashton.
Calculus—Differential and Integral Calculus; Nichols.
Astronomy—Elementary Astronomy; Young.
Surveying—Johnson.
Railroads—Searles, Webb.
Mining Engineering—A Manual of Mining; Ihlseng.
Roofs and Bridges—Merriman & Jacoby.
Sanitary Engineering—Folwell.
Water Supply Engineering—Folwell.
Contracts and Specifications—Johnson.
Masonry Construction and Foundations—Baker, Patton.
Highway Construction—Byrne.

ZOOLOGY.

A. B. CORDLEY, M. S., Professor.
W. T. SHAW, B. Agr., M. S., Assistant.

The work in this department is designed to give the student that knowledge of biological laws which is to-day regarded as an essential part of a liberal education. It aims to create a growing interest in the study of our native birds, insects and other animals and their interrelations with one another, with native and cultivated plants and with rural life; to give a knowledge of the foundation facts of morphology and physiology on which depend many of the principles of scientific stock breeding and feeding, of veterinary science and of human physiology and hygiene; and above all from an educational standpoint, it aims to train the student's perceptive faculties, to teach him to see, to do and to reason from observed facts.

The laboratories of the department occupy six rooms on the third floor of the agricultural building. They are well supplied with necessary apparatus including compound and dissecting microscopes, camera lucidas, eyepiece and stage micrometers, an automatic microtome, dissecting sets, dry and steam sterilizers, incubators, reagent sets and numerous smaller articles, all of which are for the use of students.

For the purpose of illustration there are in addition to the general museum and the entomological collection a set of the celebrated Leuchart zoological charts, enlarged dissectable models of the human ear, eye, heart, brain and larynx and a large series of microscopic mounts.

The general museum, which occupies the main part of the fourth floor of the agricultural building, also contains a small but typical collection of mounted mammal skins; a collection of mounted skins of native birds; a collection of mounted bird skins from Alaska; a collection of more than one hundred species 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; a small but interesting collection of skulls and disarticulated and articulated skeletons; and the largest collection of Oregon insects in existence.

Course I.—*Invertebrate Zoology*.—Sophomore year; third term. A course devoted principally to the morphology, physiology and ecology of invertebrates. Particular attention is given to the study of the single celled forms since it is believed that the student can thus best gain an insight into the structure and physiological activities of the higher animals. Some of the types studied are the amœba, paramœcium, vorticella, sponge, hydra, starfish, crawfish, earthworm, mussel and grasshopper. Required in the agricultural, household science and pharmacy. Seven hours a week. Laboratory deposit, $3.00.

Course II.— *Entomology*.— Junior year; first term. A study of the structure, classification and habits of insects, with particular reference to those which are beneficial or injurious. Instruction is given in methods of collecting and mounting insects and in studying their life-histories and in the preparation and use of insecticides. Required in the agricultural, household science and literary commerce courses. Prerequisite, course I. Seven hours a week. Laboratory deposit, $1.00.

Course III.—*Vertebrate Zoology*.—Junior year; second

term. A course devoted principally to the morphology and physiology of vertebrates. A careful comparative study is made by dissections of several vertebrate types, particular attention being given to the Guinea pig as a type of the mammalia. The relation of function to structure is kept constantly in mind throughout the course which thereby becomes valuable as an introduction to the study of human physiology and veterinary science. Required in the agricultural, household science, pharmacy and literary commerce courses. Seven hours a week. Prerequisite, course I. Laboratory deposit, $3.00.

Course IV.—*Physiology.*—Junior year; third term. A course in human physiology designed for students having a knowledge of general biology and of vertebrate anatomy. The student should also possess some knowledge of chemistry and physics. Required in courses in agriculture, household science, pharmacy, business and literary commerce. Seven hours a week.

Course VI.—(*a*) *Evolution.*—Senior year; first term. A course of lectures and collateral reading on organic evolution; covering such topics as the evolution of evolution, variation, struggle for existence, heredity, etc. Prerequisites, courses I and III. Two hours a week. Elective.

(*b*) *Systematic Zoology* —A discussion of the principles of zoological classification with particular reference to species of economic importance. Prerequisites, courses I and III. Three hours a week. Elective.

(*c*) *Advanced Entomology.*—A laboratory study of some restricted group of insects, of some particular species of economic importance, or of the insects affecting some particular crop. In this course students have free access to the collections and the library and records of the experiment

station. The course extends throughout the year. Prerequisites, courses I and II. Seven hours a week. Elective.

Course VII.—(*a*) *Histology.*—Senior year; second term. A course of laboratory practice in fixing, hardening, imbedding, sectioning, staining, mounting and studying the tissues of the higher animals. Prerequisites, courses I and III. Seven hours a week. Elective.

(*b*) *Advanced Entomology.*—A continuation of course VI *c*.

Course VIII.—(*a*) *Embryology.*—Senior year; third term. Mainly a laboratory course in the study of the development of the frog and the chick, supplemented by a study of the general facts and principles of embryology. Prerequisites, courses I, III and VII *a*. Seven hours a week. Elective.

(*b*) *Advanced Entomology.*—A continuation of courses VI *c* and VII *b*. Seven hours a week. Elective.

TEXT-BOOKS AND REFERENCES.

Courses I and III.—Texts, "Animal Life," Jordan and Kellogg and "Animal Forms," Jordan and Heath. References, "Outlines of Zoology," Thompson; "Text-Book of Zoology," Parker and Haswell; "Text-Book of Comparative Anatomy," Lang; "Invertebrate Morphology," McMurrich.

Course II.—Text, "Insect Life," Comstock. References, "Manual for the Study of Insects," Comstock; "Insects Injurious to Fruits," Saunders; "Economic Entomology," Smith. Bulletins and reports of the various experiment stations and of the United States Entomologist.

Course IV,—Text, "Human Physiology," Thornton. References, "An American Text-Book of Physiology," Howell; "Practical Physiology," Sterling.

BOTANY AND FORESTRY.

EDWARD R. LAKE, M. S., Professor.

BOTANY.

The aim of the regular course in botany is to give the student such a working knowledge of plants and plant-life as will enable him to intelligently consider the various problems of vegetable life on the farm, in the garden or forest.

The student is taught to observe plants; to become familiar with them through a working association; to ascertain by actual field-work and observation what plants do, and what relations they bear to each other, and to other forms of life.

The chief features of the work in this subject are field and laboratory exercises, supplemented by lectures and recitations. Text and reference books are used merely as guides, or for the purpose of furnishing suggestions to the end that the student may be enabled the better to make the field, garden, greenhouse and laboratory work the more effective.

The department has a good working equipment for the courses outlined. Individual sets, comprising dissecting and compound microscopes, laboratory glassware and other apparatus are supplied each student at a moderate rental fee. The collection of mounted and unmounted plants, especially rich in Oregon types, together with charts, models and preserved specimens furnish ample material for both regular and special advanced work in the several courses.

Course I.—*Plant Morphology.*—Freshman year; third term. Laboratory and field exercises, together with recitations. The gross structure of our common plants is the

main topic of the term's work. In the field-work particular attention is given to ecology—the plant in its relation to soil, air, water, light and the other plants that are associated with it. Incidentally germination, growth, fertilization and fructification are considered. Seven hours a week. Laboratory deposit, $1.00. Bergen, Foundations of Botany; Coulter, Plant Relations.

Course II.—*Plant Histology.*—Sophomore year; first term. Laboratory work with the dissecting and compound microscopes. The exercises of this course cover the minute structure of the higher plants, together with a brief consideration of the lower forms of plant life. Seven hours a week. Laboratory deposit, $2.50. Coulter, Plant Structures; Strassburger and Hillhouse, Practical Botany.

Course III.—*Plant Physiology.*—Junior year; second term. Laboratory exercises and recitations. The subject is considered with special reference to the needs of the agriculturist and horticulturist. The principal part of the discussion is upon those phases of the subject that bear directly upon our cultivated crops. Seven hours a week. Pre-requisite, course II. Laboratory deposit, $3.00. Sorauer, Physiology of Plants; McDougal, Plant Physiology.

Course IV.—*Plant Classification.*—Junior year; third term. This course is designed to meet the demands of the pharmacist for a working knowledge of plants in general. Much stress is laid upon field and laboratory work. Plant relationships, plant societies, regional types, plant products, the medicinal and poisonous species of our common plants, are some of the topics considered during the term's work. Required in the course in pharmacy. Seven hours a week. Laboratory deposit, $1.50.

Course V.—*Plant Pathology and Hygiene.*—Senior year;

first term. Laboratory and field work supplemented by lectures and recitations. The common fungous foes of the cultivated field, orchard and garden crops, together with the means of prevention and remedy are considered at length. Seven hours a week. Elective. References, Lodeman, Weed and Smith.

Course VI.—*Plant Products.*—Senior year; second term. Economic plants and their various preparations and uses. History, development, and distribution of the plants that furnish the world with its chief supply of material for food, shelter, clothing, fuel, medicine and the arts. Elective. Seven hours a week.

Course VII.—*Systematic or Cryptogamic Botany.*—Senior year; third term. The work of this course is arranged to meet the needs of those electing it. In the systematic work, the student collects and classifies a hundred or more of the local plants, giving data as regards habitat, and distribution, and prepares a synopsis of the orders considered and species collected. Some time is also devoted to a study of current botanical literature.

In the cryptogamic work, the exercises are confined chiefly to a study of the comparative morphology of the fungi, algæ and other low forms of plant life. Seven hours a week. Elective. Laboratory deposit, $2.50.

The laboratory deposits in courses I, II, III, IV and VII are required of all students, and are made to cover possible loss and breakage of apparatus used. At the close of each term such balance as may remain. is returned to the student. All deposits are required to be made in advance.

Course VIII.—*Agrostology.*—Senior year; first term. A brief course designed to meet the needs of those students

who desire to get a working knowledge of the more common forage grasses, particularly the local native and introduced species. The economic aspect of the subject so far as relating to culture and feeding-value will be considered by the agriculturist.

FORESTRY.

The course in forestry is designed to meet the needs of those men who desire to enter the government forest service, or to fit themselves to care for the forest areas of private owners.

Forestry I.—*Club-work.*—The "Forest Club" meets twice each month 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. First and third Fridays, each month, 7 p. m.

Forestry II.—*Club-work.*—In addition to work outlined in Forestry I, members of the third year class are required to take an active part in the affairs of the "Camera Club", an organization for the advancement of "camera craft". Besides the regular discussions of topics pertaining to lenses, cameras, camera outfits, plates, films, printing-papers, negatives, lanter-slides, transparencies and general technique, there will be occasional lectures on Art and Nature, artistic photographs, photographs for scientific purposes, photographic illustration, etc., etc. and frequent demonstrations of material and processes. First Thursday, each month, 7 p m.

Forestry III.—*Club-work.*—In addition to the work of Forestry I and II the members of the fourth year class will perform actual service in the "Rod and Gun Club", an organization having for its special field of work the study and

promotion of all matters of moment pertaining to the game and fish interests of forest and field, game preserves, game-laws, game-breeding, game-protection, huntsman's clubs, sportsmen's liabilities, and other pertinent topics. Second Friday, each month, 7 p. m.

Forestry IV.—*Sylviculture.*—Throughout second year. The principles of plant propogation; the structure, dissemination, germination, vitality, collection and preservation of tree seeds; seedbeds, seedage, cuttage, nursery-work, transplanting trees, pruning, thinning, pure and mixed plantings, nurse trees; forest reproduction by successive cuttings, selection, coppice.

Forestry V.—*The Forest.*—Third year; first term. The principles underlying the growth, development and maintenance of forest areas. The tree as a factor in forest types, and as a unit of vital force in the forest-crop. A brief outline of forestry in Europe, together with the history of the forestry movement in America, and its present status.

Forestry VI.—*Dendrology.*—Third year, second term. The study of trees from a taxonomic standpoint. Particular stress is put upon a study of those features which enable one to identify trees afield. The course includes lectures, laboratory and field work.

Forestry VII.—*Forest Industries.*—Third year; third term. A discussion of the various industries depending upon the forests, together with the consideration of questions relating to improved ways of utilizing our forest crop.

Forestry VIII.—*Forest Finance.*—Fourth year; first term. The value of the forest: stability of investment, dividends on the investment, local problems in forest finance.

Forestry IX.—*Forest Administration.*—Fourth year; second term. General principles of effective administration: work-

ing-plans, estimation, methods of harvesting the crop, principles governing the execution of working-plans.

Forestry X.—*Forest Economies.*—Fourth year; third term. Taxation, Tariff, Transportation, Markets, Labor, Organization, Trusts, Public welfare, National Commerce.

Forestry XI.—*Timber Technology.*—Fifth year; first term. Timbers as to strength, toughness, hardness, flexibility, grain, texture, etc., etc. Warping, swelling, density. The influence of these properties upon the market value of timbers; factors which determine the uses of various economic woods.

Forestry XII.—*Lumbering.*—Fifth year; second term. Lumbering practices: utilization of waste. Cutting, seasoning; commercial standards; bridge-stuff, framing, sheathing, finishing, lath, shingles; furnishing, as doors, sash, blinds, etc., etc. Grading lumber, markets and marketing the manufactured product.

Forestry XIII.—*Forest Policy and Protection.*—Fifth year; third term. Legislation for forest conservation, protection and renewal; National and State enactments regarding reserves, parks, water-sheds and irrigation.

The relation of the forests to National and State industries; statistics; protection against fires, trespass, insects, diseases, weeds and storms.

SUMMER CAMP.

All students in the regular course in forestry will be required to spend two sessions of eight weeks each during July and August of the junior and senior years in the forest. One session is required at Camp Reserve; a part of the other, at the option of the forester, may be spent in lumber camps, mills or factories. The objects of these sum-

mer sessions are two-fold; to give the student a practical working knowledge of the subject in hand, and to advance his technical training. In view of these ends the work of the summer session is diverse and is presented in two ways, lectures and field-work.

JUNIOR YEAR—LECTURES.

These are presented as a series of campfire talks and discussions covering the following topics:

1. Methods of field-work.
2. Forest transportation, trail and road construction.
3. Pack animals, selection, care and management.
4. Forest-service, duties of fire and game wardens, rangers, and other officers.
5. Forest physiography including field-geography, geology and plant distribution.
6. Timber cruising, mensuration.
7. Forest fires, prevention, fighting, remedies.
8. Grazing in forest acres.
9. Fish and game; hunting, trapping, fishing, breeding, etc.

WOODCRAFT.

This is a series of daily practical exercises in field forestry. The subjects with which the student will be required to have an actual working knowledge are: packs and packing, trail and road making; camp equipage; camp making; camp fires; water supplies; camp cooking; woodmen's tools; their use and abuse; use and care of fire arms; dressing and preserving game; care of skins, furs, hides and pelts.

FIELD WORK.

Observations, general and special; geology, meteorology,

hydrography, biology, dendrology, daily or weekly assignments; Sylviculture, cruising, surveying, mensuration, records, charting, mapping, photographing.

TIME FACTOR IN CAMP SESSION.

JUNIOR YEAR.—FIELD WORK.	Hours
Surveying	72
Sylviculture	40
Mensuration	72
Botany	20
Zoology	24
Entomology	20
Geology	24
Dendrology	40
OFFICE WORK.	
Mapping and Charting	32
Records	8
LECTURES.	
Fish and Game	8
Forest Service	12
General Topics	12

SENIOR YEAR.—LECTURES.

Influence of Forests and Trees upon National Life.
Forest Laws.
Forest Policies.
Forest Management.
Forest Administration.
Forest Reserves, National and State Parks and their values.
The Forest as a health resort.

FIELD WORK.

Logging; transportation of timber; camp management, milling, pulping, distilling, utilizing waste, preserving timbers and lumber, working plans.

HORTICULTURE.

CLAUDE ISAAC LEWIS, Professor.

The work in horticulture is so arranged as to give the student a working knowledge of the principles and practices of modern horticulture, especially applicable to Pacific Coast conditions and requirements.

The experiment station orchard of over two thousand fruit trees, shrubs and vines furnishes ample material for all phases of the work of the several courses.

Course I.—*Plant Propagation.*—Senior year; first term. House and field exercises in seeding, propagation by cuttings, layering, harvesting, storing and marketing. Recitations. Two and one-half, or five hours a week. Goff, Principles of Plant Culture.

Course II.—*Plant Culture.*—Senior year; second term. Lectures and recitations on orchard, garden and vineyard fruit crops, including selection of soils, planting, cultivating, pruning. Two and one-half, or five hours a week. Bailey, Principles of Fruit Growing.

Course III.—*Plant Evolution and Improvement.*—Senior year; third term. Lectures and recitations covering the various phases of evolution as bearing especially upon our cultivated plants, together with a discussion of the principles and practices of plant-breeding, and improvements by selection and cross-fertilization. Five hours a week. Bailey, Plant-Breeding; Bailey, The Survival of the Unlike.

ELOCUTION.

HELEN V. CRAWFORD, B. S., Professor.

"There is one accomplishment, in particular, which I would earnestly recommend to you, Cultivate assiduously the ability to read well. Good reading is the natural exponent and vehicle of all good things. It seems to bring dead authors to life again, and makes us sit down familiarly with the great and good of all ages."

It is the purpose of this department to train the pupils to become thoughtful, intelligent, and agreeable readers. To give them the power to extract thought from the printed page, and by systematic drill both in physical culture and voice work to give them adequate vocal expression. To instill in the minds of pupils a love for good literature, and a genuine pleasure in interpreting and rendering the same.

Courses I and II.—*Elocution.*—Freshman year; first and second terms. Analysis and rendering. Voice culture, physical culture. Two hours a week. Evolution of Expression, Vol. I., C. W. Emerson.

Course III.—*Elocution.*—Freshman year; third term. Voice culture, bodily expression, analysis and rendering. Two hours a week. Evolution of Expression, Vol. II., C. W. Emerson.

Courses IV, V and VI.—*Advanced Elocution.*—Senior year; first, second and third terms. Voice culture, rhythmic movements, literary analysis and rendering. Elective. Two hours a week. "Steps to Oratory," F. Townsend Southwick.

Senior year.—Rhetorical exercises will be required first term of senior year.

FLORICULTURE AND GARDENING.

GEORGE COOTE, Professor.

Instruction in floriculture is given to the classes in household science. Floriculture is intended to acquaint students with the habits and requirements of the many hardy plants for outside decoration and also with the propagation and management of tropical and subtropical varieties. Thus students are enabled to acquire considerable insight into the proper care of greenhouses. In order that this plan may be carried into effect, lectures supplemented by practical work in the propagation, potting and care of plants, are regularly given in the classes.

Course I.—Sophomore year; second term. Propagation of spring and summer plants for adorning the home grounds.

Course II.—Junior year; first term. Propagation of soft wooded plants, care of greenhouse, propagation and care of winter flowering plants.

Course III.—Senior year; third term. Landscape Gardening is treated as a fine art. Introductorily the arts of design in general are discussed. Then are discussed the principles, aims and methods of artistic gardening. The principles, when once understood, are applied to the embellishment of home grounds, cemeteries, parks and highways.

BACTERIOLOGY.

EMILE F. PERNOT, M. S., Professor.

Within the last decade bacteria have laid a very strong hold on the thought and imagination of the scientific world, and have come to be looked upon as playing a most important part, not only in the production of disease and in fermentation, but also in many everyday processes hitherto supposed to be dependent on very different causes.

In consequence of this, bacteriology has been raised to the dignity of a science, and its ramifications have become so numerous and widespread that many of the other sciences, and even some of the arts, have been freely pressed into the service of one or the other of its branches.

The study of bacteriology has made great strides both in the pathological and the technical branches of the subject; and just as investigations into the physiology of higher plants gave the first impetus to the establishment of agricultural experiment stations in all countries; so, in like manner, the physiology of fermentation and technical bacteriology have called into existence, within the last few years, a number of stations and laboratories for the development of those branches of industry wherein microörganisms play an important part.

This college has a well equipped bacteriological laboratory for the investigation and study of bacteriological diseases, both animal and vegetable.

The following courses of lectures and laboratory work have been added to the college curriculum as electives in the senior year.

Course I.—*Bacteriology.*—Senior year; first term. A course in the elements of bacteriology, including lectures, and laboratory practice in sterilizing, making culture media, inoculating and growing cultures, studying cultural characteristics of certain definite species of bacteria, mounting, staining and examining slides, classification.

Course II.—*Dairy Bacteriology.*—Senior year; second term. Study of the bacterial diseases of milk, bacteria in the dairy; study of bacteria in butter making and in cheese making; study of yeasts and ferments.

Course III.—*Bacteriology.*—Senior year; third term. Lectures and laboratory work in pathogenic germ diseases of stock and poultry; a study of vaccines, their manufacture and use; of the nitrifying bacteria in leguminous plants; of bacteria in the soil and the bacterial analysis of water.

Text-book used, "Essentials of Bacteriology," M. V. Ball.

REFERENCE BOOKS.

Manual of Bacteriology, Sternberg; Manual of Determinative Bacteriology, Chester; Bacteriology and Infective Diseases, Crookshank; Principles of Bacteriology, Abbott; Tratie de Bacteriologie, Mace; Pathogenic Bacteria, McFarland; Ptomains, Leucomains, Toxins and Antitoxins, Vaughan & Novy; Micro-organisms and Disease, Klein; Microbes, Ferments and Moulds, Trouessart; The Hygienic Laboratory, Kenwood; Tratie de Microbiologie, Duclaux; Pathological Histology, von Kahlden; Pathological Technique, Mallory and Wright; Clinical Diagnosis, Simon; Micro-organisms in Water, Frankland; Technical Mycology, Lafar; Bacteriology (Text and Atlas), Lehmann and Neumann; Micro-organisms and Fermentation, Jorgensen; Dairy Bacteriology, Von Freudenreich; Practical Studies in Fermentation, Hansen; Practical Bacteriology, Kanthack and Drysdale; Fungi and Fungicides, Weed; Bacteria and Their Products, Woodhead; The Methods of Bacteriological Investigation, Huppe; Agricultural Bacteriology, Conn. Publications of the Department of Agriculture.

FREEHAND DRAWING.

AMMEE LEVERETT, Instructor.

This course in drawing is designed chiefly to facilitate practical work in other departments, to teach the student to represent objects and plants as they actually are, rather than as they appear to be. Both professional men and craftsmen assert that a knowledge of drawing is invaluable, and as a means of general culture, the study of form and composition is very beneficial.

Course I.—Freshman year; first term. Drawing with charcoal and pencil from still life and casts; massed shading. Three hours a week.

Course II.—Freshman year; second term. Continuation of the first term work with the addition of models from nature. Line shading. Three hours a week.

Course III.—Freshman year; third term. Sketching from life, drawing from still life, nature, and the flat. Composition and design. During the third term students are permitted a choice of models and working mediums. Five hours a week.

VOCAL MUSIC.

FLORENCE McDOWELL GREEN, MUS. B., Instructor.
(University of Wooster.)

Voice Culture—Based on two lessons a week.

Grade I—Vocal exercises for placing the voice. Vaccai Italian Studies. Bonaldi, Bk. I in part. One term. Course I.

Grade II—Bonaldi completed. Conconi 50 Studies. Lutgen Trill Studies, Bk. I, Sieber Elementary Exercises. Two terms. Courses, II, III.

Grade III—Lutgen, Bk. II—Studies in phrasing by all composers. Bk. I, Scales and Exercises. Nava Studies, Bk. I, op. 36 and op. 22. Three terms. Courses IV, V, VI.

Grade IV—Bordogni, Bk. I. Exercises in Bravura work and rapid scales by Lamperti. Oratorio and opera selections. Six terms. Courses VII, VIII, IX, X, XI, XII.

Pieces suited to the pupil with all studies.

Drill in part singing through 3d and 4th grades.

Three grades of the Pianoforte course are required for graduation.

Recitals, both public and private, will aid the students in obtaining mastery of themselves before an audience.

The Choral Classes—Based on three lessons a week.

First Year—History of music in relation to national history. Tone relations. The major and minor second 3d and 6th. Practical work in reading and writing intervals. Chorus from Oratorio. Glees and simple chorus work. The Chant. Courses I, II, III.

Second Year—The history of the scale. The pitch of the orchestra. Perfect 4ths and 5ths. Practice in writing intervals. Keys. Chorus and quartet work.

Third Year—Musical terms and forms. The history of the German Folk Song, the English Ballad and the American Song. Lectures on Schubert, Wagner, Mozart, Beethoven. Practice with the 7th, all diminished, minor and augmented intervals. Brahm's "Vineta." Chorus from Mesiah, Elijah, The Holy City. Selections from the Operas. Courses VII, VIII, IX.

This course is designed to give those of limited time and means an intelligent understanding of the origin and development of song and instrumental music, as well as the ability to read at sight.

Graduation.—Upon completion of any course in music, the student will receive a certificate of graduation. While none of the regular college studies are required in the department of music, a broad, general education is earnestly recommended as necessary to success in the musical profession.

Tuition, in this department, is payable to the instructor and strictly in advance.

Private lessons, of one-half hour, two a week, $4.00 a month; of one hour, one a week, $3.00 a month.

Choral Class, for drill in the fundamental elements of music, one lesson a week, fifty cents a term.

College Chorus, for advanced study, one lesson a week, $1.50 a term.

Students registering in music are expected to pursue the study throughout the term. No deduction for missed lessons, except in cases of protracted illness.

Music may be obtained from the Instructor.

Piano rent, when the piano is desired, for practice, $1.00 a month for one hour a day.

PIANO COURSE.

GERARD TAILLANDIER, Professor.
(Boston and Leipsic)

Undergraduate Courses.—The work in pianoforte consists of three undergraduate courses: Elementary, Intermediate and Advanced. A post graduate course will also be offered. Each undergraduate course is divided into two grades, A and B. For graduation pupils will be required to complete satisfactorily the work through Grade B of the Advanced course, and to have been pupils for at least three consecutive terms, with two lessons weekly. In addition, they must pass examinations in Harmony, Musical History and Theory.

All piano students are required to play at pupils' recitals whenever asked by the instructor, and attend all recitals given by the department to all of which they will be given free admission.

The following outline will indicate the scope and difficulty of the work, but other studies and pieces may be substituted as the needs of the pupils may require. All graduates must be able to give an entire recital of not less than one hour in length.

Elementary Course.—Grade A. No requirements for entrance. Kohler Method, Vol. 1; A. Schmitt, Five Finger Exercises; Easy Pieces by Behr, Lichner, Low and others; Kohler, Studies Op. 157, Op. 50.

Grade B. Kuhlau, Sonatines; Major scales and arpeggij; Studies by Kohler and Czerny; Pieces by Koelling, Lange, Pacher, and others.

Intermediate Course.—Grade A. Major and Minor scales and arpeggij; Loschhorn, Etudes, Op. 66; Bach, Little Preludes; Mendelssohn, Op. 72; Beethoven, Variations and other pieces.

Grade B. Cramer-Bulow Studies; Bach, two part inventions; Beethoven, Sonatas, Op. 14, Op. 2; Haendel, Pieces; Kullak, Octave Studies, Book I; Bach, Fantasie in C Minor, etc.; Mendelssohn's Songs Without Words; Weber, Pieces.

Advanced Course.—Grade A. Clementi, Gradus ad parnassum; Kullak, Octave Studies, Book II; Moscheles, Etudes, Op. 70; Beethoven, Sonatas, Op. 10, 13, 31; Beethoven, Variations, Op. 34; Chopin, Preludes, Valses, Nocturnes, etc.; Bach, Preludes and Fugues; Mendelssohn, Rondo capriccioso; Schumann, Pieces.

Grade B. Chopin, Etudes, Op. 10 and 25; Bach, Fugues and Suites; Schumann, Faschingsschwank, Op. 26; Liszt, Transcriptions and Rhapsodies; Mendelssohn, Variations serieuses; Beethoven, Sonatas, Op. 26, Op. 27, Op. 53; Chopin, Scherzi and Ballades.

Post Graduate Course.—The post graduate course carries pupils on from the point reached in the Advanced Course, Grade B. The more difficult works of Bach, Beethoven, Schumann and others, including concertos, will be taken up, and the study of counterpoint and analysis becomes compulsory. To enter the post graduate course, pupils must hold diplomas from the undergraduate course of this department or from some other music school of equal requirements.

Harmony and Counterpoint I, II, III.—This course will cover one school year. Emery's Harmony and Bridge's Simple Counterpoint are used as text-books. Only two part simple counterpoint will be taught, with a view to enable

the student to intelligibly interpret polyphonic works. This study ought to be taken by all students in advanced grade A or earlier.

Theory and Musical Form I, II.—These subjects will be taught twice weekly during the winter and spring terms. No text-books will be required for Theory and Form.

Musical History I, II, III.–Bonavia Hunt's History of Music will be found a most useful and handy book of reference for students taking this course. Instruction will be given principally in lectures upon which the students are expected to take notes. The lectures will be based on the Histories of Music by Rowbotham, Naumann, Hullah, Dr. Riemann, Dr. Nohl, Dr. Langhans, Groves Dictionary of Music and Musicians, etc., and the course will be a very comprehensive one, covering the history of music from the most ancient times to the present. Two periods weekly will be required during the entire school year.

TUITION.

Piano.—Private lessons of 30 minutes duration, $18.00 per school term, twice weekly; $12.00 per school term, once weekly. If less than a term is taken the rate will be $1.00 per lesson, twice weekly, and $1.25 per lesson, once weekly.

Arrangements for renting pianos can be made with the instructor, the charges being 25 cents per week for one hour daily practice, 50 cents for 2 hours, etc. Pianos can also be rented to be placed in the house of the student.

Harmony, Musical History, Counterpoint, Theory and Musical Form, in classes twice weekly, $6.00 per term for each study.

Diploma at graduation, $5.00. No deduction will be made for missed lessons, except in case of prolonged illness, in which case due notice will have to be given to the instructor. All tuition is payable in advance.

PHYSICAL CULTURE.

WILL ORIAN TRINE, Physical Director.

The aim of this department is to secure and maintain perfect health. To this end we strive to develop a symmetrical and graceful body. No pretense is made at developing actors, and no one is required to do what is known as "heavy work." However, there are always classes and special teams in various lines of artistic gymnastics, and those enjoying the work are welcome.

The chief aim is to benefit the weak and to guard against developing any tendencies to weakness or disease that so often exist. To this end every man entering the department is given a rigid physical examination. In these examinations the exact condition of the man is noted and special exercises are prescribed to meet his particular case. Records are kept making it possible by later examinations to note results of work and progress made.

The work is largely selected from the German and Swedish systems of gymnastics and "The Grading of Gymnastic Exercises" by George M. Martin. A progressive course is followed. The class work which is carefully planned aims primarily to cure the common physical defects, such as narrow chest, stooping shoulders and weakened muscular system.

The gymnasium is well equipped for thorough work. The basement is provided with lockers and bath rooms for both men and women. The main floor is equipped with horizontal bar, parallel bars, buck, horse, rings, ladders, trapeze, dumb-bells, clubs, wands and other apparatus. South of the gymnasium is a large athletic field, with a quarter-mile track, grandstand, 100-yard straight-away track, tennis courts and foot-ball grounds.

MINES AND MINING.

JOHN FULTON, B. Agr., B. S., Professor of Mineralogy and Geology.
GORDON V. SKELTON, C. E., Professor of Mining Engineering.
CHESTER L. PROEBSTEL, B. M. E., Assistant.

Instruction is given in this department to familiarize the student with the most approved methods of successfully carrying on mining operations as practised on the Pacific coast. The student is taught the uses of the various surveying instruments and is given ample opportunity for practical application in both field and mine surveying.

For courses in mine surveying, leveling, etc., see page 63.

The student is also taught how to care for and handle such machinery as boilers, engines, motors, pumps, etc. by practical study and use in the machine shops.

The course in mineralogy is designed to make the student familiar with all the common forms of minerals and their systems of crystallization.

Crystallography is first taken up, and the laboratory work consists of the study of crystal models and natural crystals.

After sufficient familiarity with crystal forms, the students are required to make drawings from actual measurements with the reflecting goniometer, by using the Penfield sheets and special protractors, and at least two each of the different systems are required.

Any student who has passed the course should be able to identify all but the rarer species. For all practical purposes this is sufficient. This course is required of all mining students but as it includes all the various blow-pipe as

well as the other chemical tests, all who intend to become chemists will find it to their advantage to take at least crystallography.

Mineralogy I.—*Crystallography.*—Senior year; first term. Required of mining students, and open to seniors in both mechanical and agricultural courses. Seven hours a week.

Mineralogy II.—*Chemical and Descriptive Mineralogy.*—The laboratory work consists of blowpipe analysis. On alternating days recitations and lectures. Seven hours a week.

Mineralogy III.—This is a continuation of course II, and consists of the description and identification of the silicates. Seven hours a week. Qualitative analysis is required of all students who desire to enter these courses.

Mineralogy IV.—*Assaying.*—Senior year; second term. A course in practical assaying of gold, silver, iron, mercury, zinc and copper ores. Must be preceded by qualitative analysis and mineralogy I. Six hours a week.

Mineralogy V.—*Assaying.*—Senior year; third term. A continuation of course V. Six hours a week.

Mineralogy VI.—*Metallurgy.*—This course is designed to give the student a general knowledge of metallurgical principles and of the materials used in the extraction of metals from their ores. It will include a general description of fuels, furnaces, crucibles, slags and mattes, as well as the methods of extracting metals by wet processes, such as by cyaniding, or chlorination. Seven hours a week.

Mineralogy VII.—This is a course in advanced metallurgy, consisting of the complete analysis of ores and metals, and is chiefly laboratory work. Elective.

Mineralogy VIII.—*Metallurgy of Iron and Steel.*—Laboratory and lectures. Elective.

All courses in mineralogy must be preceded by Geology I, and courses in metallurgy, by Geology II.

Geology I.—*General Geology.*—This course consists of both recitation and laboratory work, and when possible, excursions into the adjoining country, to make observations upon the various geological phenomena. Five hours a week.

Geology II.—*Mining Geology.*—This course consists of lectures and recitations on the origin and geological relations of ore deposits, and is primarily for mining students. Five hours a week.

The courses in assaying cover analysis of gold, silver, mercury and lead ores, by the fire or dry assay, and the estimation of copper, iron, and zinc, by the volumetric or wet assay.

Instruction in rapid estimations of various metals is also given when time permits.

The equipment of the assay laboratory consists of one simplex ore crusher, one wall cupel machine, one Becker button balance, one Spohrhaese button balance, two pulp scales, one bucking board, two crucible furnaces, two muffle furnaces, one combination muffle and crucible furnace. All above furnaces are heated by Hoskins' gasoline burners, supplied by pressure from one fifteen-gallon pressure tank. In addition, there are furnaces for coal or coke, both stationary and movable, anvils, moulds, tongs, scorifier-crucible and cupel-hand cupel machines, etc.

Nothing has been omitted in the equipment of a first class assay laboratory, so that students completing the full course will have no difficulty in taking up the duties usually incumbent upon the assayer.

There have been added during the past year, a Fuess reflecting goniometer, a quantitative balance, two sets of crystal models and an extensive mineral collection.

A valuable addition to the mining department has just been completed which is a metallurgical laboratory sufficiently large to accommodate 72 students.

In addition to the regular course there has been added another year's work for the completion of which shall be granted the degree of Mining Engineer.

The year's work will be largely a continuation of the fourth year's courses, in some cases extending into research work, while at the same time attention will be given to the courses required by other institutions offering advanced instruction along the lines of mining economy, so that students from this institution may not be prevented from completing the necessary amount of work entitling them to the master's degree, within the required time.

The requirements of such institutions as Stanford, Berkley, Cornell, and Columbia School of Mines have been duly considered.

Texts.—Scott's Geology, Furman's Assaying, Eakle's Physical Mineralogy, Moses & Parsons Blowpipe Analysis. References.—Kemp's Ore Deposits, Dana's Geology, Leconte Geikie, Reiss, Miers, Dana, Brush-Penfield, Cheever and Smith, Spurr, Low, Lodge, Miller.

LITERARY COMMERCE COURSE.

T. H. CRAWFORD, A. M., Professor.
J. B. HORNER, A. M., Penmanship.
HELEN L. HOLGATE, B. H. E., Stenography and Typewriting.

This course leads to the degree of Bachelor of Science. The requirements for entrance to this course are the same as those for entrance to any one of the Freshman years in any of the other courses. See page 25.

One of the most attractive features of this course is the prominence given to English. Every term in the entire four years—with but two exceptions—presents the subject of English, making this emphatically a literary course.

Along commercial lines, the subjects of book-keeping, stenography, typewriting and commercial arithmetic are made prominent in the sophomore, junior and senior years and in the junior and senior years commercial law, civics and economics are studied.

The subject of penmanship is taken up in the third term of the freshman year and made prominent every term until the close of the junior year.

In mathematics—in addition to commercial arithmetic—there are algebra and geometry, All the mathematics come in the first two years.

During the sophomore and junior years either Latin or German is studied continuously. In these years will also be found the subjects of history, aesthetics, and psychology.

A fee of $1.00 per month during term time will be charged for the use of the typewriting machines.

None but regular juniors and seniors in the course take stenography and typewriting.

MILITARY SCIENCE AND TACTICS.

MAJOR FRANK EDWARDS,
Professor of Military Science and Commandant of Cadets.

"Whatever arguments may be drawn from particular examples, superficially viewed, a thorough examination of the subject will evince that the art of war is both comprehensive and complicated; that it demands much previous study, and that the possession of it in its most approved and perfect state is always of great moment to the security of a nation."—*Washington's last annual message.*

"In the same measure as we are prepared to enforce them, will our demands upon other nations receive consideration."—*President Theodore Roosevelt.*

The military body consists of two battalions of Infantry, Band of 24 pieces, and such Detachments of Cavalry, Artillery, Signal, Hospital and Engineer Corps as may be organized for special instruction. The formation is regimental; 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 towards 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 in 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 that he may render intelligent aid to his country or

state in the 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.

Instruction in the course is prescribed for all undergraduate male students, except married men who are excused from drill. Students physically unable to bear arms are excused from active military drill but will be assinged some light duty by the head of the department. The instruction is both practical and theoretical.

The Cadet band, with twenty-four instruments, is under the instruction of a competent musician as leader. Ordinarily no cadet will be assigned to the band until he is well instructed in the "school of the soldier" aud the "school of the company."

The present armory contains a drill room 700x100 feet in extent, three offices, and suitable rooms for storing guns and other ordnance. The State Legislature has appropriated $15,000 for the construction of a new drill shed and armory.

Three hundred Springfield cadet rifles with equipments, two light artillery field pieces, twenty cavalry sabres, and a liberal allowance of blank and ball cartridges are furnished by the Ordnance Department, U.S.A. Other necessary equipments, apparatus, etc., for the thorough equipment of the military department is furnished by the College.

During the summer vacation the government will probably replace the Springfield rifles with 400 modern U. S. magazine rifles (Krag-Jorgensen), and the muzzle-loading field pieces with two 3.2-inch breech-loading field pieces.

Appointment and promotion of officers and non-commissioned officers and their relative rank in each grade is determined according to the military standing of the cadets, based upon a careful consideration of the following points:

(1) Knowledge of drill and other duties as determined by examination, practical application of this knowledge on the drill field, and recommendations of superior officers. (2) Zeal, soldierly bearing and aptitude for command. (3) Character. (4) Military record. (5) General standing in College.

Commissioned officers are selected from the Senior class; non-commissioned officers from the Junior and Sophomore classes; all reductions are to the grade of private. All appointments and promotions are made by the Commandant with the approval of the President of the College.

Officers and non-commissioned officers cannot resign their commissions except on recommendation of the Commandant, approved by the President; the reasons must be plainly stated in full and must not have been in existence at the time the commission or warrant was accepted.

DRILL.—Freshman, sophomore, junior and senior years. The practical course in infantry includes the schools of the soldier, company and battalion, in close and extended order; ceremonies; guard and outpost duty; target practice and battle tactics. In artillery it includes the schools of the soldier, cannoneer and platoon, dismounted; the mechanism, nomenclature and care of the 3.2 inch breech-loading field pieces; the use of artillery in the field.

Those physically unable to bear arms, together with a limited number from the senior and junior classmen, may be assigned to the signal corps. and instructed in the usual methods employed in military signaling.

Hospital, cavalry, and engineering detachments are organized from time to time for practical instruction in those branches.

Cadets are required to wear a complete uniform at all

drills and other military exercises. The wearing of mixed civilian and uniform clothing is prohibited at all times. The uniform complete costs about $16.00 and is of the regulation olive drab color adopted by the United States Army and makes a very neat and serviceable suit.

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.

THEORETICAL INSTRUCTION.—One recitation or lecture each week during junior and senior years. This instruction consists of recitations in Infantry, Artillery and Cavalry Drill Regulations, Field Service Regulations, Manual of Guard Duty, Small Arms Firing Regulations, 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.

ROSTER.

Cadet Officers and Non-Commissioned Officers.

Regimental Field and Staff.

Colonel ..... S. L. Damon
Lieut. Colonel .....E. V. Hawley
Captain, Adjutant.....H. B. Auld
Captain, Quartermaster... K. L. Cooper
First Lieut , Com.....W. E. Wade
Second Lt. Adjt. Detach.....L. A. Bundy

Non-Commissioned Staff.

Sergeant Major.....J. G. Kelly
Quartermaster Sergt.....B. H. Greenhaw
Com. Sergt.....R. I. Thomson
Col. Sergt .....F. L. Fowells
" ....W. A. Winniford
Sergt. Maj. Detachs.....J. S. Hammel
Sergt. Chief Clerk.....E. P. Rawson

Band.

Captain, Leader .....H. L. Beard
Chief Musician.....Fred Adams
Sergeant.....A. C. Van Cleve
" .....C. F. Cathey
" .....R. E. Wills
" .....H. Wilkins

Drum Major.....G. J. Dodson
Prin. Musician .....C. A. Ingle
Corporal.....C. A. Harlan
" .....R. B. Adams
" .....O. P. Lumm

Signal Detachment.

Captain..... C. V. Swann
Second Lieutenant.....A. E. Burns

Hospital Detachment.

Captain.....G. A. Cathey
Second Lieutenant.....J. R. Leach

Sergeant	I. E. Barrett	Sergeant	W. H. Finn
"	F. M. Wilkes	"	A. J. Rich
"	A. A Garrett	"	A. K. Belknap
Corporal	F. M. Roth	Corporal	G. L. Weaver
"	W. R. Horton	"	E. P. Harding

First Battalion.

Major	Philip Gearhart	First Lieut. Adjt.	J. L. Ringo
Second Lieut. Q. M.	H. B. Carter	Sergeant Major	C. C. Hollenberg

Company.	"A"	"B"	"C"
Captain	R. C. Jackon	D. R. Groves	G. B von der Hellen
First Lieutenant	W. E. Forsythe	F. M. Hofer	F. C. Ewing
Second Lieutenant	C. R. McCormick	C. S Currin	F. R. Miller
First Sergeant	C. E Bowen	A. R. Barnett	R. W. Allen
Q. M. Sergeant	E. S. Thayer	W. H. Davolt	W. F. Bell
Sergeant	B. F. Elgin	L. A. Thomas	S. L. Bennett
"	O. C. Johnson	H. Bilyeu	E. R. Woods
"	P. C. Rinehart	P. A. Jones	S. A. Brown
"	H. A. Thomson	P. M. Finley	H. D. Eismann
Corporal	K. Cronise	C. O. Davolt	F. W. Canfield
"	W. K. Barnell	F. L. Spires	W. G. Lane
"	R. K. Brodie	R. E. Reynolds	H. C. Leonard
"	R. C. Brodie	R. S. Millu	L. L. Doane
"	D. McMillen	C. A. Purdy	R. Wall
"			W. C. Bryant
Musician	R. H. Cooper	W. H. Horton	R. Spicer

Second Battalion.

Major	R. M. Walker	First Lieut. Adjutant	C G. Brownell
Second Lieut. Q. M.	J. W. Finn	Sergeant Major	J. C. Knapp

Company.	"D"	"E"	"F"
Captain	D. C. Little	W. A. Schoel	A. L. Bradley.
First Lieutenant	A. K. Berman	C. M. Stebinger	M. V. Weatherford.
Second Lieutenant	G. C. Cate	H. G. Rumbaugh	W. A. Thomson.
First Sergeant	E. F. Wann	D. G. Thayer	O. H. Schrader.
Q. M. Sergeant	F. Knaus	C. C. Vincent.	S. H. Graff.
Sergeant	E. R Hughes	P. H. Spillman	E. H. Boyer.
"	H. E. Cook	O. R. Spires.	J. D. Paul.
"	C. T. West	C. C. Clark	L. J. Rosenstein.
Corporal	E. E. Applewhite	I. W. Carl	C. H. Bolton.
"	C. Sprague	R. H. Hawley	J. H. Hibbs.
"	A. Anderson	J. L. Gilkey	J. M. McMahon.
"	J. E. Hanney	F. Winniford	G. J. Reiling.
"	H. McCall	E. A. Goodrich	Claud Schrack.
"	B. Cunningham	R. Price	C. T. Mundy.
Musician	P. O. Pelland	V. L. Diven	W. R. Walling.

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 an economic significance to agriculture, the work of the station affords daily object lessons in good modern farming.

About one hundred acres of the college farm are devoted to scientific and experimental farming. Animal husbandry is an important feature of station work. For this branch of the work Shorthorn and Jersey cattle, Cotswold and Shropshire sheep, Berkshire and Chester White swine are maintained. Among these, animals can be found of rare individual excellence, thus offering the student in agriculture an opportunity to study the highest types of the respective breeds.

Extensive field trials are made in the growing of many varieties of cereals, grasses and forage plants, which are utilized in various feeding experiments conducted for the purpose of determining their value as stock foods. This work embraces the study of plant environment and the correlated subject of animal nutrition, thus supporting in a practical manner the science of agriculture as taught in the college.

Dairying is also a prominent feature of the station work. For this purpose a herd of typical dairy cows and a well equipped creamery are maintained. Many problems of vital interest to practical dairymen are constantly being worked out along the lines of rations for cows and methods for handling the herd. The student himself frequently assists in the work and thus obtains tangible evidence of the practical utility of the sciences in dairy husbandry.

The horticultural work of the station affords the student an admirable opportunity for comparing the work of the class room with the practices of the field. Plant breeding, cross pollination of fruits, as well as modern methods of planting, pruning, grafting, spraying and cultivation are all brought immediately under the observation of the student, thus affording him an excellent opportunity to become thoroughly conversant with the science and practice of horticulture.

THE SHORT COURSE IN AGRICULTURE.

To give Oregon farmers who are unable to pursue a four-year course in the Agricultural College, a share in the advantages of higher education, the College has for many years conducted Farmers' Institutes in various parts of the State. But the Institute, while it has its place, has developed another movement of perhaps greater importance, that of holding a more extended Institute, known as the Short Course in Agriculture, Horticulture and Dairying.

The main conception of such schools is, that they are places where people from the farm and orchard—practical farmers and fruit growers—can understandingly study the application of some of the fundamental laws of their occupation. In announcing the Short Course we feel that we can make it thoroughly practical for any intelligent agriculturist, and that we can make scientific agriculture and horticulture both educational and useful. Such a course covers a field which on account of lack of time and apparatus for illustration cannot be undertaken in the regular Farmers' Institutes.

The course consists of a series of popular lectures along lines suited to aid horticulturists, dairymen and others engaged in agricultural pursuits in developing the great

natural resources of our state. The lectures are all supplemented by laboratory work under the supervision of experts who strive to make the course thoroughly practical by adapting the work as far as possible to the needs of each individual. The primary study is of things rather than books, and there is always kept in mind the practical side of the matter under discussion. Little time is spent in purely theoretical discussion.

There will be no educational test. No special preparation is necessary as the instruction will be given by lectures and practical work. It is the aim of this course to give to the student the largest possible amount of practical information regarding the various phases of agriculture and horticulture.

An important source of information for those attending this course is the Station and College library where the best books on agriculture, horticulture, and dairying are found. The bulletins of the experiment stations of all the states in the Union are on file at the College and will be at the command of anyone wanting them. These bulletins are invaluable as being about the only source from which one can get information as to the present status of, and the progress that is being made in agricultural and horticultural matters.

An effort will be made to direct the reading along particular lines in such a way that the reader will get in touch with the progressive work that is being done in his particular occupation.

The first lecture of the series will be given at 9 a. m., Tuesday, January 8, 1907, and the course will close on Friday, January 19, 1907.

SPECIAL COURSE IN DAIRYING.

The establishment of the Dairy department of the Oregon Agricultural College on the first floor in the new Agricultural

Hall makes it possible for the institution to give a special course in butter and cheese making and subjects closely related thereto. The management of the institution will offer such a course of six weeks duration, beginning simultaneously with the opening of the short course in agriculture.

The course is designed to familiarize students with the modern forms of dairy apparatus, and to teach the underlying principles of the production, care, and manufacture of milk into butter and cheese. Both the *how* and the *why* will be the aim of the instructors, and it is the intention that the ideas set forth will be applicable to the farm dairy as well as the larger creamery or cheese factory.

ADMISSION.—The dairy course is open to all persons, both male and female, who are at least eighteen years of age and who have a common school education. No entrance examinations will be required, but it is expected that those seeking admission will be able to intelligently understand lectures, take notes, and perform a small amount of text-book work.

EQUIPMENT.—More than one-half of the floor space on the first floor of Agricultural Hall is devoted to the dairy department. At the left of the main entrance is the dairy instructor's office, and to the right are located the dairy rooms proper. The main work room, located in the northwest corner, is 24 x 44 feet with cement floor sloping from all directions toward the center where a bell trap connects with the sewer system of the building. This room is equipped with seven of the modern styles of cream separators, operated by either steam or hand power. There are also combined churns and workers, box churns, table workers, receiving and ripening vats, pasteurizer and the necessary apparatus for the manufacture of full cream Cheddar cheese

Adjoining the main work room are lockers for students' use, a well lighted boiler room 16 x 18 and a wood and store room.

In the northeast corner of the building is the Dairy Laboratory 22 x 40 feet, equipped with all the modern devices for testing milk and its products, such as hand and turbine Babcock tests, curd tests, cream scales and automatic acid measures.

Two commodious cheese-curing rooms, 10 x 16 and 12 x 16 feet, complete the quarters of the dairy department.

The college library located in the Administration Building will be open to students of the dairy course. Here access may be had to the leading farm and dairy papers of the United States as well as some foreign publications. Full sets of the bulletins of the various experiment stations and the U. S. Department of Agriculture are on the library shelves, also many valuable books pertaining to dairy matters.

CHARACTER OF WORK.—Students will meet for work six days per week. The forenoon of each day will be devoted to practical work in the dairy rooms. Two days per week will be devoted to cream separation and butter-making, two days to cheese-making, and two will be spent in the dairy laboratory. In the afternoons of all days except those devoted to cheese-making, lectures and recitations will occupy two or three hours. The object of this class-room work is to give the student a better knowledge of the underlying principles upon which the practical dairy operations are based. An outline of the work is given below:

LECTURE WORK.—*Soil Chemistry and Physics.*—This includes a study of the origin and composition of soils and of the plant food contained in them. Such questions as the conservation of moisture; conditions affecting the water-

holding capacity of soils; temperature of soils, etc., discussed and illustrated by experimental work. In this connection the composition and use of fertilizers is considered, including the discussion of both farm manures and commercial fertilizers, their composition, and when and how to use them.

Feeds and Feeding.—This includes the study of forage plants, growth, adaptability, chemical composition and their relationship to successful dairy husbandry—the study of the fundamental principles of animal nutrition, including digestion, assimilation—the composition and feeding value of the different grains and commercial feed stuffs and how they should be fed for best results in milk production.

Milk and Its Products.- -For this work a text-book, "Milk and its Products," by H. H. Wing, is used, supplemented by lectures. Some of the topics covered by the text are: secretion and composition of milk; pasteurization; market milk; the ripening of cream; principles of the Babcock Test; milk for cheese-making; varieties of cheese, etc. Creamery accounts and herd records will also be taken up in this connection.

Dairy Bacteriology.—Lectures and laboratory demonstrations are given relative to the various forms of bacteria which are of interest to the dairyman.

Breeds and Breeding.—A necessary requirement of a successful dairyman is the ability to harmonize breed and environment. Hence this work embraces the study of the origin and characteristics of the leading dairy breeds, adaptability, form as related to function and a general discussion of types.

The College maintains a typical herd of dairy animals comprising representatives of three popular breeds, thus

affording the student an excellent opportunity to make comparisons. Stock judging both by the card system and by comparison is a feature of this work.

Chemistry of Dairy Products.—In these lectures the comparison of dairy products is dealt with more in detail than it is possible for the lecturer on dairying to do. In order to bring out and emphasize certain points, these lectures are accompanied by experiments and the examination of dairy products.

Veterinary Science.—This will consist of a general discussion of the causes of the common diseases of cattle, their treatment and best means of prevention. It will also include discussions relative to the usual management and care of the herd and individual members thereof, in health or disease.

Steam Engine.—Discussions and practical work relative to the structure, care and operation of steam engines and boilers, with special reference to the principles involved are held. Four boilers and a like number of engines are available for illustration in this work.

LABORATORY.—*Practical Dairy Work.*—This work consists of extended practice in the use of the Babcock test in determining the percentage of butter fat contained in milk, skim milk, buttermilk, cream, whey, butter, and cheese. Particular attention is given to the use of scales in connection with cream testing. The use of acid tests for determining the ripeness of the cream is considered. Daily practice in the application of results obtained is afforded.

Butter-Making.—Seven latest style cream separators furnish practice in the removal of cream from milk. A combination churn, a trunk churn, and a table worker will illustrate the operations of churning and working butter.

One and two-pound molds, and cutting boxes illustrate the methods of finishing. All work in this line is performed by students under the direction of the instructors.

Cheese-Making.—The manufacture of full cream Cheddar cheese is considered. Attention is given to the small sizes known as Young Americas. Some partly skimmed milk cheese is made to illustrate the effect of the removal of a portion of the cream. The use of various rennet tests is taught, also the hot iron test. Small vats are used in this work in order that each student may have an opportunity to carry the work through from start to finish.

EXPENSES.

Fees.—There will be no fees except a breakage deposit of $3.00, a portion of which will be returned at the close of the term. This deposit is mainly to cover breakage of glassware in the laboratory, and in case of no breakage the fee will all be returned, except a small fee for material.

Board and Lodging is obtainable in Corvallis at $3.00 to $4.00 per week. A list of places may be seen at the office of the Dairy Instructor.

Clothing.—Students are ordinarily required to wear white suits while at work. These can be purchased in the Corvallis stores at $1.00 to $1.50 per suit, consisting of cap, trousers and jacket. A pair of colored overalls will also be found useful at times.

Books.—This item will not exceed $2.00. The only regular text-book will be "Milk and Its Products," by Wing. Some note books will be needed by those who wish to make the most of the course. Anything required in this line can be obtained in Corvallis.

Since only a limited number of students can be accom-

modated in this course, application for admission should be made to the department of dairying at least two weeks preceding the opening.

The course will open on Tuesday, January 8th, in connection with the opening of the Short Course in Agriculture.

For further particulars regarding the Special Dairy Course address F. L. Kent, Corvallis, Oregon.

FARMERS' INSTITUTES.

One of the most useful methods of diffusing agricultural education is the farmers' institute. These institutes are especially helpful both to the farmer and the experiment worker. The former secures scientific information upon topics of immediate interest to him and is instructed in its practical application to the farm; while the latter is brought to realize more vividly the needs and perplexities of the farmer. It is gratifying to note the growing demand for more of these institutes, and while the station is ever ready to accede to these demands, it is, however, becoming annually more difficult on the part of the station officials to fulfill these obligations, owing to the constant increase in the work of the station.

LIBRARY.

RICHARD JEFFREY NICHOLS, B. S., Librarian.

The library occupies a large, well-lighted room on the first floor of the administration building, and contains nearly 4000 bound volumes of standard works on history, literature, arts, sciences, general subjects and fiction; as many more bound volumes of U. S. government publications and about 10,000 pamphlets and bulletins. Care has been exercised in the selection of books in order that each department may have proper works of reference at the disposal of the student.

A card catalogue is used and the books are indexed according to subject by the decimal system, and alphabetically according to title and author, so that the use of the library is greatly facilitated and its resources upon any subject easily ascertained.

The library receives the leading literary and scientific magazines and journals, all of which are kept on file.

The library is open for the issuing of books every school-day from 8 a. m. to 5 p. m., and during that time the librarian is in constant attendance. Books, excepting cyclopedias and works of general reference, may be drawn out by students for a period not exceeding two weeks.

LIST OF STUDENTS.

GRADUATES.

NAME.	POSTOFFICE.	COUNTY.
William Gustave Abraham, B. S.,	Albany,	Linn.
Lucile Jean Buxton, B. S.,	Hood River,	Wasco.
Mary Cecil Danneman, B. S.,	Clem,	Gilliam.
Anna Mary Denman, B. L.,	Union,	Union.
Lura Lovene Flett, B. S.,	Fisher,	Lincoln.
Joseph Garrow, B. S.,	Oregon City,	Clackamas.
Grace Gatch, A. B. (University of Washington).	Seattle,	Washington State.
Alice Jones, B. S.,	Suver,	Polk.
Bert Trew Jordan, B. S.,	Albany,	Linn.
Ethel Elenor Linville, B. S.,	Corvallis,	Benton.
Edna Marie Osburn, B. S.,	Corvallis,	Benton.
Bert Pilkington, B. S.,	Oakland.	Douglas.
Sohan Lall Ravi, C. C., (Punjah University)	Armitrar,	India.
Harvey Earl Rinehart, B. S.,	The Dalles,	Wasco.
Otto Gerald Simpson, B. S.,	Suver,	Polk.
Mahesh Charan Sinha, A. B., (Tallahobad University).	Lucknow,	India.
Abram Hercules Steckle, M. E.,	Reno,	Nevada.
Floyd Williams, B. S.,	Airlie,	Polk.

SENIORS.

Name	Course	Postoffice	County
Fred Adams,	Phar.,	Roseburg,	Douglas.
Harry Benjamin Auld,	L. C.,	Woodburn,	Marion.
Miles Bebee Belden,	Min.,	Cove,	Union.
Arthur Edward Belknap,	Mech.,	Corvallis,	Benton.
Ethel Berman,	H. S.,	Decatur,	Illinois.
Arthur George Bouquet,	Agri.,	Purley,	England.
Alfred Leroy Bradley,	Elec.,	Portland,	Multnomah.
Lyman Albert Bundy,	Phar.,	Moscow,	Idaho.
Archibald Eugene Burns,	Elec.,	Beaverton,	Washington.
Grover Cleveland Cate	Agri.,	Hillsboro,	Washington.
Alice Leora Edwards,	H. S.,	Monroe,	Benton.

Joel Emily,	Mech.,	Troutdale,	Multnomah.
Fred Clark Ewing,	Agri.,	Oswego,	Clackamas.
Julia Fuller,	H. S.,	Corvallis,	Benton.
Arthur Amos Garrett,	Min.,	Albany,	Linn.
Philip Gearhart,	Mech.,	Astoria,	Clatsop.
Howard Clayton Getz,	Min.,	Portland,	Multnomah.
Maud Crenshaw Graves,	H. S.,	Odell,	Klamath.
Mertie Harrington,	H. S.,	Omaha, Nebraska.	
Earl Vincent Hawley,	Elec.,	Monroe,	Benton.
Maggie Maud Hays,	H. S.,	Tangent,	Linn.
Annie Laura Hill,	L. C.,	Hood River,	Wasco.
Mary Alicia Hill,	H. S.,	Hood River,	Wasco.
Max Arthur Hinrichs,	Elec.,	Hood River,	Wasco.
Walter Ralph Horton,	Elec.,	Prineville,	Crook.
Rose Mildred Ingram,	H. S.,	Monroe,	Benton.
Robert Combs Jackson,	Agri.,	Portland,	Multnomah.
John Carl Knapp,	Phar.,	Oregon City,	Clackamas.
Weaver Thomas Martin,	Elec.,	McMinnville,	Yamhill.
Belle Kate Mattley,	H. S.,	Lewisville,	Polk.
Cyrus Ross McCormick,	Min.,	Lebanon,	Linn.
MargaretKathrynMcCormick,	H. S.,	Lebanon,	Linn.
Sarah Stella Parsons,	H. S.,	Albany,	Linn.
Minnie Ethel Phillips,	H. S.,	Corvallis,	Benton.
Elmer Philander Rawson,	L. C.,	Vancouver,	Washington.
Joseph Lucine Ringo,	Min.,	Mollala,	Clackamas.
Fred Miller Roth,	Min.,	Canby,	Clackamas.
Floyd Elba Rowland,	Elec.,	Shedd,	Linn.
William Amile Schoel,	Elec.,	Albany,	Linn.
Claud Schrack,	Agri.,	Tangent,	Linn.
Claude Vivian Swann,	Mech.,	BuenaVista,	Polk.
Wallace Atwood Thompson,	Agri.,	Echo,	Umatilla.
Albert Pearl Tedrow,	Elec.,	Monmouth,	Polk.
Archie Clifford VanCleve,	Phar.,	Baker City,	Baker.
Agnes von de Hellen,	L. C.,	Wellen,	Jackson.
Walter Eakin Wade,	Mech.,	Wallowa,	Wallowa.
Guy Leonard Weaver,	Phar.,	Salem,	Marion.

Bessie Hart Wilson,	L. C.,	Canyonville,	Douglas.
Walter Asa Winniford,	Agri.,	KingsValley,	Benton.

JUNIORS.

Name	Course	Postoffice	County
Kate Dolores Adams,	L. C.,	MyrtleCreek,	Douglas.
Ralph Wilmer Allen,	Agri.,	Rickreall,	Polk.
Avery Lamar Applewhite,	Agri.,	Tillamook,	Tillamook.
Arthur Rex Barnett,	Elec.,	Portland,	Multnomah.
Elizabeth Nina Bell,	H. S.,	Beaver City,	Nebraska.
William Frank Bell,	Elec.,	Beaver City,	Nebraska.
Belle Rebecca Bonney,	H. S.,	Woodburn,	Marion.
Myrtle Ruth Burnap,	L. C.,	Philomath,	Benton.
Cecil Carl Clark,	Agri.,	Barton,	Clackamas.
Pauline Davis,	H. S.,	Newport,	Lincoln.
Clinton Orr Dicken,	Phar.,	Hood River,	Wasco.
Pearl Evangeline Edwards,	L. C.,	Dell,	Malheur.
Charles Warren Fullerton,	Elec.,	Alsea,	Benton.
Helen Margaret Gilkey,	H. S.,	Montesano,	Washington.
Benjamin Howard Greenhaw	Min.,	Portland,	Multnomah.
John Leonidas Griffith,	Mech.,	Omaha,	Nebraska.
Del Roy Groves,	Elec.,	Portland,	Multnomah.
Cyrus Ashley Harlan,	L. C.,	Beatrice,	Nebraska.
Fred Miller Hofer,	Min.,	Marshfield,	Coos.
Vera Delle Horner,	L. C.,	Corvallis,	Benton.
Charles Ludlow Huff,	Min.,	Portland,	Multnomah.
James Blanco Jones,	Elec.,	Suver,	Polk.
James Garfield Kelly,	H. S.,	Lents,	Multnomah.
Fred Knaus,	Elec.,	Oswego,	Clackamas.
Jens Lingaas,	Min.,	Portland,	Multnomah.
Charles, David Little,	Min.,	Houlton,	Columbia.
Ralph Waldo McNeil,	Elec.,	Portland,	Multnomah.
Lewis Wallace Metzger,	Elec.,	Gresham,	Multnomah.
Madeline Lenore Nichols,	H. S.,	Monroe,	Benton.
Jesse Earl O'Neel,	Phar.,	LaFayette,	Yamhill.
Bessie Parsons,	H. S.,	Albany,	Linn.
Winnie Parsons,	H. S.,	Albany,	Linn.

James Donald Paul,	Mech.,	Portland,	Multnomah.
Arthur James Rich,	Phar.,	Astoria,	Clatsop.
Leatha Lenore Rickard,	H. S.,	Corvallis,	Benton.
Harold Goltra Rumbaugh,	Min.,	Albany,	Linn.
Louis Schoel,	Mech.,	Albany,	Linn.
Royal Raymond Selleck,	Elec.,	Boyd,	Wasco.
Carl Bryant Smith,	Phar.,	Carson,	Washington.
Roger Spicer,	Elec.,	Antelope,	Wasco.
Carl Marion Stebinger,	Elec.,	Portland,	Multnomah.
Darwin Greene Thayer,	Agri.,	Rainier,	Columbia.
Edward Sprague Thayer,	Elec.,	Rainier,	Columbia.
Clarence Cornelius Vincent,	Agri.,	KingsValley,	Benton.
Erwin Fred Wann,	Min.,	Salem,	Marion.
Mark Verne Weatherford,	L. C.,	Olex,	Gilliam.
Jessie Agnes Wilson,	L. C.,	Canyonville,	Douglas.

SOPHOMORES.

Name	Course	Postoffice	County
Ross Brayton Adams,	Mech.,	Warren,	Columbia.
Arvid Anderson,	Mech.,	Corvallis,	Benton.
Harry Asbahr,	Agri.,	Hillsboro,	Washington.
Walter Rawalt Baker,	Mech.,	Macleay,	Marion.
Warren Keifer Barnell,	Mech.,	La Grande,	Union.
Carl Jackson Bartlett,	Mech.,	Drewsey,	Harney.
Louis Bennett,	Agri.,	Medford,	Jackson.
Arthur Karl Berman,	Phar.,	Decatur,	Illinois.
William Cowan Bolton,	Mech.,	Enterprise,	Wallowa.
Charles Edwin Bowen,	Min.,	Oysterville,	Wash.
Leon Terry Bowser,	Mech.,	Silverton,	Marion,
Robert Chester Brodie,	Agri.,	Lents,	Multnomah.
Renton Kirkwood Brodie,	Agri.,	Lents,	Multnomah.
Sherman Asher Brown,	Mech.,	Ft.Klamath,	Klamath.
Cyril Gideon Brownell,	Agri.,	Umatilla,	Umatilla.
Carrie Buchanan,	H. S.,	Corvallis,	Benton.
Elmer Buchanan,	L. C.,	Corvallis,	Benton.
Mildred Buchanan,	H. S.,	Corvallis,	Benton.
Mabel Burdette Cady,	L. C.,	Holbrook,	Nebraska.

Ralph Cady,	Mech.,	Holbrook,	Nebraska.
Ross Cady,	L. C.,	Holbrook,	Nebraska.
Claud Franklin Chambers,	L. C.,	KingsValley,	Benton.
Lincoln Beaumont Chambers,	Mech.,	KingsValley,	Benton.
Norris, Everard Chapin,	Mech.,	Walla Walla,	Wash.
Philip Jodrell Cherry,	Mech.,	Astoria,	Clatsop.
Elva Chrisinger,	L. C.,	Pendleton,	Umatilla.
Conrad Christianson,	Mech.,	Toledo,	Lincoln.
John Jay Clark,	Mech.,	Portland,	Multnomah.
Herbert Edward Cooke,	Min.,	Shaniko,	Wasco.
Harry Kratz Cronise,	Mech.,	Portland,	Multnomah.
Claud Olson Davolt,	Mech.,	Catlin,	Washington.
William Harling Davolt,	Mech.,	Catlin,	Washington.
Glen DeHaven,	Phar.,	Shedds,	Linn.
Leslie Lewis Doane,	L. C.,	Sumpter,	Baker.
Samuel Michael Dolan,	Min.,	Albany,	Linn.
Edgar Wade Donelly,	Agri.,	Richmond,	Wheeler.
Margaret Dunlap,	Phar.,	Shedds,	Linn.
William James Dunlap,	Mech.,	Shedds,	Linn.
Mildred Elanore Dyer,	H. S.,	Albany,	Linn.
Gustave Frederick Eilers,	L. C.,	Aurora,	Marion.
Mary Elgin,	Phar.,	Corvallis,	Benton.
Percy Marvin Finley,	Agri.,	JunctionCity,	Lane.
Fred Noble Fox,	Mech.,	La Grande,	Union.
Samuel Herman Graf,	Mech.,	LaFayette,	Yamhill.
Nelson Gunderson,	L. C.,	Sodaville,	Linn.
Frank Edward Hall,	Min.,	Milwaukie,	Clackamas.
John Edward Hanny,	Mech.,	Oregon City,	Clackamas.
Lora Hansell,	L. C.,	Corvallis,	Benton.
Ethel Marian Higdon,	H. S.,	Canon City,	Colorado.
Arthur Donald Hill,	Mech.,	Hood River,	Wasco.
Joseph William Howard,	Phar.,	Prineville,	Crook.
Arthur Drummond Hughes,	Mech.,	Baker City,	Baker.
Cleo Lorena Johnson,	H. S.,	Scio,	Linn.
Oliver Clarence Johnson,	Min.,	John Day,	Grant.
Paul Jones,	Min.,	Ontario,	Malheur.

William Robert Jones,	L. C.,	Suver,	Polk.
Lela Jane Kelsay,	H. S.,	Hood River,	Wasco.
Fred Kerr,	Phar.,	Corvallis,	Benton.
Bertha Anna King,	H. S.,	Corvallis,	Benton.
William Clark Lawrence,	Mech.,	Reno, Nevada.	
John Roy Leach,	Phar.,	Lexington,	Morrow.
Percy Albert Lockwood,	Mech.,	Portland,	Multnomah.
Oliver Porter Lumm,	Mech.,	Dayton,	Yamhill.
James Hugh McCall,	Agri.,	La Grande,	Union.
Adah McDonald,	L. C.,	Grants Pass,	Josephine.
David McMillan,	Mech.,	Oregon City,	Clackamas.
John Melhase,	Min.,	Ft. Klamath,	Klamath.
Frank Roland Miller,	Phar.,	Corvallis,	Benton.
Victor Ernest Niederer,	Mech.,	Summerville,	Union.
Asa Holcolm Post,	Agri.,	Dayton,	Yamhill.
George Joseph Reiling,	Min.,	Parkplace,	Clackamas.
Ralph Elmer Reynolds,	Agri.,	La Grande,	Union.
Clyde Rhodes,	Min.,	Ashland,	Jackson.
Lulu Ruth Rice,	L. C.,	Clear Lake,	Iowa.
Philip Cooper Rinehart,	Phar.,	The Dalles,	Wasco.
Charles Lawrence Rogers,	Phar.,	Astoria,	Clatsop.
George Herbert Root,	Agri.,	Wasco,	Sherman.
Edna Mae Russ,	H. S.,	Ashland,	Jackson.
Linwood Burt Russel,	Phar.,	Baker City,	Baker.
Charles Fabius Schirmer,	Min.,	Oregon City,	Clackamas.
Mary Rosa Scoggin,	H. S.,	Laidlaw,	Crook.
Thomas Roy Sleight,	Mech.,	Oregon City,	Clackamas.
Ernest James Smith,	Phar.,	Medford,	Jackson.
Ralph Edward Smith,	Agri.,	Salem,	Marion.
Paul Herman Spillman,	Agri.,	Mt. Tabor,	Multnomah.
Fred Lloyd Spires,	Mech.,	MyrtlePoint,	Coos.
Oliver Ritchie Spires,	Phar.,	MyrtlePoint,	Coos.
Alva Edwin Stovall,	L. C.,	Philomath,	Benton.
Earle Leland Sweek,	L. C.,	Burns,	Harney,
Howard Weston Taber,	Mech.,	Sheridan,	Yamhill.
Herbert Augustus Thompson,	Mech.,	Canby,	Clackamas.

Ralph Infield Thompson,	Mech.,	Heppner,	Morrow.
Walter Robertson Waggoner,	Phar.,	Corvallis,	Benton.
Dow Vernon Walker,	L. C.,	St. Johns,	Multnomah.
Rupert Wall,	Mech.,	Early,	Sherman.
Bertha Estella Watrous,	L. C.,	Olympia,	Washington.
Eugene Cyrus Wiggen,	Mech.,	Westport,	Clatsop.
Marion Francis Wilkes,	Min.,	Cripple Creek,	Colo.
Harold Wilkins,	L. C.,	Corvallis,	Benton.
John Franklin Winniford,	Mech.,	KingsValley,	Benton.
John Withycombe,	Agri.,	Portland,	Multnomah.
Alvah Athenas Witzig,	Mech.,	Parkplace,	Clackamas.
Walter Ernest Wood,	Mech.,	Corvallis,	Benton.
David Alvis Wright,	Mech.,	Woodburn,	Marion.

FRESHMEN.

Name	Course	Postoffice	County
Sidney Thomas Abbott,	Min.,	Corvallis,	Benton.
Abraham Gaylord Adams,	Agri.,	Hoquiam,	Washington.
Everett Edward Allen,	L. C.,	Hood River,	Wasco.
Hazel Allen,	H. S.,	Hood River,	Wasco.
John Warwick Allen,	Mech.,	Baker City,	Baker.
Harrison Courtney Ames,	Mech.,	Sweet Home,	Linn.
Harry Leon Andrews,	Mech.,	Portland,	Multnomah.
William Sylvester Angus,	Mech.,	Gardiner,	Douglas.
Ernest Everette Applewhite,	Phar.,	Roseburg,	Douglas.
Thomas John Autzen,	Mech.,	Hoquiam,	Washington.
Ernest Avery,	L. C.,	Corvallis,	Benton.
Edgar Bruce Ayers,	Mech.,	Heppner,	Morrow.
Charles Irwin Barnes,	Phar.,	Elgin,	Union.
Ira Ellis Barrett,	Phar.,	Hillsboro,	Washington.
Fred Lawrence Beach,	Agri.,	Hillsboro,	Washington.
Nellie Bell Beers,	L. C.,	JordanV'll'y,	Malheur.
Roy William Bell,	Mech.,	Corvallis,	Benton.
Sadie Bell,	H. S.,	Beaver City,	Nebraska.
Charles Franklin Benshadler,	Mech.,	Elgin,	Union.
George Benshadler,	Mech.,	Elgin,	Union.
Albert Francis Bernard,	Mech.,	Beaverton,	Washington.

Hamon Shelley Bilyeu,	Min.,	Athena,	Umatilla.
Otto Carl Blackaby,	Mech.,	Ontario,	Malheur.
George Hiram Blackmun,	Phar.,	Woodburn,	Marion.
Harry, Emile Blevins,	Mech.,	Cove,	Union.
Cecile Boswell,	H. S.,	Vale,	Malheur.
Robert Edgar Bower,	Agri.,	Silverton,	Marion.
Harry Bowman,	Mech.,	Hillsboro,	Washington.
Edward Hoag Boyer,	Phar.,	Portland,	Multnomah.
Thomas Frank Brewster,	Phar.,	Adams,	Umatilla.
William Cullen Bryant,	Mech.,	Woodburn,	Marion.
Leslie Cade,	Agri.,	Salem,	Marion.
Philip Harrison Cale,	L. C.,	Albany,	Linn.
John Lee Caldwell,	Mech.,	Burns,	Harney.
Edward Cleveland Calloway,	Phar.,	Ontario,	Malheur.
Fred Ward Canfield,	Mech.,	Ontario,	Malheur.
Ira Wallace Carl,	L. C.,	MyrtlePoint,	Coos.
Geo. Bartholomew Carmichael,	L. C.,	Weston,	Umatilla.
Henry Carter,	Mech.,	Ashland,	Jackson.
Ray Castle,	Mech.,	Vale,	Malheur.
Collie Flint Cathey,	Agri.,	Woodburn,	Marion.
George Andrew Cathey,	Phar.,	Woodburn,	Marion.
Alex. Kesterson Chapman,	Mech.,	Grants Pass,	Josephine.
Donald Winthrop Chapman,	Min.,	Troutdale,	Multnomah.
Sherman Alban Chappell,	Phar.,	Corvallis,	Benton.
John Clark,	Mech.,	Alicel,	Union.
Roy Ross Clark,	Mech.,	Barton,	Clackamas.
John Edward Coleman,	Phar.,	Harrisburg,	Linn.
Inez Romana Colvig,	Phar.,	Canyonville,	Douglas.
James Marion Conner,	L. C.,	Enterprise,	Wallowa.
Robert Alvin Cook,	Mech.,	Albany,	Linn.
Kenneth Leigh Cooper,	Agri.,	The Dalles,	Wasco.
Roy Francis Cooper,	Phar.,	Corvallis,	Benton.
Grace Cramer,	L. C.,	Holbrook,	Nebraska.
George Albert Cross,	Mech.,	Dundee,	Yamhill.
Elmer Raymond Crowe,	Mech.,	Lorane,	Lane.
Burton Leigh Cunningham,	Min.,	Ft. Klamath,	Klamath.

Charlton Straw Currin,	Phar.,	KlamathFalls,	Klamath.
Cleve John Currin,	Agri.,	Ione,	Morrow.
Harvey William Currin,	Min.,	Ione,	Morrow.
Linnie Edith Currin,	H. S.,	Ione,	Morrow.
Amy Cyrus,	H. S.,	Crabtree,	Linn.
Nellie Cyrus,	H. S.,	Crabtree,	Linn.
Samuel Lyman Damon,	L. C.,	Independence,	Polk.
Gertrude Luella Davidson,	H. S.,	Ione,	Morrow.
William Frank Davies,	Agri.,	Ashland,	Jackson.
John Emerson Davis,	L. C.,	Shedds,	Linn.
Bessie Dilley,	L. C.,	Corvallis,	Benton.
Minnie Diven,	L. C.,	Vale,	Malheur.
Vernon Lewis Diven,	L. C.,	Vale,	Malheur.
Ezra Stephen Dixon,	Mech.,	Cornelius,	Washington.
Roscoe Britten Doane,	Phar.,	Sumpter,	Baker.
Earl Irving Donelson,	Mech.,	Hillsboro,	Washington.
Eugene Earl Dudley,	Agri.,	Athena,	Umatilla.
Alma Ray Edwards,	H. S.,	Dell,	Malheur.
Joseph Earl Edwards,	Mech.,	Monroe,	Benton.
Velma Ethel Edwards,	H. S.,	Mayville,	Gilliam.
Henry Detlef Eisman,	Phar.,	Grants Pass,	Josephine.
Ben Elgin,	Phar.,	Corvallis,	Benton.
DeWalt Quinn Elrod,	Phar.,	Grass Valley,	Sherman.
Alfred John Evans,	L. C.,	Mosier,	Wasco.
Karl William Farnsworth,	Agri.,	Heppner,	Morrow.
Henry Ward Farrell,	Agri.,	Scappoose,	Columbia.
Bert Felton,	Phar.,	Corvallis,	Benton.
John Waldo Finn,	Mech.,	McCoy,	Polk.
William Harry Finn,	Phar.,	La Grande,	Union.
Henry Pervine Fisher,	Agri.,	Haines,	Baker.
Robert Edmund Fletcher,	Mech.,	Ontario,	Malheur.
Warren Elsworth Forsythe,	Phar.,	Enterprise,	Wallowa.
Samuel Lane Foster,	Agri.,	JunctionCity,	Lane.
Thomas Edward Foster,	Phar.,	Athena,	Umatilla.
Frank LaVerne Fowells,	Mech.,	Fayette,	Iowa.
Charles Augustus French,	Agri.,	Corvallis,	Benton.

Dell Rawson French,	L. C.,	GrassValley,	Sherman.
Henry Sidney French,	Agri.,	Corvallis,	Benton.
Frank Asberry Galloway,	Phar.,	Elgin,	Union.
Joseph Allen Ganong,	Phar.,	Oregon City,	Clackamas.
Winnifred Evangeline Gates,	H. S.,	Corvallis,	Benton.
Frances Violet Gellatly,	L. C.,	Philomath,	Benton.
Jesse Gilkey,	Mech.,	Montesano,	Washington.
Edward Aseph Goodrich,	Mech.,	Lebanon,	Linn.
Thomas Radir Graham,	Phar.,	Corvallis,	Benton.
Harold Roscoe Graves,	Phar.,	Sumpter,	Baker.
Greta India Gray,	L. C.,	Arapahoe,	Nebraska.
Azora Gregg,	H. S.,	Ballston,	Polk.
Henry Connor Gregg,	L. C.,	Ballston,	Polk.
Frederick Llewellyn Griffin,	Agri.,	Canby,	Clackamas.
Merril Eugene Groshong,	Phar.,	Enterprise,	Wallowa.
Bernhard John Groth,	Mech.,	Dundee,	Yamhill.
Grover Jameson,	L. C.,	Burns,	Harney.
Sylvester Benjamin Hall,	Mech.,	Cleone,	Multnomah.
Stanley Hammel,	Phar.,	Portland,	Multnomah.
Violet Irene Hancock,	L. C.,	Cove,	Union.
Earl Paul Harding,	Phar.,	Gaston,	Washington.
Charley Harris,	Mech.,	Vale,	Malheur.
Cora Hawley,	L. C.,	Monroe,	Benton.
Jessie Myrtle Hawley,	L. C.,	GrassValley,	Sherman.
Ralph Hamilton Hawley,	Min.,	Monroe,	Benton.
William Hawley,	Mech.,	Wildwood,	Lane.
Charley Henry Hays,	Agri.,	Sherwood,	Washington.
William Albert Hensley,	Mech.,	Troutdale,	Multnomah.
John Halver Hibbs,	Mech.,	Gaston,	Washington.
Charlie William Hickey,	Mech.,	Portland,	Multnomah.
John Elmer Higdon,	Mech.,	New Castle,	Colorado.
Ralph Hinrichs,	Mech.,	Hood River,	Wasco.
Claire Holgate,	L. C.,	Baker City,	Baker.
Clare Conrad Hollenberg,	L. C.,	New Providence,	Iowa.
Soren F. Holm,	Mech.,	Milwaukie,	Clackamas.
Alicia Pearl Horner,	L. C.,	Corvallis,	Benton.
Charles Henry Hoyt,	Mech.,	Jefferson,	Marion.

Ernest Alsworth Hudson,	Mech.,	Milton,	Umatilla.
Floyd Huff,	Phar.,	Corvallis,	Benton.
Edward Richard Hughes,	Mech.,	Oregon City,	Clackamas.
Clarence Felix Hyde,	Min.,	Weston,	Umatilla.
Finlay Imbert,	L. C.,	Wheeler,	Washington.
Jessie Esther Imbler,	H. S.,	Enterprise,	Wallowa.
Mattie Imbler,	L. C.,	Enterprise,	Wallowa.
Calvin Ingle,	Phar.,	Wasco,	Sherman.
Forrest Scott Ivanhoe,	L. C.,	La Grande,	Union.
Grover Newton Jameson,	L. C.,	Burns,	Harney.
Clarence William Johnson,	Phar.,	Newberg,	Yamhill.
Florence Elva Johnson,	L. C.,	John Day,	Grant.
Lawrence Rowland Johnson,	Agri.,	Vale,	Malheur.
Verne Lewis Johnson,	L. C.,	John Day,	Grant.
Zeta Alma Johnson,	H. S.,	Scio,	Linn.
Earnest Eugene Jones,	Phar.,	Selma,	California.
Robert Henry Jones,	Mech.,	Suver,	Polk.
Ralph Adrian Keiser,	Agri.,	Spirit Lake,	Iowa.
Edythe Harriet Keady,	H. S.,	Corvallis,	Benton.
Loyd Homer Kelty,	Phar.,	N. Yamhill,	Yamhill.
Mabel Harriette Kinnison,	H. S.,	Baker City,	Baker.
Wanda Christina Knox,	H. S.,	Centralia,	Washington.
James Koeber,	Agri.,	Sherwood,	Washington.
Roscoe Verne Lake,	Agri.,	Corvallis,	Benton.
William Robert Lancefield,	L. C.,	Amity,	Yamhill.
William George Lane,	L. C.,	Harrisburg,	Linn.
Ada Mae Lay,	L. C.,	Joseph,	Wallowa.
Marshall James Lazelle,	Agri.,	Oregon City,	Clackamas.
Charles Herbert Leonard,	Mech.,	Sheridan,	Yamhill.
Homer Clarence Leonard,	L. C.,	Sheridan,	Yamhill.
Letticia Pearl Leonard,	L. C.,	Sheridan,	Yamhill.
Linnie Edna Lerwill,	H. S.,	JunctionCity,	Lane.
Ena Leverett,	H. S.,	Fayetteville,	Arkansas.
Sidney Witham Leverett,	Agri.,	Fayetteville,	Arkansas.
James Rhea Luper,	Min.,	Heppner,	Morrow.
Fred Deininger Luse,	Mech.,	Oregon City,	Clackamas.

Isabelle Mallett,	H. S.,	Ontario,	Malheur.
William Lester Marrs,	Mech.,	Oregon City,	Clackamas.
Azariah Lewis Maule,	Mech.,	Medford,	Jackson.
Rex Roy May,	Mech.,	Turner,	Marion.
Nelson Fred McColl,	Mech.,	Gresham,	Multnomah.
Russell Alfred McCully,	Agri.,	Joseph,	Wallowa.
Edmund Samuel McElligott,	Mech.,	Ione,	Morrow.
Alice Marie McGinnis,	L. C.,	Moro,	Sherman.
Fred Marshall McHenry,	L. C.,	Corvallis,	Benton.
John Bliss McKennon,	Mech.,	Alicel,	Union.
Robert Frank McKennon,	Agri.,	Alicel,	Union.
William Wallace McKenzie,	Mech.,	Fossil,	Linn.
Wayne Carl McLagan,	Mech.,	Tangent,	Wheeler.
Leva Chester McLain,	Phar.,	Sumpter,	Baker.
Herbert Berry McLane,	Mech.,	Lyons,	Linn.
James Stewart McMahan,	L. C.,	Corvallis,	Benton.
Mabel Claire McNabb,	H. S.,	Ione,	Morrow.
Elmer Metzger,	Min.,	Gresham,	Multnomah.
Winnie Pearl Michael,	Phar.,	Corvallis,	Benton.
Earl August Miebus,	Mech.,	Portland,	Multnomah.
Edyth Eleanora Miller.	L. C.,	Drewsey,	Harney.
Maxwell Elliott Mitchell,	Min.,	Portland,	Multnomah.
Leon Montgomery,	L. C.,	Scio,	Linn.
Kate Irene Moore,	L. C.,	Echo,	Umatilla.
Donald Fain Morgan,	Mech.,	Portland,	Multnomah.
John Armour Muldrick,	Mech.,	Canyon City,	Grant.
Clark Taylor Mundy,	Phar.,	Mt. Tabor,	Multnomah.
Charles Leon Murphy,	L. C.,	Monmouth,	Polk.
Claude Murphy,	Min.,	Independence,	Polk.
Chester Arthur Myers,	Phar.,	Jefferson,	Marion.
Clarence Shelley Murray,	Mech.,	North Yakima,	Wash.
Roscoe, Neal,	Mech.,	Baker City,	Baker.
George Allen Nelson,	Agri.,	Dixie,	Washington.
Lelia Aneil Newhouse,	L. C.,	Corvallis,	Benton.
Roy Ernest Nichols,	Phar.,	Portland,	Multnomah.
Winnifred Osten,	H. S.,	Heppner,	Morrow.

Jud Oviatt,	L. C.,	Buell,	Polk.
May Oviatt,	H. S.,	Buell,	Polk.
Charles Taylor Parker,	Min.,	Salem,	Marion.
Philip Oliver Pelland,	Mech.,	St. Paul,	Marion.
Bessie Pogue,	H. S.,	Ontario,	Malheur.
Lester Wright Porterfield,	L. C.,	Parkers,	Polk.
Lois Lucinda Pratt,	H. S.,	Corvallis,	Benton.
Roy Wilber Price,	L. C.,	Scappoose,	Columbia.
Horace Minor Propst,	Mech.,	Albany,	Linn.
Mohammed Abduh Rashid,	Agri.,	Gorakhpur, India.	
Richard Jarvis Read,	L. C.,	Jordan Valley,	Malheur.
Nollie Frank Reed,	Phar.,	Burns,	Harney.
Charles Francis Roberts,	L. C.,	Hood River,	Wasco.
Robert Henry Rodgers,	Mech.,	Portland,	Multnomah.
Henry Rooper,	Agri.,	Antelope,	Wasco.
John August Rooper,	Agri.,	Antelope,	Wasco.
Burrus Estes Rose,	Phar.,	Airlie,	Polk.
Gordon Custer Rosendorf,	Phar.,	Corvallis,	Benton.
ModestaFlorenceRosendorf,	L. C.,	Corvallis,	Benton.
Leo Rosenstein,	Mech.,	Oregon City,	Clackamas.
Henry Salvon,	Phar.,	Astoria,	Clatsop.
Eugene Schiller,	Min.,	Sylvan,	Multnomah.
Alfred Schoel,	Phar.,	Albany,	Linn.
Charley Vernon Schrack,	Agri.,	Tangent,	Linn.
Otto Harrison Schrader,	Mech.,	Tillamook,	Tillamook.
John Godfrey Schroeder,	L. C.,	Portland,	Multnomah.
Edgar Senders,	Mech.,	Harrisburg,	Linn.
Audie Wave Shelton,	L. C.,	Scio,	Linn.
Robert Jerome Shepard,	Agri.,	Salem,	Marion.
Arthur Wesley Simmons,	Mech.,	Silverton,	Marion.
Ina Myrtle Simpson,	L. C.,	Corvallis,	Benton.
Charles Samuel Spain,	L. C.,	Joseph,	Wallowa.
Mamie Warren Sparkman,	H. S.,	Woodland,	California.
Claude Bates Sprague,	Agri.,	Oregon City,	Clackamas.
Helen Maude Sprague,	H. S.,	Oregon City,	Clackamas.
Irvin Earl Small,	Agri.,	Silver Lake,	Lake.

Adolph Harry Schmidt,	Mech.,	The Dalles,	Wasco.
Arthur Byron Smith,	Mech.,	Newberg,	Yamhill.
Hubert Smith,	L. C.,	Moro,	Sherman.
Forrest Custer Smithson,	L. C.,	Portland,	Multnomah.
Claire Weltha Starr,	L. C.,	JunctionCity,	Lane.
Grace Elizabeth Starr,	H. S.,	Belfountain,	Benton.
Cedric Hiram Stone,	Agri.,	Cleone,	Multnomah.
John Curtis Strebin,	Mech.,	Troutdale,	Multnomah.
Marcus Struve,	Agri.,	Pendleton,	Umatilla.
Samuel Pliney Sutton,	Mech.,	Portland,	Multnomah.
William Dantzler Sutton,	Mech.,	Portland,	Multnomah.
Calvin Lawrence Sweek,	L. C.,	Monument,	Grant.
Durland Orville Taggart,	Mech.,	Vale,	Malheur.
Lawrence Leroy Taylor,	Agri.,	Fossil,	Wheeler.
Zack Layfette Taylor,	L. C.,	Corvallis,	Benton.
Owen Hancock Test,	Mech.,	Ontario,	Malheur.
Stephen Montgomery Tharp,	Mech.,	Corvallis,	Benton.
Lee Arden Thomas,	Mech.,	Huit,	Washington.
Grace Thomson,	L. C.,	Vale,	Malheur.
Carrie Edna Thrasher,	H. S.,	Corvallis,	Benton.
Jesse Almond Tiffany,	Agri.,	Portland,	Multnomah.
Lulu Turner,	L. C.,	Dallas,	Polk.
Herbert Ray Tyler,	Agri.,	Lents,	Clackamas.
Luella VanCleve,	H. S.,	Baker City,	Baker.
Evans Craig Varner,	Mech.,	Marx,	Tillamook.
Perl Vincent,	H. S.,	Corvallis,	Benton.
John Oscar Vines,	Mech.,	Vale,	Malheur.
George Bruce von der Hellen,	Min.,	Wellen,	Jackson.
Laura Benton Waggoner,	H. S.,	Corvallis,	Benton.
Harry Byrd Waggoner,	Min.,	Corvallis,	Benton.
Murland Edwin Waelty,	Mech.,	Wallowa,	Wallowa.
John Benjamin Walden,	Phar.,	Milton,	Umatilla.
Ray Mike Walker,	L. C.,	Indep'dence,	Polk.
Homer Stacy Wall,	Mech.,	Early,	Sherman.
Edwin Wheeler Wallace,	Mech.,	Indep'dence,	Polk.
Walter Walling,	Mech.,	Oswego,	Clackamas.
Charles Adam Watts,	Mech.,	Pullman,	Washington.

Clarence Theodore West,	Mech.,	Olex,	Gilliam.
George Ernest Whitcomb,	Min.,	Foster,	Linn.
Austin Joy White,	Mech.,	KlamathF'ls,	Klamath.
Georgia Belle White,	H. S.,	Corvallis,	Benton.
Oscar Philip Wigle,	Mech.,	Brownsville,	Linn.
Burt Wilkes,	Min.,	Hillsboro,	Washington.
Elinor Wilkes,	H. S.,	Hillsboro,	Washington.
John Corwin Williams,	Min.,	Troutdale,	Multnomah.
Pearl Irene Williams,	Phar.,	JordanVal'y,	Malheur.
Clyde Everrett Williamson,	L. C.,	Albany,	Linn.
Reuben Ernest Wills,	L. C.,	Heppner,	Morrow.
Frank Jackson Wilson,	Phar.,	Canyonville,	Douglas.
Martha Delilah Winniford,	H. S.,	Wren,	Benton.
Ernest Rowland Woods,	L. C.,	Albany,	Benton.
Ralph Worstell,	Mech.,	La Grande,	Union.
Richard Jeremiah Wright,	Phar.,	Athena,	Umatilla.
Maude Agatha Wysong,	H. S.,	Amity,	Yamhill.
Harvey August Yeager,	Mech.,	Heppner,	Morrow.
Carl **Yount**,	Agri.,	Douglas,	Morrow.
Charles Edwin Zeiger,	Agri.,	Montclair,	New Jersey.
Henry Roderick Zimmerman,	Mech.,	The Dalles,	Wasco.

SUB-FRESHMEN.

Name	Postoffice	County
Alfred Abraham,	Albany,	Linn.
Gustav Abraham,	Albany,	Linn.
Elvera Trinette Allen,	Hood River,	Wasco.
James Marvin Anderson,	Salem,	Marion.
Sylvester Armitage,	Springfield,	Lane.
Claud Carthel Baynard,	Aumsville,	Marion.
Harold Wilson Bell,	The Dalles,	Wasco.
Henry Ludwig Bergman,	Gardiner,	Douglas.
Edward Lewis Berland,	Enterprise,	Wallowa.
John Lester Bilyeu,	Scio,	Linn.
Clarence Edgar Boner,	Joseph,	Wallowa.
Hugh Edwin Brady,	Portland,	Multnomah.
Clara Viola Brant,	Monmouth,	Polk.

Kinnear Owsley Buick,	Silver Lake,	Lake.
Leslie Pearl Bush,	Hoskins,	Benton.
Jane Russell Caldwell,	Corvallis,	Benton.
Bessie Kate Caldwell,	Corvallis,	Benton.
Lee Calvin,	Enterprise,	Wallowa.
Ralph Orin Caves,	Hoskins,	Benton.
Harry Roemine Clark,	Drewsey,	Harney,
Leonard Fred Darby,	Corvallis,	Benton.
Melville Evan Davis,	Vale,	Malheur.
Mary Lillian Earnest,	Vernon,	Lincoln.
Phil Emit Edwards,	Dell,	Malheur.
Harry Evans,	Bourne,	Baker.
Georgia Virginia Ewing,	Oswego,	Clackamas.
Nellie Martha Farrell,	Scappoose,	Columbia.
Birdie Emeline Fletcher,	Ontario,	Malheur.
Frank Farley Fletcher,	Ellsworth,	Washington.
Oliver Bradford Fowles,	Mountain Dale,	Washington.
Walter Carol Galloway,	Hillsboro,	Washington.
Howard Gill,	Oregon City,	Clackamas.
Lloyd Roscoe Goodrich,	Dayton,	Yamhill.
Stuart Grenfell,	McMinnville,	Yamhill.
Martin James Gribble,	Mt. Hood,	Wasco.
Harry Roy Hamilton,	Portland,	Multnomah.
Alex Hanly,	Burns,	Harney.
Ethel Elnora Harpole,	Junction City,	Lane.
Philo Benjamin Hawley,	Wildwood,	Lane.
Clyde Crawford Hayden,	Alsea,	Benton.
Alice Bernice Henness,	Gates,	Linn.
Cyrus Wellington Hewitt,	Ione,	Morrow.
Mervin Herbert Horton,	Burns,	Harney.
Charley Harry Howard,	Bridal Veil,	Multnomah.
Alva Chester Hughes,	Oregon City,	Clackamas.
Bertha Ella Hughes,	Oregon City,	Clackamas.
Loyd Clarence Hunt,	Detroit,	Marion.
Daniel Haden Jackson,	Bandon,	Coos.
William Homer Kitchen,	Sumpter,	Baker.
Benjamin Harrison Knapper,	Joseph,	Wallowa.

Gustave Wilhelm Krause,	Cornelius,	Washington.
Nellie Kurth,	Portland,	Multnomah.
Bennie William Lee,	Elgin,	Union.
Roland Vivian Leep,	Myrtle Point,	Coos.
John Donald Lines,	Albany,	Linn.
Samuel Elmer Masters,	Haines,	Baker.
Roy Calvert McCully,	Joseph,	Wallowa.
William Forrest McGinnis,	Moro,	Sherman.
Frank Lester Michaelbook,	McMinnville,	Yamhill.
Clifford Hartley Moore,	Portland,	Multnomah.
Thomas Morris,	Rainier,	Columbia.
Lillian May Nelson,	Dixie,	Washington.
Evaline Newkirk,	Oregon City,	Clackamas.
Arthur O'Conner,	Montague,	California.
Howard O'Connor,	Montague,	California.
James Emmett O'Sullivan,	Haines,	Baker.
Helen Loretta Pelland,	St. Paul,	Marion.
Frank Richard Pendergrass,	Amity,	Yamhill.
Frederick Eugene Pernot,	Corvallis,	Benton.
Frank Edgar Porter,	Pendleton,	Umatilla.
Philip Porter,	Hammond,	Clatsop.
Ralph Earl Porter,	Pendleton,	Umatilla.
Clifton Aaron Purdy,	Gaston,	Washington.
Thurlow Reeves,	Joseph,	Wallowa.
Bert Reynolds,	Carson,	Washington.
George Rieben,	Greenville,	Washington.
Ira Lewis Rowe,	Corvallis,	Benton.
Johnnie Andrew Schassen,	Kent,	Sherman.
Frank Schrack,	Tangent,	Linn.
Alexander Schwabauer,	Montavilla,	Multnomah.
Roy Leon Shaw,	Olex,	Gilliam.
Robie Floyd Shull,	Myrtle Point,	Coos.
John Add Silvertooth,	Antelope,	Wasco.
Frank Leroy Smith,	Corvallis,	Benton.
Roy Herbert Sprague,	Oregon City,	Clackamas.
Farris Edith Stocker,	Antelope,	Wasco.
James Everett Stubblefield,	Enterprise,	Wallowa.

Daniel Sutherland,	Shedds,	Linn.
Maurice Earl Taber,	Sheridan,	Yamhill.
Nash Orlin Taylor,	Hollister,	California.
Aura Anemarillas Thomson,	Echo,	Umatilla.
James Jay Thompson,	Macleay,	Marion.
Benjamin Blaine Totten,	Corvallis,	Benton.
Laura Elsie Van Meter,	Hoskins,	Benton.
George Vest,	Joseph,	Wallowa.
Howard Wagner,	Enterprise,	Wallowa.
William Oliver Wagstaff,	Fort Klamath,	Klamath.
Nina May Wall,	Glendale,	Douglas.
William Villows Weaver,	Enterprise,	Wallowa.
Leila Lucile West,	Scappoose,	Columbia.
Orin Roy West,	Mt. Tabor,	Multnomah.
Erwin Arthur Wicklund,	Vale,	Malheur.
Leroy Owen Wicklund,	Vale,	Malheur.
Elmer Benton Williamson,	Albany,	Linn.
Gilbert Fayette Winslow,	Oysterville,	Washington.
Charles Winkelried Wortman,	Enterprise,	Wallowa.
Robert Cecil Wygant,	Toledo,	Lincoln.
Cora Myrtle Yocum,	Estacada,	Clackamas.
Norris William Young,	Sherwood,	Washington.
Peter Crist Zimmerman,	Portland,	Multnomah.

SPECIALS.

Name	Postoffice	County
Florence Leona Allen,	Hood River,	Wasco.
Delle May Baldwin,	Corvallis,	Benton.
Nishi Kauta Banerji,	Rodrokor,	Bengol.
Josephine Belt,	Corvallis,	Benton.
Zena Hester Chapman,	Grants Pass,	Josephine.
Bessie Guss Danneman,	Clem,	Gilliam.
George J. Dodson,	Snowden,	Washington.
Margaret Isabel French,	Corvallis,	Benton.
Etta Anna Hall,	Milwaukie,	Clackamas.
Gretta Harrington,	Omaha,	Nebraska.
Lana Claire Holgate,	Baker City,	Baker.

Maud Montgomery,	Falls City,	Polk.
Fred Porter,	Corvallis,	Benton.
Laura Pratt,	Mound City,	Missouri.
Pala Singh,	Dharmkote,	India.
Ina Adele Smith,	Springfield,	Lane.
Mildred Maude Smith,	Springfield,	Lane.
Ida Mary Williams,	Albany,	Linn.

MUSIC AND OTHER STUDIES.

Name	Postoffice	County
Edna Grace Allen,	Corvallis,	Benton.
George Henry Baker,	The Dalles,	Wasco.
Laura Dameron Bolton,	Enterprise,	Wallowa.
Julia Gladys Borst,	Centralia,	Washington.
Emma Crabill,	Baker City,	Baker.
Jessie May Davidson,	Ione,	Morrow.
Susie Louise Fiser,	Ontario,	Malheur.
Jessie Ruth Hills,	Jasper,	Lane.
Agnes May Langer,	Sherwood,	Washington.
Winnie Logan,	Kings Valley,	Benton.
May Margaret Martin,	McMinnville,	Yamhill.
Gertrude Alice McBee,	Corvallis,	Benton.
Gladys Gwendolin Moore,	Prineville,	Crook.
Frankie Eugenie Payne,	Albany,	Linn.
Vena Rickard,	Corvallis,	Benton.
George Snipes,	The Dalles,	Wasco.
Irene Brown Sproat,	Hood River,	Wasco.
Walter Tyler,	Lents,	Clackamas.
Zetta White,	Mt. Angel,	Marion.

SPECIAL DAIRYING.

Name	Postoffice	County
Henry Belloni,	Coquille,	Coos.
Walter Bennett,	Glen's Falls,	New York.
Swen Bradeson,	Toledo,	Lincoln.
Louis Brandes,	Portland,	Multnomah.
Martin Clausen,	Coquille,	Coos.
William Deeds,	Mist,	Columbia.

Mrs. Mary Earnest,	Corvallis,	Benton.
Vernon Gilkey,	Kittitas,	Washington.
Egbert Goodspeed,	Tillamook,	Tillamook.
Chester Johns,	Galesville,	Douglas.
Hjalmar Kandoll,	Deep River,	Washington.
Carl Mattson,	Sumner,	Coos.
Ross Miller,	Silverton,	Marion.
Charles Myers,	Coquille,	Coos.
Arthur Persinger,	Monroe,	Benton.
Lameck Peterson,	Mist,	Columbia.
Mark Rickard,	Alsea,	Benton.
Michael Walsh,	Milwaukie,	Clackamas.

SPECIAL AGRICULTURE.

Name	Postoffice	County
Louis Brooks,	Corvallis,	Benton.
Wes Elliot,	Dallas,	Polk.
Henry Foster,	Corvallis,	Benton.
Millard French,	Heppner,	Morrow.
Homer Harris,	Lebanon,	Linn.
Lewis Moulton,	McMinnville,	Yamhill.
Otto Naef,	Milwaukie,	Clackamas.
Henry Reed,	Hood River,	Wasco.
John Sprague,	Oregon City,	Clackamas.
Clyde Welborn,	Turner,	Marion.

PIANO.

Name	Postoffice	County
George Baker,	The Dalles,	Wasco.
Laura Bolton,	Enterprise,	Wallowa.
Gladys Borst,	Centralia,	Washington.
James Chambers,	Kings Valley,	Benton.
Juliet Cooper,	Palo Alto,	California.
Emma Crabill,	Baker City,	Baker.
Jessie Davidson,	Ione,	Morrow.
Vera Sarah Farrell,	Scappoose,	Columbia.
Minnie Diven,	Vale,	Malheur.

Susie Fiser,	Ontario,	Malheur.
Blanch Hammell,	Corvallis,	Benton.
Cora Hawley,	Monroe,	Benton.
Jessie Hawley,	Grass Valley,	Sherman.
Alice Hill,	Hood River,	Wasco.
Jessie Hills,	Jasper,	Lane.
Pearl Horner,	Corvallis,	Benton.
Vera Horner,	Corvallis,	Benton.
Mary Jones,	Suver,	Polk.
Ora Jones,	Corvallis,	Benton.
Mabell Keady,	Corvallis,	Benton.
Nellie Kurth,	Portland,	Multnomah.
Agnes May Langer,	Sherwood,	Washington.
Winnie Logan,	Kings Valley,	Benton.
Faith Lister,	Nashville,	Benton.
Adah McDonald,	Grants Pass,	Josephine.
Gladys Moore,	Prineville,	Crook.
Kate Moore,	Echo,	Umatilla.
Bertha Neui,	Clem,	Gilliam.
Frankie Payne,	Albany,	Linn.
Bessie Pogue,	Ontario,	Malheur.
Horace Propst,	Albany,	Linn.
Lydia Rainey,	Portland,	Multnomah.
Audie Shelton,	Scio,	Linn.
John Silvertooth,	Antelope,	Wasco.
Lester Smith,	Corvallis,	Benton.
Dorothea Simpson,	Corvallis,	Benton.
Lulu Spangler,	Corvallis,	Benton.
Irene Sproat,	Hood River,	Wasco.
Aura Thomson,	Echo,	Umatilla.
Georgia White,	Klamath Falls,	Klamath.
Zetta White,	Mount Angel,	Marion.
Bertha Witman,	Lebanon,	Linn.
Lawrence Taylor,	Fossil,	Wheeler.

VOCAL MUSIC DEPARTMENT.

Name	Postoffice	County
Edna Grace Allen,	Corvallis,	Benton.
Gustave Abraham,	Albany,	Linn.
Arthur Rex Barnett,	Athena,	Umatilla.
Cecile Boswell,	Vale,	Malheur.
Sherman Brown,	Fort Klamath,	Klamath.
Louis Bennett,	Medford,	Jackson.
Miles Belden,	Cove,	Union.
Nellie Beers,	Jordan Valley,	Malheur.
Janette Blackledge,	Corvallis,	Benton.
Thad Blackledge,	Corvallis,	Benton.
Grace Cramer,	Holbrook,	Nebraska.
Linnie Currin,	Ione,	Morrow.
Edward Calloway,	Ontario,	Malheur.
Cecil Clark,	Logan,	Clackamas.
Zena Chapman,	Ione,	Morrow.
Harvel Currin,	Ione,	Morrow.
Cleve Currin,	Ione,	Morrow.
Ralph Caves,	Hoskins,	Benton.
Earnest Carey,	Philomath,	Benton.
John Clark,	Portland,	Multnomah.
Marian Chappell,	Corvallis,	Benton.
Ruth Corbett,	Corvallis,	Benton.
Grace Corbett,	Corvallis,	Benton.
Clinton Dicken,	Hood River,	Wasco.
Gustave Eilers,	Aurora,	Marion.
Alma Edwards,	Vale,	Malheur.
Pearl Edwards,	Vale,	Malheur.
Alice Edwards,	Belfountain,	Benton.
Verna Farrell,	Scappoose,	Columbia.
Margaret Fowells,	Fayette,	Iowa.
Lloyd Goodrich,	Dayton,	Yamhill.
Azora Gregg,	Amity,	Yamhill.
Hubert Green,	Corvallis,	Benton.
Isabel Green,	Corvallis,	Benton.
Blanche Hammell,	Corvallis,	Benton.

Mary Alicia Hill,	Hood River,	Wasco.
Amy Holmes,	Grants Pass,	Josephine.
Merle Hollister,	Hood River,	Wasco.
Deane Hollister,	Hood River,	Wasco.
Grace Huff,	Corvallis,	Benton.
Orie Anes Holmes,	Grants Pass,	Josephine.
Amber Humiston,	Fayette, Iowa.	
Stella Humiston,	Fayette, Iowa.	
Edward Hughes,	Oregon City,	Clackamas.
Frank Hall,	Milwaukie,	Clackamas.
Etta Hall,	Milwaukie,	Clackamas.
Ethel Higdon,	Cannon City,	Colorado.
Donald Arthur Hill,	Hood River,	Wasco.
Sophia Hartley,	Cottage Grove,	Lane.
Calvin Asa Ingle,	Milton,	Umatilla.
Floy Johnson,	John Day,	Grant.
Lillian Johnson,	Corvallis,	Benton.
Inez Johnson,	Corvallis,	Benton.
Lawrence Johnson,	Vale,	Malheur.
James Garfield Kelley,	Lents,	Multnomah.
Olivia Kennedy,	Hillsboro,	Washington.
Jean Marian Kent,	Corvallis,	Benton.
Ethel Linville,	Corvallis,	Benton.
Donald Lines,	Albany,	Linn.
Donald Morgan,	Portland,	Multnomah.
Gertrude McBee,	Corvallis,	Benton.
Clifford Moore,	Portland,	Multnomah.
May Margaret Martin,	McMinnville,	Yamhill.
Maude Mattley,	Lewisville,	Polk.
Silvis Nichols,	Belfountain,	Benton.
Victor Niederer,	Summerville,	Union.
May Oviatt,	Buell,	Polk.
Helen Pelland,	St. Paul,	Marion.
Marie Louise Pelland,	St. Paul,	Marion.
Asa Post,	Dayton,	Yamhill.
Stella Parsons,	Albany,	Linn.
Annie Lenore Peterson,	Portland,	Multnomah.

Frankie Eugene Payne,	Albany, Linn.
Marjorie Ellen Richards,	Farmington, N. H.
Elmer Rawson,	Vancouver, Washington.
Vena Rickard,	Inavale, Benton.
Mary Simpson,	Corvallis, Benton.
Evelyn Smith,	Corvallis, Benton.
Mary Rosa Scoggin,	Sherman, Wasco.
Carl Smith,	Carson, Washington.
Mamie Sparkman,	Woodland, California.
Aura Thomson,	Echo, Umatilla.
Edward Thayer,	Rainier, Columbia.
Walter Tyler,	Lents, Multnomah.
Lena Belle Tarter,	Airlie, Polk.
Agnes Elizabeth von der Helen,	Wellon, Jackson.
Erwin Fred Wann,	Salem, Marion.
Rupert Wall,	Early, Sherman.
Rose Wilson,	Corvallis, Benton.
Mary Wilkins,	Fort Dodge, Iowa.
Mildred Watts,	Washington Depot, Conn.
Winona Woodward,	Corvallis. Benton.
Pearl Williams,	Jordan Valley, Malheur.
Guy Leonard Weaver,	Salem, Marion.
Ralph Worstell,	La Grande, Union.
Harvey Yeager,	Heppner, Morrow.

Students Classified by Courses of Study.

MECHANICS.		
Seniors	5	
Juniors	3	
Sophomores	39	
Freshmen	91	
ELECTRICAL ENGINEERING.		
Seniors	9	
Juniors	12	21—159
HOUSEHOLD SCIENCE.		
Seniors	12	
Juniors	9	
Sophomores	9	
Freshmen	35	65
AGRICULTURE.		
Seniors	7	
Juniors	5	
Sophomores	14	
Freshmen	40	66
PHARMACY.		
Seniors	5	
Juniors	4	
Sophomores	14	
Freshmen	47	70
LITERARY COMMERCE.		
Seniors	5	
Juniors	7	
Sophomores	17	
Freshmen	62	82
MINING.		
Seniors	6	
Juniors	6	
Sophomores	11	
Freshmen	18	41
GRADUATES		18
SPECIAL STUDENTS		37
MUSIC		139
SUB-FRESHMEN		110
DAIRYING & AGRICULTURE		28
GRAND TOTAL		824
COUNTED TWICE.		
Music	89	
NUMBER OF STUDENTS		735

RECAPITULATION.

	Men	Women	Dept. Total	Class Total
GRADUATES	10	8		18
SENIORS—				
Mining	6		6	
Mechanical	5		5	
Electrical	9		9	
Literary Commerce	2	3	5	
Household Science		12	12	
Agricultural	7		7	
Pharmacy	5		5	
Total seniors				49
JUNIORS—				
Mechanical	3		3	
Electrical	12		12	
Mining	6		6	
Literary Commerce	2	5	7	
Household Science		9	9	
Agricultural	5		5	
Pharmacy	4		4	
Total juniors				46
SOPHOMORES—				
Mechanical	39		39	
Mining	11		11	
Literary Commerce	12	5	17	
Household Science		9	9	
Agricultural	14		14	
Pharmacy	12	2	14	
Total sophomores				104
FRESHMEN—				
Mechanical	91		91	
Agricultural	40		40	
Household Science		35	35	
Literary Commerce	37	25	62	
Pharmacy	44	3	47	
Mining	18		18	
Total freshmen				293
SUB-FRESHMEN	88	22		110
SPECIAL	7	30		37
SPECIAL AGRICULTURE AND DAIRYING	27	1		28
MUSIC				
Vocal	39	57		96
Piano	6	37		43
				824
STUDENTS COUNTED TWICE—				
Music—Vocal	34	27	61	
Piano	4	24	28	
Total				89
Number of students in college	523	212		735

Students Classified by Counties, States and Foreign Countries.

Baker	19	Lincoln	6
Benton	119	Linn	53
Clackamas	41	Malheur	28
Clatsop	7	Marion	30
Columbia	12	Morrow	18
Coos	12	Multnomah	57
Crook	4	Polk	29
Curry	0	Sherman	11
Douglas	12	Tillamook	4
Grant	5	Umatilla	17
Gilliam	7	Union	20
Harney	9	Wallowa	23
Jackson	9	Wheeler	3
Josephine	6	Wasco	33
Klamath	8	Washington	25
Lake	2	Yamhill	23
Lane	18		

Number of counties in Oregon	33
Total number of counties represented	32
Whole number of students from Oregon	665
Arkansas	2
California	6
Colorado	3
Connecticut	1
England	1
India	5
Idaho	1
Illinois	2
Iowa	8
Missouri	1
Nebraska	12
Nevada	2
New Hampshire	1
New Jersey	1
New York	1
Washington	23
Total	735

Comparative Statement of Enrollment.

Year.	*Music, Special.*	*Preparatory.*	*Freshmen.*	*Sophomores.*	*Juniors*	*Seniors*	*Graduate Students.*	*Special.*	*Dairying.*	*Total.*
1888-1889	.....	36	33	14	14	0	0	0	.....	97
1889-1890	.....	67	55	17	6	0	6	0	.....	151
1890-1891	.....	76	83	24	15	0	3	0	.....	201
1891-1892	.....	86	63	28	19	9	3	0	.....	208
1892-1893	.....	98	123	31	18	7	5	0	.....	282
1893-1894	.....	36	103	71	21	5	4	0	.....	240
1894-1895	.....	47	85	64	52	13	0	0	.....	261
1895-1896	.....	80	175	63	54	9	14	2	.....	397
1896-1897	.....	*Sub-*	157	80	29	17	11	22	.....	316
1897-1898	.....	*Fresh-*	151	75	45	26	15	24	.....	336
1898-1899	.....	*men.*	164	79	30	36	15	14	.....	338
1899-1900	.....	.....	42	145	74	40	36	20	48	.....	405
1900-1901	.....	.....	44	177	72	42	37	9	55	.....	436
1901-1902	14	.....	38	247	83	30	38	10	28	.....	488
1902-1903	21	.....	54	232	97	40	36	12	32	17	541
1903-1904	48	.....	85	191	80	46	39	3	28	10	530
1904-1905	29	.....	75	304	97	36	49	11	33	46	680
1905-1906	50	.....	110	293	104	46	49	18	37	28	735

INDEX.

TEXT-BOOKS.

Agriculture—
Book on Drainage, Miles.
Brooks' Agriculture, Vols. I, II and III.
Cattle Breeding, Warfield.
Feeding of Animals, Jardan.
Feeds and Feeding, Henry.
Horses, Cattle, Sheep and Swine, Curtis.
Manual of Cattle Feeding, Armsby.
Physics of Agriculture, King.
Soil, King.
Stock Feeding, Stewart.
Study of Breeds, Shaw.
Veterinary Studies, Reynolds.
Bacteriology—
Essentials of Bacteriology, Ball.
Botany—
Histology—Coulter, Plant Structures.
Strassburger, Practical Botany.
Morphology and Exology — Leavitt, Outlines.
Coulter, Plant Relations.
Bergen, Foundations.
Physiology—Sorauer, McDougal, Green
Physiology, Laboratory—Ganong, Mcdougal.
Chemistry—
Agricultural Chemistry, Johnson.
Crooke's Select Methods.
Engineering Chemistry, Blount and Bloxan.
Food Inspection and Analysis, Leach.
General Chemistry, Bradbury, Newell, Young.
Microscopy of Vegetable Foods, Winton
Qualitative Analysis, Johnson and Prescott, Dennis and Whittlesey.
Quantitative Analysis, Talbot, Smith and Cheever.
Organic Chemistry, Remsen,
Stillman Engineering Chemistry.
Sutton's Volumetric Analysis.
Technology of Paint and Varnish, Savin
Thorpe's Dictionary of Applied Chemistry.
Wiley's Principles of Applied Chemistry
Civil Engineering and Mathematics—
Advanced Algebra, Hawks.
Algebra—Essentials of, Wells.
Analytic Geometry—Plane and Solid, Ashton.
Arithmetic—Higher, Wentworth.
Railroads—Searles, Webb.
Roofs and Bridges—Merriman and Jacoby.
Sanitary Engineering—Folwell.
Snrveying—Johnson.
The New Business Arithmetic—Powers and Lyon.
Trigonometry—Plane and Spherical, Ashton and Marsh.
Water Supply Engineering, Folwell.
Dairying—
Dairy Chemistry, Snyder.
Milk and Its Products, Wing.
Elocution—
Evolution of Expression, Emerson.
Steps to Oratory, Townsend.
English and Literature—
American Literature, Abernethy.
Composition, Lockwood and Emerson
Elementary English Composition, Huber, Gray, Buehler.
Kimball's Business Speller.
Baldwin's College Manual of Rhetoric
English Grammar, Whitney.
Introduction to English Literature, Pancoast.
Practical Elementary Rhetoric, Genung.
Entomology—
Animals, Jordan, Heath & Kellogg.
Bulletins and Reports, U. S. Entomologist.
Thornton's Human Physiology.
Insect Life, Comstock.
German—
Collar-Eysenbach's German Gram mar.
Mueller and Wenckebach's Gluck Auf.
Hewett's German Reader.
Bronson's Colloquial German.
Jagemann's German Syntax.
Selections from Modern prose works, Schiller's and Lessing's Dramas.
Brandt and Day Scientific German Reader.
History—
General History, Myers (Two Volume Edition).
U. S. History—Essentials in American History, Hart.

Astronomy—Elementary, Young.
Calculus—Differential and Integral, Nichols.
Contracts and Specifications, Johnson.
Geometry—Plane and Solid, (Revised Edition), Wentworth.
Highway Construction, Byrne.
Masonry Construction and Foundations, Baker, Patton.
Mining Eegineering—A Manual of Mining, Ihlseng.
Allen & Greenough's Latin Grammar.
Caesar—Books I and II, Allen and Greenough.
Cicero's Orations, Allen and Greenough.
First Year Latin, Collar and Daniel.

Literary Commerce—
Modern Book-keeping, Montgomery.
Commercial Law, Richardson.

Mechanical and Electrical Engineering—
Alternating Currents and Alternating Current Machinery, Jackson & Jackson.
A Practical Course in Mechanical Drawing, Fox & Thomas.
Descriptive Geometry, C. E. Ferris.
Electricity and Magnetism, Sylvanus Thompson.
Electro-Magnetism and the Consruction of Dynamos, D. C. Jackson.
High School Physics, Carhart & Chute.
Machine Design, Part I, Jones.
Physical Laboratory Manual, Chute.
Technical Mechanics, Edward R, Maurer.
The Strength of Materials, Merriman.

Mental and Political Science—
Essentials of Psychology, Buell.
Johnston's History of American Politics
Principles of Economics, Fetter.

Military—
Army Regulations, U. S. A.
Constitutional Law, Cooley.
Conventional Signs and Symbols, General Staff U. S. A.
Drill Regulations of Hospital Corps, U. S. A.
First Aid to the Injured, Johnson & Johnson.

Horticulture—
Principles of Fruit Growing, Bailey.
Plant Breeding, Bailey.
Principles of Plant Culture, Goff.
The Survival of the Unlike, Bailey.

Household Science—
Ethics of Marriage, Pomeroy;
From Cellar to Attic, Elizabeth Holt.
Household Science Helen Campbell.

Latin—
Aeneid, Greenough and Kittredge.

Federal Aid in Domestic Disturbances, W. D. Publication.
Guard Manual, U. S. A.
Infantry Drill Regulations, U. S. A.
International Law, Davis.
Light Artillery Drill Regulations, U. S. A.
Military Science, Wagner.
Manual of Field Engineering, Beach.
Map Making and Map Reading, Beach.
Military Occupation, Magoon.
Military Law, Winthrop.
Manual of Physical Drill, Butts.
Manual of Signal Corps, Giddings.
Organization and Tactics, Wagner.
Small Arm Firing Regulations, U.S.A.
Security and Information, Wagner.
Telephones and Telegraphs, U. S. A.

Mining—
Assaying, Furman.
Blowpipe Analysis, Moses & Parsons.
Geology, Scott.
Physical Mineralogy, Eakle.

Pharmacy and Materia Medica—
King's Dispensatory.
Materia Medica, Culbreth.
Medical Chemistry, Bartley.
National Formulary.
Organic Analysis, Prescott.
Practice of Pharmacy, Remington.
Quantitative Analysis, Sturmer and Vanderkleed.
The Art of Compounding, Scoville.
Treatise on Pharmacy, Caspari.
Manual of Toxicology, Brundage.
U. S. Dispensatory, Pharmacopœia, Homeopathy.