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REPORT

OF THE

STATE

AGRICULTURAL COLLEGE,

DISCARD

CORVALLIS, OREGON.

—————
NINTH REGULAR SESSION—1876.
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SALEM, OREGON:
MART. V. BROWN, STATE PRINTER.
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REPORT.

To His Excellency,

Governor L. F. Grover,

Salem, Oregon :

SIR :—I have the honor to submit the second biennial report of the agricultural department of Corvallis College.

ORGANIZATION.

There seems to be a desire on the part of many that all the laws relating to the organization of the Agricultural College be made public in some report. I insert them in this :

In the year 1862 the Congress of the U. S. passed an act providing for the establishment of Industrial Colleges in the several States of the Union. By this law, it is required of each State that should accept the provision of this act, that it "shall maintain, at least, one college where 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 Legislatures of the several 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." It will be seen upon inspection that liberal and practical education in the "several pursuits and professions of life," is the thing to be promoted, and not in two only,

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(agriculture and the mechanic arts), as some do ignorantly talk; for it can not be meant that men in all professions and pursuits are to be turned away from their several respective pursuits to devote themselves to agriculture and the mechanic arts. The great ideal of the law seems to be this: To bring education in agricultural science and in the mechanic arts upon a level with education in all other pursuits. (I may remark, by parenthesis, that our Legislature, in adopting a course of study for the Agricultural College, well understood the spirit of the law of Congress.) In accordance with the Act of Congress, the Legislature of Oregon proceeded to such legislation as was necessary to organize an agricultural college. On page 40 of the "General Laws" for the year 1868, is found the following Act: "An Act to secure the location of the lands donated by Congress to the State for an Agricultural College, and to establish such college."

The first section of this Act provides that a Board of Commissioners be appointed to locate lands. The second section provides, "That, until other provisions be made, the Corvallis College is hereby designated and adopted as the Agricultural College, in which all students, sent under the provisions of this Act, shall be instructed in all the arts, sciences and other studies in accordance with the requirements of the Act of Congress making such donation."

On page 17 of the "General Laws" for 1870, we find the following additional legislation in relation to the Agricultural College:

"An Act permanently to locate the Agricultural College of Oregon."

Section first of this Act provides "That Corvallis College, in Benton county, is hereby designated and perma-

nently adopted as the Agricultural College of the State of Oregon, in which all students, sent under the provisions of law, shall be instructed in accordance with the requirements of the Act of Congress, approved on the 2d of July, 1862, granting public lands to the several States and Territories which might provide colleges for the benefit of agriculture and the mechanic arts, and the acts amendatory thereof."

Section second provides "That the following persons, to-wit: J. C. Avery, L. F. Grover and N. H. Cranor, are hereby constituted a Board of Commissioners to propose a plan for the instruction and education of the students in said Agricultural College, and to prepare rules, regulations and by-laws for the government of the same, all of which shall be submitted to the Legislative Assembly at its next regular session for its adoption or rejection, and in the meantime the said College shall be governed by and under the provisions of the Act of the Legislative Assembly, approved the 27th day of October, 1868, in relation to said College." (See the report of this Committee below.)

Section third requires "That the Board of Trustees of Corvallis College shall, by resolutions, accept the provisions of this Act, and agree to be bound by the within thirty days after its passage, and cause a copy of said resolutions to be filed with the Secretary of State, and upon their failure to do so, they shall be deemed to have rejected its provisions."

The following are the resolutions of the Board of Trustees accepting the provisions of this Act. They are found on page 19 of the "General Laws" of 1870. I insert only the resolutions, not the preambles:

"*Resolved*, (1) By the Board of Trustees of Corvallis College, That said Board does accept the provisions of

said Act of the Legislative Assembly aforesaid and they do agree to be bound by the same.

Resolved, (2) That the Secretary of the Board is hereby directed forthwith to forward to the Secretary of the State of Oregon, a copy of the foregoing preamble and resolutions.

R. S. STRAHAN, President.

B. R. BIDDLE, Test, Secretary.

“Filed in the office of Secretary of the State, November 2, 1870.”

On page 21 of “General Laws of 1872,” we find the following Act:

“An Act for the further organization of the Agricultural College, and to provide for the support of the same.”

Section second provides, “That the rules, regulations and by-laws for the government of said institution, reported to the Legislative Assembly, at its present session, by the Commission appointed under Act of the Legislature, approved October 21, 1870, entitled ‘An Act to permanently locate the Agricultural College of Oregon,’ shall constitute under the several Acts of Congress and of the State relative to said institution, and in conjunction with the Articles of Incorporation of Corvallis College and the government of said institution established under the same, shall constitute the full organization of said Agricultural College of the State of Oregon.”

The following is a copy of this report in all its essential features.

REPORT

Of the Board of Commissioners on Regulations and
Course of Study for the Agricultural College
of Oregon.

*To the Honorable the Legislative Assembly of the State of
Oregon:*

We, the undersigned Commissioners, appointed by the Act of the Legislative Assembly of the State of Oregon, approved October 21, 1870, entitled an Act to permanently locate the Agricultural College of Oregon, pursuant to the requirements of said Act, beg leave to make the following report, prescribing rules, regulations and by-laws for the government of said institution.

J. C. AVERY,
L. F. GROVER,
N. H. CRANOR.

The rules and regulations, as a matter pertaining wholly to the Board of Trustees and the Faculty, need not here be given.

The following is the course of study adopted by the Act above mentioned, as a part of the report of this committee:

COURSE OF STUDIES.

PREPARATORY CLASSES.

Mathematics—Arithmetic and Algebra.

English—Reading, Spelling, Geography, English Grammar, Penmanship, Composition, Elocution, History of United States.

Natural Science—Natural History, Philosophy, Physiology.

Languages—Latin Grammar, Latin Reader, Greek Reader, Greek Grammar, French Grammar and Reader, German.

Military Exercises—Tactics, Drill.

Agriculture—Practical Instruction on Farm.

FRESHMAN CLASS.

Mathematics—Algebra, Geometry.

English—Rhetoric, Composition, History, Book-keeping.

Natural Science—Inorganic and Organic Chemistry, Qualitative Analysis, Structure and Physiology of Plants, Water, Atmosphere and Soil in their relation to vegetable production, Meteorology, Zoology, Botany, Physical Geography.

Languages—Ancient Geography, Roman Antiquities, Virgil, Cicero, Greek Antiquities, Greek Testament, Homer, French, German.

Agriculture—Theory and Practice of Agriculture, Principles of Tillage, Drainage, Landscape Gardening.

Military—Tactics, Drill.

Excursions—Botanical and Zoological.

SOPHOMORE CLASS.

Mathematics—Trigonometry, (plane and spherical), Navigation, Mensuration, Surveying, Drawing, Maps of Farms, etc.

English—Rhetoric, Logic, Composition, Elocution, Book-keeping, Universal History.

Natural Science—Analysis of Minerals, Ores, Soils, Manures, Ashes of Plants, Mineral Waters, etc., etc., Practice in Mineralogy, Entomology, Geology, Botany.

Languages—Roman and Greek Antiquities, Sallust,

Horaces' Odes and Epodes, Greek Testament, Homer, French, German.

Agriculture—Theory and practice of Agriculture, Horticulture, Farm Implements and Drainage, Stock-breeding.

Excursions—Geological and Botanical.

JUNIOR CLASS.

Moral Philosophy—Evidence of Natural and Revealed Religion, Moral Philosophy, (ethics), Political Economy.

Mathematics—Analytical Geometry, Differential and Integral Calculus, Practical Surveying and Engineering.

English—Mental Philosophy, English Literature.

Natural Science—Qualitative and Quantitative Analysis, Mineralogy, Chemistry, (general), Geology, Organic Analysis.

Languages—Livy, Horace's Satires, Epistles, etc., Odyssey, De Corona, Latin and Greek Composition, French, German.

Agriculture—Theory and Practice of Agriculture, Training and Culture of Fruit Trees, the Vine, Small Fruits, Culture of Flowers.

Military—Tactics and Drill.

SENIOR CLASS.

Moral Philosophy—Evidence of Natural and Revealed Religion—continued.

Mathematics—Mechanics, Astronomy, Civil Engineering.

Natural Science—Chemistry, completed, Quantitative Analysis.

Languages—Juvenal, Cicero, Tacitus, Alcestis, (Euripides), Thucydides, Demosthenes.

Agriculture—Theory and Practice of Agriculture, Laying out of Lawns, Ornamenting Grounds, etc.

Military—Tactics, Drill.

Your Commission find it impossible to draft laws and regulations sufficiently comprehensive to meet all the interests of the State Agricultural College. We therefore recommend that the Regents be empowered to make such additional regulations and such changes in the course of study as may be necessary to meet the growing wants of the Institution.

And in relation to the foregoing, we beg leave to suggest that courses of study be so arranged as to give students the option between different courses, or the selection of different studies taught in said College, and that diplomas may be awarded upon courses of study actually mastered by the pupils; this course always being under the direction of parents, guardian and faculty. These are all the laws pertaining to the organization of the College; all, at least, of essential importance.

The Faculty, finding it impossible for the present to teach this entire course, as not having a full corps of teachers, proceeded to select such a course as would best meet the intentions of the law. The course of study was accordingly classified in eight departments, as follows :

- I. A School of Mathematics.
- II. A School of Language (ancient).
- III. A School of Language (modern).
- IV. A School of Chemistry.
- V. A School of Natural Philosophy.
- VI. A School of Moral Science.
- VII. A School of Agriculture.
- VIII. A School of History and Literature.

Prof. Emery has charge of the School of Mathematics and Natural Philosophy, under which for the present are placed Astronomy and Geology. The following Report of the Professor will show his work in these departments of the School:

DEPARTMENT OF MATHEMATICS AND NATURAL PHILOSOPHY.

JOSEPH EMERY, TEACHER.

The studies in these departments are pursued in the following order:

FRESHMAN CLASS.

First Session—Algebra and Geometry completed.

Second Session—Trigonometry and Descriptive Geometry.

SOPHOMORE CLASS.

First Session—Surveying and Engineering.

Second Session—Analytical Geometry.

JUNIOR CLASS.

First Session—Differential Calculus.

Second Session—Integral Calculus.

SENIOR CLASS.

First Session—Mechanics, Sound and Light, Electricity.

Second Session—Astronomy and Geology.

MATHEMATICS.

Special attention is given to the mental discipline of the student and the development of his intellectual powers,

for which the study of mathematics is pre-eminently adapted.

The great practical utility of this branch of science is constantly impressed upon the student, and as far as possible taught and illustrated by some useful application in the field of practical life.

Lectures are given on the Logic of Mathematics, pointing out and comparing the two methods of reasoning—*analytical* and *synthetical*.

The adjustment of the compass and theodolite is fully explained and illustrated by practice in the field.

TEXT BOOKS.

Davies, Loomis, Courtney, Olney and Todhunter for reference.

NATURAL PHILOSOPHY.

The doctrines of *Light*, *Heat* and *Electricity* are taught in this department; Mechanics in its lower forms; Astronomy, Mineralogy and Geology.

The more difficult principles are taught by lectures, accompanied by practical illustrations and experiments in the laboratory.

During the present year we have added (through the kindness of State Treasurer Brown) to our cabinet of minerals, a fine collection of valuable specimens for the classroom.

TEXT BOOKS.

Olmsted, Peck, Dana and Lyell.

SCHOOL OF CHEMISTRY.

In this School are taught the doctrines of Heat, Light

and Electricity in their relation to Chemical Science, Molecular Forces and Conservation of Force. Then the history classification and properties of the elements are considered; then the oxides and their reduction, acids and salts. All the principles are illustrated with suitable apparatus and experiments. Last comes the principles of Chemical Philosophy. Here the theories of the Atomic weights, old and new, and in connection therewith the doctrines of the nomenclature, are discussed.

QUALITATIVE ANALYSIS.

The student begins this course by the separation and classification of the twenty-four more common metals, after the method of Elliott and Storer. Then he passes to a consideration of the salts, the methods for the treatment of the more refractory oxides. Lastly, an application of the principles thus learned to the analysis of soils, ores and natural waters.

QUANTITATIVE ANALYSIS.

This course relates chiefly to the analysis of soils, fertilizers and farm products.

AGRICULTURE.

Under this head are taught those subjects that relate to practical farming; in other words, what is termed Practical Agriculture is here taught. This includes Botany and its relations to Agriculture (see below the report of Professor Hawthorne), also Meteorology in its relations to Agriculture. The next thing to be considered is the soil in its physical qualities, its origin, classification and physical preparation, the various methods of drainage and plowing.

The next subject is the Chemistry of Plants, which

leads to a discussion of the origin of the food of plants, and thus we are led to the consideration of the Chemistry of the soil and atmosphere. Improvement of soil is discussed in immediate connection with this subject, when the matter of fertilizers is made prominent—the kinds of fertilizers, their preparation, cost, value, modes of application. Here comes the great question: How can we render available the mineral constituents of the soil, so as to preserve them fertile? I may remark that much progress has been made in solving this, and is still making. After this the student studies the subject of Animal Nutrition, how to use farm products most economically for the various domestic animals; and after this many kindred subjects claim attention, such as the history, habits and cultivation of special crops. The subject of fruit culture is taught (see Report of Prof. Hawthorne below).

The next thing that comes is stock-raising. This we find it impossible for the present to teach, being too much crowded. All the rest, above noticed, is taught in detail.

SCHOOL OF MORAL PHILOSOPHY.

I have charge of this School, also. The class begins this course of study with the subject of Logic, Deductive and Inductive; then the principles of Methodology and Modified Logic claim attention. This includes Analogy. Sometimes a double course of Logic is given. Mental Philosophy comes next, and after that the applications of the principles of Mental Philosophy and Logic, in Rhetoric, and Ethics and Political Economy are considered. This course closes with a study of the History of Philosophy, when all the principal opinions held by men such as have governed mankind come in review.

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EXPERIMENTS IN AGRICULTURE.

Experiments here are intended to illustrate the principles taught, and also to develop new principles. Our attention has been directed chiefly to the so-called white soil. I have had several analyses of this soil made, and have made several myself, and in every case we find all the substances necessary to the growth of the plant present. I still believe that if the white soil be thoroughly drained, well plowed and cultivated in green crops for several years, it will produce grain as well as any other soil. I have experimented during the period since my last report with wheat in connection with soda, potash, lime in three forms, ashes, sulphuric acid, marl, chlorine, superphosphate of lime, urine, ammoniated phosphate. Of all these, the last is far the best, hastening the crop and producing a much larger yield. It takes a long time to develop and establish, on sure grounds, principles in agricultural science. When, therefore, we shall have arrived at any principles which are proved beyond doubt, we shall set them down for the guidance of the farming community. It is useless and hurtful to send out half-established opinions for the farmers to experiment with.

GENERAL CONDITION OF THE SCHOOL.

The school is in a healthy condition and well attended. During the two years just closing, there have been in attendance ninety-five agricultural students. They have, in general, been men of sterling worth. The State cannot, in my opinion, do better than to foster such men in their education. Surely, it would be a great blessing to Oregon, if we might say of her citizens what the great Grecian statesman said of the Athenian citizens, that the

“same individual among us proves himself qualified for the most varied kinds of action, and with the most graceful versatility.” A steady pursuit of liberal education must bring to our young and growing State wealth and power, and sending out this influence, she must make herself felt both for the present and future generations. I must applaud, therefore, the wisdom of those men, both in the General and State Governments, who are fostering the education of our people.

BUILDING AND APPARATUS.

The Board of Trustees have had an addition made to the College building; this, together with such changes as are to be made in the old building, will give us ample room for several years; until, at least, two other teachers shall be added to the faculty.

Additions to our apparatus have been made every year, so that we are now in a condition to illustrate all the fundamental principles in Chemistry and Physics.

A glass house is to be built this Fall, when we shall be quite well equipped for the business of the College.

I hope, sir, that any apparent imperfections will be excused, when it is recollected that we are all confined to the class-room six hours a day, and occupied from four to five with preparations therefor.

Respectfully submitted,

B. L. ARNOLD.

SCHOOL OF LANGUAGES.

PROF. HAWTHORNE.

President B. L. Arnold :

SIR:—I have the honor to present the following biennial report of this Department:

It is the aim here to teach language as a science, to explain its laws and its construction.

ENGLISH.

The English language is elevated to an equal rank and dignity with the classical languages. It is studied with the same analysis of its philology and structure, and a thorough knowledge of it is acquired by daily recitations in the writings of the best authors. The language *itself* is studied and the grammar is learned from it, and not the language from the grammar.

Weekly compositions are required.

TEXT BOOKS.

Sprague's English Literature, Brown's Grammar, Whitney's Study of Language, and Select Plays of Shakspeare.

GERMAN.

Whitney's Grammar, Reader, Deutsche Grammatik (Heyse), selections from Goethe, Schiller and other standard authors, Adler's Dictionary.

As soon as the students become familiar with the various inflections, they begin to translate German into English and English into German, continuing meanwhile the study of the Grammar. Following the great American linguist,

Prof. W. D. Whitney, of Yale College, I hold that the "study of this language must be, as a rule, chiefly directed to the acquisition of a good *reading* knowledge of it."

FRENCH.

Otto's Grammar, De Fivas' Classic French Reader, Joynes' French Plays, and Telemaque, Spiers and Surrenne's Dictionary.

Frequent exercises are required throughout the course. The classes are thoroughly drilled by daily recitations.

LATIN.

Gildersleeve's Grammar, Reader and Exercise Book. Cæsar, Virgil's *Æneid* and Cicero's Orations.

Sallust, Horace's Odes and Epodes, Livy, Horace's Satires and Epistles, and Latin composition.

Juvenal, Cicero de Officiis, and Tacitus.

The Chase & Stuart edition of Latin authors is used in the entire course.

Leverett's Latin Lexicon, Long's Classical Atlas.

Our students manifest great interest in the study of Latin. The classes are generally large, and nearly all the agricultural students seize the opportunity of acquiring a knowledge of the language of science.

A clear philosophical insight into the principles of the language being considered more profitable than a collection of mere facts, students are required to explain the structure of sentences by giving *reasons*, and to change from *oratio recta* to *oratio obliqua*, and *vice versa*.

GREEK.

Hadley's Grammar, Xenophon's *Anabasis* (Kendrick), Homer's *Iliad* (Owen), Greek Testament, Homer's

Odyssey, Greek Composition, Alcestis (Euripides), Thucydides, Demosthenes, Liddell and Scott's Lexicon, Smith's Classical Dictionary.

Every member of the classes recites daily; translating and analyzing one day and reciting on grammar the next, with written translations of English into Greek.

GENERAL REMARK.

I would respectfully state that I have actually taught classes in all the subjects above mentioned for the last two years. This has compelled me to labor at least ten hours a day. And in addition to all this work, I teach a class in Botany and also one in Fruit Culture.

BOTANY.

Gray's "How Plants Grow," and the "New Manual of Botany," Lectures.

The structure of plants, their nature and their habits, and the principles in accordance with which they are classified, are studied. Plants are analyzed in the classroom, and vegetable physiology is thoroughly learned. Plants are arranged according to the NATURAL SYSTEM.

Particular attention is given to the grass family, including, besides the true grasses, wheat, barley, rye, oats, rice and Indian corn.

FRUIT CULTURE.

Downing's Selected Fruits.

The course is taught principally by lectures. The leading subjects discussed are as follows:

1. Production of new varieties of fruit.
2. Duration of varieties. ...

3. Propagation of varieties, grafting, budding, cuttings, layers and suckers.
4. Pruning.
5. Transplanting.
6. General remarks on insects.
7. The best varieties of apples, cherries, pears, currants, gooseberries, grapes, peaches, melons, raspberries, blackberries, strawberries and plums.

In conclusion, I wish to add that much praise is due the students in my department for their zeal, close attention and gentlemanly deportment.

Very respectfully,

B. J. HAWTHORNE.

AUGUST 18, 1876.

CALENDAR.

September 21st	Session Begins.
January 1st	Beginning of Second Term.
April 2d	Beginning of Third Term.
June 27th	Commencement Day.

SCHEME OF RECITATIONS.

	PRESIDENT ARNOLD.	PROF. HAWTHORNE.	PROF. EMERY.
8:00 to 8:45	Logic		
9:00 to 9:45	Mental Philosophy.	Latin Preparatory.	Calculus.
8:45 to 10:30	Political Economy.	Latin Junior.	Int. Math.
11:15 to 12	English Grammar.	English Grammar.	Eng. Grammar.
1:45 to 2:30	Analytical Chemistry & Agriculture.	Greek.	Junior Math.
2:30 to 3:15		Fruit Cult. & Botany.	Prep. Math.
3:15 to 4	Gen'l Chemistry.	German.	Nat. Philosophy