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UNIVERSITY OF COLORADO BULLETIN

Vol. XIV, No. 11.

Published Monthly by the Regents of the University of Colorado.
Entered at the Post Office, Boulder, Colorado, as second-class mail matter.

BIENNIAL REPORT OF THE REGENTS

1912-1914

UNIVERSITY OF ILLINOIS LIBRARY

DEC 28 1920



BOULDER, COLORADO, NOVEMBER, 1914

UNIVERSITY OF ILLINOIS

FEB 4 1915

General Series No. 76
Administration Series No. 5

PRESIDENT'S OFFICE

UNIVERSITY OF COLORADO BULLETIN

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NINETEENTH BIENNIAL REPORT OF THE REGENTS

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UNIVERSITY OF COLORADO

NINETEENTH BIENNIAL REPORT OF THE REGENTS, 1912-1914.

To the Governor of the State of Colorado, the State Library Commission, and the Twentieth General Assembly:

The Nineteenth Biennial Report, from October 1, 1912, to September 30, 1914, is herewith presented by the Regents of the University of Colorado.

Because of the somewhat contradictory requirements of the various statutes regarding reports from the University, this Biennial Report of the Regents is intended to cover the following:

President's report to the Regents.

Regents' report to the Governor of the State.

Librarian's report to the Library Commission.

It is a pleasure to report continued progress in all departments of the University of Colorado as will appear from the detailed statements below.

The Board regrets to report the deaths of Regent Samuel I. Hallett on September 14, 1913, and of Regent William H. Bryant on April 6, 1914. These vacancies were filled by the appointment of Julius C. Gunter, of Denver, in the place of Mr. Hallett, and Mrs. Minnie L. Harding, of Canon City, in the place of Mr. Bryant.

On December 3, 1913, President James H. Baker, after twenty-two years of devoted and distinguished service, presented his resignation as President of the University, to take effect December 31, 1913. This resignation was accepted by the Regents with deep regret, and in recognition of Dr. Baker's service he was elected President Emeritus of the University.

The vacancy so created was filled by the election of Dr. Livingston Farrand of Columbia University, New York, as presi-

dent. President Farrand assumed the duties of the office February 1, 1914.

During the interim between the resignation of President Baker and the arrival of President Farrand, Professor George Norlin was appointed Acting President of the University.

One of the chief administrative developments during the last biennial period has been the reorganization of the system of registration in the University and the concentration of this work in the hands of a new officer, the Registrar. Mr. Fred E. Hagen has been appointed to this office.

The financial and business operations of the University have also been systematized and placed under the direction of a Bursar. Mr. Frank H. Wolcott has been appointed to this office.

The additions to the physical plant of the University include certain progress on the Macky Auditorium and the installation of a temporary heating plant, thus making the building available, even in its unfinished condition, for necessary meetings.

Through the generous cooperation of friends of the University a wing has been added to the University Hospital and it is now in full operation.

The City and County of Boulder have united in building an Isolation Hospital on ground belonging to the University and adjacent to the University Hospital. The management of this Isolation Hospital is placed in the hands of the University under an agreement similar to that in force at the time the present hospital was established.

One wing of the Henry S. Denison Memorial Building has been completed. It is now equipped for medical research and was opened in September, 1914.

COLLEGES AND SCHOOLS OF THE UNIVERSITY.

The Colleges and Schools of the UNIVERSITY OF COLORADO are the following:

- I. COLLEGE OF LIBERAL ARTS:
Leading to the degree B.A.
- II. COLLEGE OF COMMERCE:
Leading to the degree B.A. and special certificate.
- III. COLLEGE OF EDUCATION:
Leading to the degree B.A. and special certificate.
- IV. SCHOOL OF SOCIAL AND HOME SERVICE:
Leading to certificate of work done.
- V. COLLEGE OF ENGINEERING:
Civil Engineering, leading to the degree B.S. (C.E.).
Railway Civil Engineering, leading to the degree B.S. (C. E.).
Electrical Engineering, leading to the degree B.S. (E.E.).
Railway Electrical Engineering, leading to the degree B.S. (E.E.).
Mechanical Engineering, leading to the degree B.S. (M.E.).
Railway Mechanical Engineering, leading to the degree B.S. (M.E.).
Chemical Engineering, leading to the degree B.S. (Ch.E.).
- VI. GRADUATE SCHOOL:
Leading to the degrees Ph.D. and M.A.; M.S., C.E., E.E., and M.E.; D.Oph., D.P.H., M.S. (P.H.), and M.S. (San. Eng.).
- VII. SCHOOL OF MEDICINE:
Leading to the degree M.D.
- VIII. SCHOOL OF LAW:
Leading to the degree LL.B.
- IX. SCHOOL OF PHARMACY:
Leading to the degrees Ph.C., B.Pharm., and B.S. (Pharm.).

- X. SUMMER SESSION.
- XI. UNIVERSITY EXTENSION DIVISION:
 - Correspondence-Study.
 - Study Classes.
 - Lectures and Addresses.
 - Social Centers.
 - Library Extension, and Bureau of Information.
 - Bulletins of Investigations.

ATTENDANCE.

The following is the attendance by departments for each year:

Year	Grad.	Arts	Eng.	Med.	Law	Phar.	Total, reg- ular, of Univ. Gr. exc. Dups	Summer School	Prep.	Normal	Grand total exc. Dups
1877-8	...	.....	.....	.....	.....	..	.....	.....	61	14	75
1878-9	...	12	.....	.....	.....	..	12	.....	56	22	90
1879-80	...	16	.....	.....	.....	..	16	.....	67	9	92
1880-1	...	13	.....	.....	.....	..	13	.....	61	7	81
1881-2	...	17	.....	.....	.....	..	17	.....	49	9	75
1882-3	...	11	.....	.....	.....	..	11	.....	54	17	82
1883-4	...	10	.....	1	.....	..	11	.....	76	13	100
1884-5	...	22	.....	19	.....	..	41	.....	58	...	99
1885-6	1	20	.....	13	.....	..	34	.....	55	...	89
1886-7	3	15	.....	5	.....	..	23	.....	78	...	101
1887-8	2	25	.....	10	.....	..	37	.....	71	20	128
1888-9	3	21	.....	15	.....	..	39	.....	73	17	129
1889-90	2	50	.....	23	.....	..	75	.....	74	4	153
1890-1	...	55	.....	15	.....	..	70	.....	105	...	175
1891-2	...	55	.....	11	.....	..	66	.....	103	...	169
1892-3	3	77	.....	26	23	..	129	.....	158	...	286
1893-4	5	85	.....	42	28	..	159	.....	146	...	305
1894-5	18	106	11	51	19	..	204	.....	192	...	396
1895-6	20	135	22	62	29	..	267	.....	242	...	509
1896-7	29	162	29	78	26	..	324	.....	276	...	600
1897-8	29	198	38	33	39	..	337	.....	273	...	610
1898-9	25	215	61	50	53	..	390	.....	310	...	700
1899-'00	22	252	64	61	46	..	433	.....	356	...	789
1900-1	17	256	80	60	62	..	466	.....	367	...	833
1901-2	22	263	103	63	73	..	510	.....	352	...	862
1902-3	19	269	123	63	60	..	531	.....	363	...	894
1903-4	23	312	142	52	62	..	581	.....	385	...	966
1904-5	33	381	173	53	61	..	685	60	415	...	1,143
1905-6	37	410	176	70	62	..	743	79	504	...	1,308
1906-7	38	473	215	58	69	..	840	98	527	...	1,450
1907-8	37	532	271	52	83	..	961	126	.....	...	1,044
1908-9	72	550	281	55	105	..	1,041	129	.....	...	1,128
1909-10	83	577	292	80	102	..	1,108	168	.....	...	1,221
1910-11	61	697	292	152	108	..	1,284	186	.....	...	1,411
1911-12	84	725	288	118	126	..	1,306	248	.....	...	1,474
1912-13	70	671	267	95	97	11	1,183	305	.....	...	1,419
1913-14	77	728	293	59	82	22	1,236	385	.....	...	1,559
	835	8,416	3,221	1,545	1,415	33	15,183	1,784	5,907	132	22,545

GRADUATES.

The following is a list of the degrees and certificates for each year:

Year	Hon.	Grad.	Arts	Eng.	Med.	Law	Phar.	Total	*Dip. Ed.	*Dip. Com.
1882....	1	.....	6	.....	.....	.....	.....	7	.....	.....
1883....	.....	.....	2	.....	.....	.....	.....	2	.....	.....
1884....	.....	.....	1	.....	.....	.....	.....	1	.....	.....
1885....	.....	1	.....	.....	2	.....	.....	3	.....	.....
1886....	.....	.....	7	.....	2	.....	.....	9	.....	.....
1887....	.....	2	2	.....	1	.....	.....	5	.....	.....
1888....	.....	.....	4	.....	1	.....	.....	5	.....	.....
1889....	2	.....	3	.....	1	.....	.....	6	.....	.....
1890....	.....	.....	3	.....	4	.....	.....	7	.....	.....
1891....	2	.....	9	.....	5	.....	.....	16	.....	.....
1892....	.....	.....	4	.....	1	.....	.....	5	.....	.....
1893....	2	2	10	.....	3	.....	.....	17	.....	.....
1894....	.....	1	10	.....	12	12	.....	35	.....	.....
1895....	1	4	12	.....	11	6	.....	34	.....	.....
1896....	.....	.....	11	.....	13	7	.....	31	.....	.....
1897....	.....	1	19	1	22	9	.....	52	.....	.....
1898....	1	5	21	3	.....	9	.....	39	.....	.....
1899....	1	5	20	12	.....	13	.....	51	.....	.....
1900....	1	7	28	5	7	.....	.....	48	.....	.....
1901....	.....	6	43	5	8	12	.....	74	.....	.....
1902....	1	9	33	8	13	14	.....	78	.....	.....
1903....	.....	4	28	13	8	11	.....	64	.....	.....
1904....	.....	12	47	16	14	20	.....	109	.....	.....
1905....	3	11	41	14	6	15	.....	90	.....	.....
1906....	2	12	64	14	16	12	.....	120	.....	.....
1907....	.....	9	53	19	12	16	.....	109	.....	.....
1908....	1	14	77	27	11	16	.....	146	8	.....
1909....	2	15	72	32	11	29	.....	161	22	.....
1910....	1	14	82	34	8	21	.....	160	28	.....
1911....	.....	15	96	37	39	27	.....	214	31	1
1912....	1	16	110	43	39	22	.....	231	49	.....
1913....	3	23	106	42	51	22	1	248	35	6
1914....	4	29	115	45	16	35	5	249	39	.....
	29	217	1,139	370	337	328	6	2,426	212	7

*These are given as evidence that certain specified courses have been included in the work for the B.A. and M.A. degrees.

GRADUATE SCHOOL.

The last biennium is marked by distinct progress in the Graduate School. Its rules have been thoroughly revised to strengthen its requirements and to facilitate its administration; its scope has been extended to include courses which lead to the degrees, Doctor of Ophthalmology, Master of Science in Public Health, Master of Science in Sanitary Engineering, and Doctor of Public Health; it has granted, as compared with thirty-one degrees for the biennium just preceding, fifty-two higher degrees as follows: Doctor of Philosophy, 3; Master of Arts, 33; Civil Engineer, 1; Electrical Engineer, 7; Master of Science, 2; Doctor of Ophthalmology, 6.

The Graduate School has up to the present rendered very valuable service with little financial support. This has been made possible by the interest and devotion of members of the Faculty already overburdened with undergraduate teaching. However, if the proper work of the Graduate School is not to be fatally handicapped in its further progress, means must be provided for its necessary equipment. There must be increased laboratory facilities for research; many books which are of fundamental importance must be added to the various departmental libraries; the periodical list must be supplemented by a large number of scientific and technical journals and publications of learned societies; above all is the need of providing more instructors for the undergraduate work so that the heads of departments and other professors may have time to devote to advanced teaching and research. These are the most pressing, immediate needs. There should also be established in the various departments fellowships to make it financially possible for students of proved ability to engage in work toward a higher degree in this University.

The rapid development of the Graduate School is of vital importance to the University and the State for these reasons:

1. The experience of universities in general has proved that a graduate school of a high order with a considerable group of selected students earnestly engaged in scientific research and in the investigation of the problems of society, is more effective than any other influence in creating throughout the University as a whole an atmosphere of serious-minded devotion to truth.

2. The University cannot maintain the standing which it deserves among the first institutions of the country unless the Graduate School is, in the matter of financial support, put on a par with the other schools of the University.

3. Citizens of Colorado should be provided with such facilities for advanced study and research in their own University as would make it unnecessary to go to other universities for this training.

4. Graduates from other institutions would come here in increasing numbers if in addition to the attractions of climate they could have the advantages of an excellent graduate school.

COLLEGE OF LIBERAL ARTS.

In the College of Liberal Arts there is to be noted a resumption of the rapid numerical increase that had temporarily halted at the time of the last report. This means that the College is again facing the urgent need of enlarging its teaching force and adding to the number of rooms available for class work. Fortunately it has been able to raise the standing of the junior teachers in almost every department; but it is to be hoped that progress in this respect is only a forerunner of further improvement. Each year of growth only serves to emphasize the importance of having a scholarly personality in even the minor teaching positions.

The question of adding to the scope of the curriculum must receive careful consideration during the coming biennium. There is a general feeling that the state universities should provide courses in Domestic Art and Domestic Science, wherein technical training shall be associated with sound general scholarship. At present the University of Colorado is doing practically nothing in this field. Similarly, it is felt that in a democratic community it is desirable to have students trained in Public Speaking, for which there is no adequate provision at present.

As a matter of special interest it may be pointed out that the claims of the young women for general hygienic guidance and adequate supervision in their exercise have been met by the appointment of a physical director devoting her whole time to their welfare.

With reference to the activities of the Faculty, it should be noted that many of its members, in addition to performing

their teaching and other duties, have found time to publish literary or scientific articles of genuine worth and interest.

A list of changes in the Faculty is appended, and this is followed by detailed reports of the various Colleges organized within the College of Liberal Arts.

Faculty.

The following promotions have been made in the last two years: Ralph D. Crawford, Ph.D., to be Professor of Mineralogy and Petrology, September, 1914; Max M. Ellis, Ph.D., Sc.D., to be Assistant Professor of Biology, September, 1914; C. Henry Smith, B.Ph., to be Assistant Professor of Bibliography, September, 1914; Carl C. Eckhardt, Ph.D., to be Assistant Professor of History, September, 1914; Miss Claribel Kendall, M.A., to be Instructor in Mathematics, September, 1913; Miss Ida M. Johnson, M.A., to be Instructor in Romance Languages, September, 1913; Miss Estelle M. Kyle, B.A., to be Instructor in Education, September, 1914; Miss Florence E. Galligan, M.A., to be Instructor in Education, September, 1914; the Secretaries of the College of Education, College of Commerce and the School of Social and Home Service, to be termed Directors, September, 1914.

The following appointments have been made: William A. Cook, Ph.D., to be Assistant Professor of Education, September, 1913; Charles E. Armstrong, B.A., B.P.E., to be Director of Physical Training and Athletics, September, 1913; Frederick W. Skirrow, Ph.D., to be Lecturer in Physics, September, 1913; Francis Wolle, B.A., to be Instructor in English Literature, September, 1913; Lorin T. Peters, B.Ph., to be Instructor in English, September, 1913; Landon M. Robinson, B.A., to be Instructor in English, September, 1913; Hector T. Madison, M.A., to be Instructor in Economics, September, 1913; Harry A. Aurand, B.A., to be Instructor in Education, September, 1913; Henry M. Sayre, to be Instructor in Accounting, February, 1914; Jay W. Woodrow, Ph.D., to be Instructor in Physics, September, 1914; Esbon Y. Titus, B.A., to be Instructor in Chemistry, September, 1914; Mrs. Anna H. Powless, M.A., to be Instructor in Education, September, 1914; Arnold J. Lien, Ph.D., to be Instructor in Economics, September, 1914; Erskine R. Myer, B.A., to be Instructor in English, September, 1914; Miss Dorothy M. Burton, B.A., to be Instructor in English Literature, September, 1914; Miss Edna

M. Reynolds, M.A., to be Instructor in Psychology, August, 1914; Craig M. Bouton, B.A., to be Instructor in Chemistry, September, 1914; Eugene M. Kayden, M.A., to be Instructor in Economics, September, 1914; James N. Ashmore, to be Director of Physical Training and Athletics, September, 1914; Miss Helen M. Bunting, to be Director of Physical Education for Women, September, 1914.

The following deaths have occurred during the biennial period: William E. Dittman, Instructor in Accounting, January 22, 1914; George N. Rohwer, Instructor in Chemistry, September 19, 1914.

The following members of the Faculty have severed their connection with the University: Assistant Professor Charles H. Williams, B.S. in Ed., B.A., June, 1913; Miss Elva Cooper, M.A., June, 1913; S. Griswold Morley, Ph.D., June, 1913; Miss Ethel R. Ford, B.A., June, 1913; J. Warren Stehman, M.A., June, 1913; Leonard P. Fox, M.A., June, 1913; Homer S. McMillan, B.A., June, 1913; Charles E. Armstrong, B.A., B.P.E., June, 1914; Frederick W. Skirrow, Ph.D., June, 1914; Arthur G. Vestal, M.A., June, 1914; Miss Edna Potter, June, 1914; Miss Victoria H. Hazlitt, B.A., June, 1914; B. Howard Jackson, M.E., M.A., June, 1914; Lorin T. Peters, B.Ph., June, 1914; Hector T. Madison, M.A., June, 1914; Harry A. Aurand, B.A., June, 1914.

The following members of the Faculty have been granted leave of absence: Assistant Professor Harry A. Curtis, Ph.D., for the year 1913-14; Professor J. Raymond Brackett, Ph.D., for the year 1914-15.

THE COLLEGE OF COMMERCE.

The College of Commerce was organized in 1906. Its purpose is to provide a liberal education and at the same time to give a course of training which shall equip students to enter modern industrial and commercial life. With this end in view the first two years of the course are devoted to general cultural subjects, including English, Modern Languages, History, Science, or Mathematics; while the last two years are devoted primarily to more specialized business courses.

In addition to the regular courses offered, addresses are given before the school from time to time by prominent business

men on practical topics connected with the various subjects of study.

The courses in the College of Commerce are open to all students of the University and many students in other departments are taking advantage of the opportunities offered. The great interest shown in economic subjects will soon necessitate a readjustment of the work in the department and an increase in the teaching staff.

The demand for college training in Journalism has been continually increasing and this year an advanced course in editorial writing is being offered by the instructor in charge. Provision should also be made in the immediate future for additional courses in Accounting. More extended courses are needed also in Business Organization and Administration for both men and women who are intending to enter business pursuits. An additional instructor especially trained to give such courses is already urgently needed.

COLLEGE OF EDUCATION.

The College of Education—a reorganization of the Department of Education of the College of Liberal Arts—was established at the beginning of the year 1908-1909. The purpose of the College of Education is to train students for the service of the State in Education. It utilizes—specializes for this purpose—a part of the energies of the Faculty and some of the equipment of the College of Liberal Arts.

Students who complete, as a part of the Liberal Arts course, twenty hours of Education, receive, by an enactment of the Legislature of 1909, a state-wide license to teach. Those who take the full course of study of the College of Education receive the regular B.A. degree, the license to teach and a Bachelor's Diploma in Education. This last is comparable to a professional degree.

That a College of Education is a valuable asset to the State is readily seen when it is known that more than half of the teachers of the State have had no training beyond the high school and that many of them have not had that much. At present (first semester, 1914-1915) there are enrolled in the classes in Education 294 persons, of whom 89 are working for

the degree B.A., the Bachelor's Diploma in Education, and the State license. The remaining 205, presumably, are working for the State license. The Diploma has been granted thus far to 212 persons, the license to these and 99 others. Practically all are in responsible teaching and supervisory positions.

The Boulder Training School, under the direction of the College of Education, was organized in the Fall of 1913 to give practice, according to State law, to prospective teachers. This School is administered as one of the Boulder schools by the Professor of Education of the University in cooperation with the Superintendent of City Schools. An Instructor in Education is the Principal. The assisting supervisory force consists at present of two graduates of the College of Education. The enrollment of the school (pupils from the kindergarten to the eighth grade) is 107. Sixty-two "cadet teachers" are doing practice teaching. Additional facilities for practice teaching are afforded by the Boulder High School, so that some opportunity to instruct is offered in all grades from the kindergarten to the last year of high school. These facilities could be increased with advantage.

The minimum requirement for the B.A. degree and the Bachelor's Diploma in Education is 120 hours—that is, four years of work. It must include the following:

English Language	10 hours
Classics and Mathematics, Mathematics and Science, or Science and Classics.....	15 hours
History or Economics.....	6 hours
Psychology (General and Educational).....	6 hours
Principles of Education.....	6 hours
Principles and Practice of Teaching.....	6 hours
Philosophy or Sociology or additional Education or Psychology	6 hours
Group Electives, major and minors (subjects the stu- dent expects to teach).....	50 hours

THE SCHOOL OF SOCIAL AND HOME SERVICE.

This School was organized in 1912 and a year later a Preparatory Course for Nurses was added to the original course of study.

The aims of the School are: (1) to provide a two-years' course of training, which may be taken as an integral part of a

college course by young women who are planning to engage in some branch of social service; (2) to provide preliminary scientific training for those who may wish later to enter a training school for nurses; (3) to provide within a college course an opportunity for the study of those sciences most closely related to household management.

Problems of housing, food supply, prevention of disease, care of children and the sick, are dependent for their solution upon the subjects offered in this course of study.

The State Board of Charities reports a great need for competent nurses and adds that the schools for preparing them are too remote to supply the needs of this commonwealth. One of the important purposes of the School is to contribute toward meeting this demand.

THE SUMMER SESSION.

The enrollment in the Summer Session has increased continuously since its organization, as is shown by the following statistics of attendance:

1904.....	60
1905.....	79
1906.....	98
1907.....	126
1908.....	129
1909.....	168
1910.....	186
1911.....	248
1912.....	305
1913.....	385
1914.....	566

The marked increase during recent summers, the range of interests represented by the students and their extensive geographical distribution clearly indicate that the Summer Session is becoming widely and favorably known. It is a matter of general comment among students and non-resident members of the summer faculty that our rigid adherence to standards universally recognized, a cool summer climate affording most favorable conditions for sustained study, and rugged mountain scenery inviting to wholesome and invigorating recreation are destined

to attract, within a very few years, large numbers of students and make the University of Colorado an important center of vacation study.

The development of the Summer Session has a vital relation to the enlargement of the University's influence. Each year an increasing number of students, whose first acquaintance with the University was in connection with its advantages for summer study, matriculate as candidates for a degree, electing courses in the regular session, or pursuing work in the Extension Division. The membership of the Summer Session includes many men and women holding positions of responsibility as teachers or executives. The University, while performing a valuable service to education in responding acceptably to their needs, enlists in turn their valuable support and cooperation in extending a knowledge of the opportunities offered by its various schools and colleges.

The conclusion is, that the Summer Session should be viewed as an integral part of the University, entitled as such to sufficient support to meet growing demands. Each year the resources of the University's valuable plant have been utilized, standard courses have been offered by a strong faculty, students have been encouraged to regard themselves as members of a University community. But to ensure continued growth, it is imperative that the number and range of summer courses approximate the normal work of the regular curricula. For the accomplishment of this desirable end, the expense of equipment and plant would not be appreciably advanced, while the additional outlay in salaries would be largely reimbursed by the increased revenues from tuition fees.

There is one limitation of the University's material equipment, which, presenting a trying situation at all times, will soon seriously affect the work of the Summer Session. It speaks well for the earnestness and enterprise of the summer students that, while the enrollment at the last session was about 46 per cent. of that of the regular year, the inadequacy of the library building was more keenly felt than ever before.

COLLEGE OF ENGINEERING.

The aim of the College of Engineering is to give the student a liberal education and at the same time give him the necessary

scientific training for entering one of the engineering professions. While equipment and laboratories are important, a competent and efficient faculty is even more important. The teaching staff of the College of Engineering has been materially strengthened during the last biennium by the appointment of several additional instructors and the appointment of two additional assistant professors.

Faculty.

The following appointments have been made during the past two years: Joseph B. Morrill, E.E. (Colorado), Assistant Professor of Engineering Mathematics, September, 1913; Howard E. Phelps, B.S. (C.E.) (Colorado), Assistant Professor of Civil Engineering, February, 1914; Frank G. Allen, B.S. (M.E.) (Illinois), Instructor in Engineering Drawing, September, 1913; Charles S. Sperry, B.A., B.S. (C.E.) (Colorado), Instructor in Engineering Mathematics, September, 1913; William J. Christian, B.S. (M.E.) (Colorado), Instructor in Engineering Mathematics, September, 1913, Instructor in Mechanical Engineering, September, 1914; Tom A. Blair, B.S. (C.E.) (Colorado), Instructor in Civil Engineering, September, 1913; Charles M. McCormick, E.E. (Iowa State College), Instructor in Electrical Engineering, September, 1913; Clarence L. Eckel, B.S. (C.E.) (Colorado), Instructor in Civil Engineering, September, 1914; James J. Doland, B.S. (C.E.) (Colorado), Instructor in Engineering Mathematics, September, 1914; Walter F. Mallory, B.S. (M.E.) (Colorado), Instructor in Mechanical Engineering, September, 1914; James L. Merrill, B.S. (C.E.) (Colorado), Instructor in Engineering Drawing, September, 1914; Eduard F. Grundhoeffler, B.S. (M.E.) (Pennsylvania State College), Instructor in Mechanical Engineering, September, 1914; Matt W. Moyle, B.S. (M.E.) (Colorado), Heat Inspector and Assistant in Engineering Mathematics, September, 1914.

Whitney C. Huntington, C.E. (Colorado) was promoted from Instructor to Assistant Professor of Civil Engineering, February, 1914, and Frank S. Bauer, B.S. (M.E.) (Illinois) was promoted from Instructor to Assistant Professor of Mechanical Engineering, September, 1914.

Saul Epsteen, Ph.D. (Zurich), Professor of Engineering Mathematics, resigned September, 1913, to accept a position as

Insurance Commissioner of Colorado; Clement C. Williams, C.E. (Colorado), Assistant Professor of Civil Engineering resigned February, 1914, to accept a position as Professor of Railway Engineering in the University of Kansas; and Frank L. Brown, B.S. (C.E.) (Colorado), Instructor in Civil Engineering, resigned June, 1913, to accept a position as Assistant Professor of Mechanics in the University of Kansas.

New Buildings.

The present engineering buildings are entirely inadequate, making it necessary to give instruction in overcrowded laboratories, drawing rooms and class rooms. It has been necessary to use most of the class rooms in the present engineering building for laboratories and drawing rooms requiring that most recitations in engineering subjects be held in other buildings on the campus. Much of the present equipment in the electrical, hydraulic and oil testing laboratories cannot be used effectively on account of lack of room. The freshman drawing room is overcrowded so that any increase in the freshman class will require an additional drawing room.

The increased attendance of engineering students for the past two years has taxed the facilities of the College of Engineering to provide instruction for the large freshman and sophomore classes. To provide reasonable facilities for the instruction of the large junior and senior classes next year and the year after will require additional buildings at once. A new engineering building with at least twice the capacity of the present engineering building will be necessary to provide drawing rooms, class rooms, an assembly room and minor laboratories; while the main laboratories should be provided for by an extension of the present shops. To provide temporary relief for the laboratories and drawing rooms will require the addition of approximately twice the floor space for the present shops building. This added room will furnish only temporary relief for the next year, or until the main engineering building can be finished.

The importance and value of a technical education to a young man have been emphasized by the continually growing preference given to technical graduates by the large manufacturing concerns, bridge shops and railroads. Formerly it was possible for a man with partial training to obtain a position in

engineering and to work up, but at present most railroads and other industrial concerns appoint only technical graduates to engineering positions where the men are in line for promotion, and the man who is not a technical graduate has no opportunity to enter engineering.

Research Work.

The following research work has been conducted during the past two years:

Department of Civil Engineering.

The Department has carried on investigations along the following lines, mostly in connection with thesis work:

1. Tests of Actual Stresses in a Highway Bridge.
2. Tests of Actual Stresses in Railroad Track.
3. Tests of Road Building Materials.
4. Tests of Steel, Cement and Other Building Materials.
5. Tests of Full Size Reinforced Concrete Beams.
6. Tests of Centrifugal Pumps.
7. Tests of Railway Ties.
8. Tests of Culvert Pipe.

Road Materials Testing Laboratory.—A Road Materials Testing Laboratory, equipped with apparatus necessary to make commercial and special tests of road materials, is operated in connection with the Applied Mechanics Laboratory of the Civil Engineering Department. This laboratory is operated in cooperation with the State Highway Commission and tests have been made of many of the different road-building materials in the State. Practically nothing has been done in connection with materials for building roads in Colorado and the results obtained in this laboratory will prove of material benefit to the State.

Department of Electrical Engineering.

The following lines of work have been carried on under the direction of the Department during the past two years, mostly in connection with thesis work:

1. Tests of Mechanical Properties of Transmission Line Material for the Colorado Power Company.
2. Operation Tests on Electric Passenger Elevator, First National Bank Building, Denver.

3. Operating Tests and Investigations for the Denver and Interurban Single Phase Electric Railway.
4. Extended Investigation of First Cost and Operating Expense of Alternating Versus Direct Current Railway Systems.
5. Investigation of Relative Costs and Merits of Various Systems of Pumping for Irrigation.
6. Tests of Line Losses and Load Distribution for the Western Light and Power Company.
7. Tests of Illuminating Power of Different Types of Locomotive Headlights for the Colorado and Southern Railway.
8. Breakdown Tests on Line Insulators, and Adjustment of Protective Spark Gap Around Insulator Strings, at High Voltage and High Frequency for the Colorado Power Company.
9. Leakage and Puncture Tests on Different Grades of Insulating Materials for the General Electric Company, Schenectady, N. Y. For the Purpose of Determining the Effect of Altitude on Above Characteristics.

Electrical Standardizing Laboratory.—This laboratory has been established at the University for the purpose of serving the power companies and industrial organizations in Colorado and surrounding states in the calibration and repair of all types of electrical measuring instruments and other electrical and mechanical apparatus at a minimum cost. The laboratory is prepared to make tests in the field when such are desirable.

A considerable number of the latest types of precision instruments have been added to the equipment.

With the assistance of this laboratory the Department has been able to build several pieces of apparatus of great value for experimental purposes.

Departments of Mechanical and Chemical Engineering.

The Departments have carried on or completed the following lines of investigation during the past two years:

1. Analysis of Colorado Coals.
2. Tests of Domestic Heating.
3. Investigation of Oils.

Oil Testing Laboratory.—A fully equipped oil testing laboratory has been established to make the tests of oils required by the State Oil Inspector. The investigation of many oils are being carried on in addition.

Railway Engineering.

To meet the demand for men with special training in the different lines of railway engineering work new courses have been outlined and are now offered in Railway Civil Engineering, Railway Electrical Engineering, and Railway Mechanical Engineering. The demand for men in railway engineering to carry on the work of valuation of the Interstate Commerce Commission, and to assist in railway construction and maintenance makes the courses in railway engineering very attractive.

Hydraulic and Sanitary Engineering.

The Civil Engineering Department is cooperating with the School of Medicine in giving courses in Public Health, and is prepared to give graduate work in Sanitary Engineering. To meet the needs of the State for trained men an undergraduate course should be offered in Hydraulic and Sanitary Engineering. This course would be administered by the Civil Engineering Department and will require additional laboratory and instructional facilities.

Department of Architecture.

A Department of Architecture should be established. Most of the work required for the course in Architecture is now given in the other departments and it will be necessary only to add those special courses that are peculiar to the profession of architecture. The surplus funds resulting from the Colorado State Architects' License Law are to assist in maintaining a Department of Architecture in the University. As a result of this law there is at present approximately \$5,000 in the hands of the State Treasurer available for the support of a Department of Architecture, and approximately \$700 will be added each year. There is no School of Architecture of standing nearer than that of the University of Illinois, and a course in Architecture in the University of Colorado will meet a very pressing need.

The Department of Architecture will require room for drawing rooms, recitation rooms, a library and a museum, which rooms are not available, and can only be provided by the completion of a main engineering building.

SCHOOL OF MEDICINE.

The problem of medical education at the University is complex but the opportunity presented is so great and the demand so pressing that the responsibility for meeting the situation cannot be avoided.

While marked progress has been made in the past, much is needed to put the School on a fairly even footing with its standard contemporaries.

New buildings in Boulder and Denver are imperative. The present building in Boulder, designed over twenty years ago for a small hospital, has naturally become entirely inadequate for teaching purposes. In Denver the situation is even worse. The present building, rented not owned by the University, is a former dwelling and in no way adapted for the purposes of the School.

In addition to buildings, more full-time salaried instructors are demanded. The standard laid down as minimum by the Council on Medical Education, the accepted authority in this field, calls for at least six men at the head of as many teaching departments devoting their entire time to teaching and research. Our School still falls short of even this minimum. The problem of satisfactory hospital and clinical facilities is also not yet solved but the relations between the City and County Hospital of Denver and the School of Medicine are cordial and negotiations are in progress pointing toward a close cooperation between the two institutions.

Of particular significance and value is the Denison Research Laboratory mentioned elsewhere and now in operation. This building is the home of the Department of Preventive and Experimental Medicine and bids fair to play an important part in the development of the public health work of the State. The growing demand for trained public health officials and the increasing tendency toward public health legislation, based upon modern scientific knowledge, constantly emphasize the need which this Memorial is designed to fill.

The changes in the teaching staff of the School of Medicine during the biennial period have been as follows: Doctors Sherman G. Bonney, Thomas H. Hawkins, William C. Mitchell, Edmund J. A. Rogers, and William J. Rothwell have retired as professors emeritus.

New appointments have been made as follows: Instructor in Anaesthesia, Dr. Robert L. Charles; Instructor in Medicine, Dr. Rudolph W. Arndt; Instructor in Neurology, Dr. Cyrus L. Pershing; Instructor in Ophthalmology, Dr. William H. Crisp; Instructor in Oto-laryngology, Dr. Claude E. Cooper; Instructor in Oto-laryngology, Dr. Edward W. Collins; Instructor in Pathology, Dr. Thomas F. Walker; Instructor in Surgery (Orthopedics), Dr. Henry W. Wilcox; Instructor in Surgery (Orthopedics), Dr. Samuel Fosdick Jones.

SCHOOL OF LAW.

The increased entrance requirements of the School of Law went into effect at the beginning of the last biennium. They have naturally resulted in a certain decrease in the attendance. The class of 1914 being the last to graduate under the former entrance requirements, it is expected that the School will soon reach its former numbers.

Since the last Report, fifty-seven graduates have been granted the degree of LL.B. There are now sixty-eight students taking regular law courses, while a considerable number from the College of Commerce are taking elementary law as a preparation for business careers.

In the last year the School has suffered greatly by death. The loss of Professor Pease, who died suddenly in August, 1914, is especially severe. Professor Pease had been continuously a member of the Faculty since 1901 and was one of the most valued members of the University. The School has also suffered by the deaths of Regent William H. Bryant, Lecturer in Mining Law, and Mr. Edwin Van Cise, Professor of Law.

The vacancies so caused have been filled as follows: Mr. Erwin L. Regennitter, a graduate of the School of 1895, takes the place of Professor Van Cise. Mr. James H. Brewster, formerly of the Faculty of Law of the University of Michigan, has been appointed Acting Professor of Law for the year 1914-15, and takes the work of Professor Pease in Real Property and Equity. Mr. Frank L. Moorhead, a graduate of the School of 1909, takes Professor Pease's work in Elementary Law and Contracts. With these exceptions, the Faculty remains the same as at the time of the last Report.

SCHOOL OF PHARMACY.

The Board of Regents in April, 1911, authorized the establishment of a School of Pharmacy to be a division of the School of Medicine. In June, 1913, the School of Pharmacy was organized as a separate department of the University.

The School was opened in September, 1911, and from the beginning has maintained a standard of requirements for entrance and graduation equal to the best schools of pharmacy in the country. Notwithstanding these high requirements, the growth of the School has been steady, increasing from two students the first year to twenty-six at this the beginning of the fourth year. This steady increase is the more satisfactory in view of the fact that more than seventy-five per cent. of the schools and colleges of pharmacy in the United States admit students on two years of preparatory school training or less.

Another compensating feature in the higher requirements is the fact that we receive a better class of students and are able to do better and more advanced work.

The School of Pharmacy offers three courses of study designed to prepare the student for the various fields of pharmaceutical industry. The two and three-year courses, while designed more especially to prepare students to fill responsible positions in the wholesale and retail lines, yet equip the more competent to serve as manufacturing chemists and analysts.

Graduates of the four-year course are prepared to take the civil service examinations for appointment as food and drug chemists and inspectors in the government service. Further, the enactment of food and drug laws by the Federal Government and the several states is creating an ever-increasing demand for competent and well-trained pharmacists and chemists in the field of drug and chemical manufacturing as well as in the State and Government service.

Although young, the School of Pharmacy has already outgrown its present building and further material growth will be greatly hampered until more suitable quarters are provided.

THE UNIVERSITY EXTENSION DIVISION.

The University Extension Division, the youngest of the constituent schools of the University, was formally organized in

June, 1912. Only a fortunate few have the privilege of being in residence at the University. It is no longer conceivable that the University has exhausted its duty and opportunity by putting its educational equipment at the service of this comparatively small number of young people, important as this function is. Its expert resources are too valuable an asset to the State to be thus limited. They should be at the disposal of individuals who cannot come within the college walls, and of communities which are seeking information and guidance in the solution of the complex problems of modern life. It was the appreciation of this fact on the part of the University, and its desire to be of the widest possible service in the State, that led to the organization of the University Extension Division, and it is with this broad purpose and spirit that the department is being administered.

The growth of the Extension Division has been gratifying. During the first year the formal enrollment of students was 275 in correspondence courses and study classes, while the informal services rendered reached a very large constituency. During the past year, the second year of the Division's organization, the formal enrollment doubled, reaching 550, while the number of individual correspondence students trebled. Meanwhile, the more general work of the Extension Division has also assumed new and wider aspects in the direction of social and community service. One illustration of this was the leadership of the Extension Division in the calling, during the past year, of the first Colorado Municipal Conference, which resulted in the formation of a State Municipal League, for the purpose of studying and improving living conditions in Colorado cities.

During the past year, by authority of the Board of Regents, an effort has been made to study somewhat the demands for vocational education in Colorado and to make a beginning in satisfying these needs. Lecture courses have been given in Business Organization and in Salesmanship, and correspondence work offered in elementary engineering mathematics. The aim of this sort of work is to provide further educational opportunities for young people who have left school and gone into business and whose efficiency both as workers and as citizens will be greatly increased by such training as is here offered. Because of its close touch with all parts of the State the University is better qualified to conduct such courses than are private

correspondence schools located in distant parts of the country, and can provide the work at greatly reduced cost to those who wish to benefit by it.

Each summer for the past two years the Extension Division has conducted at the University a Sociological Conference, of a week's duration, which is coming to be an influential factor in the State. At the Conference held in 1913 there were 200 different people in attendance at one or more sessions, representing seventeen States. The wide representation from various parts of the United States is due largely to the fact that the Conference is held in the midst of the Summer Session of the University which is attracting people from distant localities. At the Sociological Conference of 1914 there were 300 people in attendance. The State Board of Charities and Corrections held its semi-annual meeting in connection with this Conference and the public health officers of the State also adopted the program of one day as the program of their own conference. Eminent social thinkers and workers, both from this and other States, participated in these Conferences, and this mid-year gathering at the University has become an occasion for the serious discussing of important questions pertaining to the welfare of the State.

Of a somewhat similar character are the Community Welfare Conferences which are being undertaken this year in three or four cities in Colorado. The plan is to study a given community with a view to determining what phases of service the University can most helpfully render, and then to organize a three or four days' conference along these lines. Experts from the University will be on the program and the local welfare agencies of the community will be enlisted. This opens a promising field of University service, which is being undertaken in other states with marked success.

Hitherto the Extension work of the University has not been organized into formal departments, but has been conducted along several related lines of activity, as follows:

Correspondence-Study.—Offering University instruction by mail to the individual student.

Study Classes.—Consisting of groups of students, often public school teachers, who carry on connected courses of study under the direction of accredited instructors.

Lectures and Addresses.—Providing for instruction by lectures, either single addresses or courses, by members of the faculty.

Social Welfare.—Arranging Sociological Conferences for the discussion of social problems; establishing Social Centers where community life may gain effective expression; assisting in club programs; advising concerning municipal life and public health; and furthering social betterment in other ways.

Information and Library Extension.—Furnishing information upon request, and loaning books and package libraries to high schools for purposes of debate and discussion on questions of current interest.

Bulletins of Investigations.—Publishing in pamphlet form for public use the results of important investigations conducted by the University faculty.

The activities of the Extension Division have now reached a point where further development requires the organization of the work into districts and departments in the interest of increased efficiency. A beginning in this direction has already been made during the current year by the appointment of an Extension Superintendent for Western Colorado, with headquarters at Grand Junction, a step which should greatly increase the University's opportunities for service in this distant and isolated section of the State. Further district representatives should be appointed in strategic localities from time to time as the Extension work develops and resources make possible. These districts will need to be large at first, but should be diminished in size as the number of Extension workers increases. While some of these districts can wait, there is immediate and urgent need of an Extension Superintendent for Southeastern Colorado with headquarters at Pueblo. Here is a great industrial community that offers exceptional opportunities for just the kind of service that the University is qualified to render through its Extension Division.

Further assistance is needed in connection with University Extension instruction. Hitherto, the Division has had to rely almost entirely upon assistance from the regular departments of the University, whose time and energy is already taxed by their resident duties. An Extension Instructor for business courses is imperatively needed. Special instructors for other lines of

teaching are needed, also, unless it should be deemed best to accomplish the same end by an increase in the teaching force of some of the regular departments of the University upon which the demand for Extension teaching is greatest.

The entire State is open for Extension work, which is everywhere being welcomed and approved as an advanced step in educational progress. High-school graduates who are delayed in attending colleges; individual teachers in isolated districts, and city teachers in groups; young people who have been forced to drop out of college, and older people who never had a chance to go—these and others, detained from attending college by the necessity of making a living, are gladly availing themselves of the opportunities offered by the Extension Division of the University.

THE LIBRARY.

The report for the library covering the period from October 1, 1912, to September 30, 1914, is as follows:

Statistics and Growth.

Net total of volumes October 1, 1914.....		77,174
Volumes accessioned during biennium—		
Purchase	5,224	
Gift	7,720	
Exchange	1,074	
		14,018
Volumes bound		2,796
Volumes rebound		601
Volumes repaired		735
Volumes withdrawn: Sold, 160; condemned, 213..		373
Volumes reported lost, later returned.....		42
Circulation—		
Faculty	5,784	
Students	25,039	
Departments	7,230	
Extension	1,510	
Engineering library (one year)	1,333	
Education library (eight months).....	840	
Inter-library loans	38	41,774
Inter-library loans from other libraries		362

Growth.—Growth of the library during this biennial period has been accomplished against a handicap of nearly eighteen months when departments have been decidedly limited in funds for book purchases.

Circulation.—Circulation figures have doubled. No attempt has been made to record the use of "reserve books" in the main library, or borrowed over night, but 140,000 would be a conservative estimate.

Purchases.—Principal purchases include North American Review, 85 v. (to complete); Nile's Weekly Register (complete); British Association for the Advancement of Science, 75 v.; Living Age, 236 v.; American Journal of Science, 70 v. (to complete); Harper's Weekly (complete); Blackwood's Magazine, 138 v. (to complete); American Catholic Quarterly Review, 31 v.; Bibliotheca Sacra, 61 v.; Independent, 20 v. (to complete); La Grande Encyclopédie, 31 v.; Allgemeine Deutsche Biographie, 56 v.; Great American Debates, 14 v.; Debater's Handbook Series, 19 v.; New Shakespeare Society Transactions (complete); United States catalogue (books in print, 1912); New International Encyclopaedia; late editions of New International, Standard and Century Dictionaries; National Cyclopaedia of American Biography; Encyclopaedia of Religion and Ethics; Cyclopaedia of Law and Procedure, 40 v.; Ohio Supreme, 42 v.; New York Supreme, 165 v.; Kansas Supreme, 29 v.; Iowa Supreme, 50 v.; Encyclopaedia of Evidence, 15 v.; American and English Annotated Cases, 28 v.; Words and Phrases, 8 v.; Vermont Reports, 17 v.; Federal Cases, 30 v.

Gifts.—Notable gifts include a memorial to Richard H. Whiteley, 1882, of 500 v., from Dean Fred B. R. Hellems; 300 v. of scientific journals and proceedings from the Colorado Scientific Society; 58 v. on Ophthalmology from Dr. Edward Jackson; the Jewish Encyclopaedia from the University of Colorado Menorah Society; 232 v. from President James H. Baker; 213 books and pamphlets from Mrs. Charles Denison, a memorial to her son; 70 v. from the Medical Society of the City and County of Denver; 45 v. of magazines from the Denver Public Library; 45 v. from the Inter-Collegiate Menorah Association; 108 v. of insurance reports from Commissioner Saul Epstein. The donation book records gifts of 3,977 books, 14,675 pamphlets, and 316 maps, donated by 152 individuals, 81 societies, 54 institutions,

80 colleges, 86 government and state officers, and 34 companies. Cooperation by members of the faculties is exhibited in gifts of nearly one thousand books.

Cataloguing.—The cataloguing has kept up with the accessioning. 41,000 cards have been added to the catalogues in the main library; 20,000 pamphlets have been sorted, the worthy ones bound, and analytical catalogue cards have been written.

Other Activities.

Library Extension.—Library Extension has been practiced along usual lines with an increasing number of regular borrowers. The new parcels post regulation has simplified transportation. The State Preparatory School Library and the Boulder Public Library have been given aid in reclassification and instruction in making new card catalogues. The Librarian has taken the initial steps to secure material for a municipal legislative reference bureau for local and State service.

Department Libraries.—The departmental libraries have developed rapidly. The Law Library now numbers over 6,000 volumes, the latest acquisition being a collection of State Session laws, Senate and House Journals. The Engineering Library has been moved to larger quarters. The Librarian in charge has perfected a card catalogue for all the books in the collection, and is now engaged in analyzing the Engineering journals and proceedings for the card catalogue. An assistant has been provided for the Geology Library and increased usefulness will result. Additional branch libraries have been established in the Denison Memorial Building and in the Pharmacy Building.

Publications.—“List of Serials in the University of Colorado Library”, compiled by C. Henry Smith and Faith E. Foster. (University Extension Division, General Series No. 6, Library Series No. 1).

“Writings and Addresses by Officers of the University of Colorado”, compiled by C. Henry Smith (General Series No. 69, Library Series No. 2).

Convention.—The Colorado Library Association met May 19-20, 1913, as guests of the University.

Staff.

Staff appointments include: Miss Florence Keep, 1914, appointed Engineering Assistant Librarian, September 1, 1913;

Miss Elizabeth Selleck, 1914, appointed Assistant Librarian, August 1, 1914, to fill vacancy caused by the resignation of Miss Elizabeth M. Phillips; Miss Martha J. Schoth, appointed Stenographer, August 1, 1914; Miss M. Jean MacDonald, 1918, appointed Geology Assistant Librarian, September 1, 1914.

THE MUSEUM.

Collections.

A total of about 40,000 specimens have been received during the past biennial period. A considerable part of this material has been collected by the Museum staff and other members of the Faculty. Material has been received as gifts and in exchange from 115 persons aside from the Faculty.

Mollusca.—16,557 specimens have been received and catalogued, including several hundred foreign species, besides several thousand which have not yet been catalogued. This brings the mollusk collection up to about 65,000 specimens.

Other Invertebrates.—A large display collection of Colorado butterflies has been installed, supplemented by as large a reserve collection of duplicates and species not displayed. Many insects of other orders have been added to the collection. A good start has been made upon the Crustacea, especially the Colorado species. A well prepared series of Salpa has been added to the display type collection of invertebrates.

Cold-blooded Vertebrates.—The collections of amphibians, reptiles and fishes, especially of Colorado, have now assumed great importance, and have made possible two full reports upon these faunas, one on the Amphibia and Reptilia of Colorado, the other on the Fishes of Colorado. There has been a large demand for these reports, particularly the latter, the supply of which is already nearly exhausted.

Warm-blooded Vertebrates.—Chief among the additions to the bird and mammal collections are a good series of mounted Guatemala birds and a large number of mammals from the eastern foothills and plains of Colorado.

Paleontology.—About 15,000 fossils have been added to the cabinets, chiefly invertebrates. The collection has been enriched by foreign species, besides many American species. All the

geological ages from Cambrian to recent are now represented. The fossils in the Museum aggregate 100,000 specimens.

Archaeology and Ethnology.—The most notable accession during the biennial period is the archaeological material from southwestern Colorado and northern New Mexico, obtained by excavation in the ancient ruins. It includes over 140 pieces of pottery, many of them unique, together with stone implements, matting, sandals and other articles. The collection is the more remarkable in view of the small amount of money expended in this work. The ruins of that region are being rapidly looted by men without scientific training or public spirit, and the contents scattered. It is exceedingly desirable that the scientific examination of this ancient culture be pushed as rapidly as possible, with adequate appropriations and equipment, in order that as much data as possible may be gathered while it is obtainable. Other notable accessions are the Dr. J. H. Todd stone implements from Ohio and Missouri (1,500 specimens), and the Dean A. Worcester Philippine collection.

Other Activities.

That the Museum is meeting a public need is shown by the increasing attendance, as well as by the great demand for information upon natural history and kindred subjects. Hundreds of inquiries are received each year, many coming from visitors in person, large numbers by mail. The accumulating material and data, and the growing card catalogue and index, now consisting of over 75,000 entries, are making this branch of work more and more useful to the public. Specimens are received for identification from many parts of Colorado and other States and from foreign countries.

Museum Needs.

The most imperative need of the Museum at present is additional space. Lack of space prevents the proper and orderly arrangement of display material in such way as to exhibit its real significance, and compels the crowding of material in such manner as to confuse the student. Much of the finest material on hand which should be on display for the benefit of all students and the general public, must be kept in drawer cabinets where it is available only to special students. With

100,000 fossils in the cabinets, less than 1,000 are on exhibition. Out of 65,000 mollusks in the cabinets, only 500 can be displayed, and those in many cases not the finest specimens, as a few large specimens would displace many smaller species. The same is true in other groups. In addition to the crowded condition of the Museum, the office and work-shop of the Curator and his assistants, paid and volunteer, is a room less than fourteen feet square. To make even a fairly representative display of material which should be available to the public would require three or four times the present floor space, making little allowance for future growth. Adequate work-shop, office room, photographic dark room and other space should be provided in order that the Museum may rise to its greatest usefulness. Adequate help should be provided, to carry on the work as it should be done. At present the Curator is dependent upon temporary help employed from time to time, mostly untrained students, and volunteer assistance. As soon as possible a trained preparator and general assistant should be employed permanently.

RELATION TO THE HIGH SCHOOLS.

All of the means by which the University attempts to keep itself helpfully related to the high schools of the State have been used during the past two years. The chief of these means, as was pointed out in detail in the last Biennial Report, are the High-School and College Conference; the visiting, inspecting and accrediting of high schools; cooperation with school officers in the selection and promotion of teachers; purely educational visits of various members of the faculty to schools and teachers' institutes; and the encouragement of visits to the University by high-school teachers and officers. The High-School and College Conference met in the Spring of 1913 and will meet again November 27 and 28, 1914. Full reports of these two meetings will be published shortly.

The usual inspecting and accrediting of high schools has been supplemented this past year by a careful survey of high-school conditions throughout the State. This survey has amounted to a careful "inventory"; the findings, which will be published this autumn, show clearly where Colorado stands

educationally in respect to high schools. That this has been a large undertaking, considering the fact that there has been no increase of force for this purpose, will be seen when it is pointed out that there are 247 high schools offering at least one year of work. There are 70 four-year high schools that are accredited and 60 that are not.

The placing and promotion of teachers has been still further developed and systematized and is yielding each year larger professional and educational returns on the investment. The visits of members of the faculty to the high schools and of high-school people to the University continue to yield satisfactory results. A number of projects for still more effective work and organization and for still more cordial relations will be discussed at the coming Conference.

NEEDS OF THE UNIVERSITY.

Reference has been made in the preceding pages to the pressing needs of the University in its various departments. The last Biennial Report of the Regents summarized the situation and the two years which have elapsed only serve to emphasize the Institution's needs.

The two-fifths mill rate, granted to the University in 1903, has been unchanged while the attendance has increased nearly 150 per cent. The increase in State valuation has been slight, and as a consequence, the necessity for additional maintenance is paramount.

Additional income should be provided which would allow for the development of the various schools of the University, for the addition of much needed instructors and for the improvement of the salary schedule throughout the University. There is not a department in which the demand for increased facilities is not pressing. A similar desperate situation exists with regard to buildings. Little has been added to the material equipment of the University in the last ten years, whereas the increase in number of students has been rapid. As noted in the last Report, at least ten buildings are needed without delay. Of these perhaps the most important are a woman's building and a man's building to serve as centers for the social life of the students as well as to provide gymnasium, dormitory and

other facilities. Medical buildings, both in Boulder and Denver, additional wings for the Library, added room for Engineering and Chemistry, the completion of the Museum Building and additional quarters for the College of Liberal Arts are only a part of the imperative demand.

REPORTS SUBMITTED.

We submit herewith the Treasurer's Report, Bursar's Fee Report, Bursar's Report, Report on Permanent Fund, Report on University Lands, Inventory of Property.

Respectfully submitted,

ETHELBERT B. ADAMS,
JULIUS C. GUNTER,
WILLIAM J. KING,
ANNA L. WOLCOTT VAILE,
MINNIE L. HARDING,
JAMES B. RAGAN,

Board of Regents.

LIVINGSTON FARRAND,

President.

FRANK H. WOLCOTT,
Secretary.

APPENDIX

TREASURER'S REPORT.

From October 1, 1912, to September 30, 1914.

General Fund.

October 1, 1912. Balance on hand.....	\$ 19,159.91
October 1, 1912, to September 30, 1914. Received from	
State Treasurer, University Tax Fund.....	329,677.58
State Treasurer, Land Income	9,229.78
F. H. Wolcott, Bursar	127,415.94
	\$485,483.21
Warrants paid and returned to Bursar.....	\$453,514.87
Balance on hand September 30, 1914	31,968.34
	\$485,483.21

Philo Sherman Bennett Fund.

October 1, 1912. Cash on hand.....	\$ 427.44
Interest Received	43.33
	\$ 470.77
Checks paid during period	\$ 20.00
September 30, 1914, balance	450.77
	\$ 470.77

William Porter Herrick Memorial Fund.

May 16, 1913. Received	\$ 5,000.00
Interest Received	294.00
	\$ 5,294.00
Checks paid during period	\$ 175.00
September 30, 1914, balance	5,119.00
	\$ 5,294.00

Edward G. Stoiber Scholarship Fund.

July 30, 1913. Received	\$ 2,085.75
Interest Received	129.96
	\$ 2,215.71

Checks paid during period	\$	75.00
September 30, 1914, balance		2,140.71
	\$	<u>2,215.71</u>

Macky Bequest.

Cash in hands of Treasurer, October 1, 1912.....	\$	1,919.57
Cash received from October 1, 1912, to Sept. 30, 1914..		6,611.78
	\$	<u>8,531.35</u>
Outstanding warrants, Oct. 1, 1912.....	\$29,400.00	
Warrants issued Oct. 1, 1912, to Sept. 30, 1914	9,259.61	
Unpaid balance		<u>30,128.26</u>
	\$38,659.61	\$38,659.61

Cash in hands of Treasurer, Sept. 30, 1914.....	\$	331.74
Cash in hands of Bursar, Sept. 30, 1914.....		30.00

Unpaid warrants—

*\$29,400.00
478.00
582.00
<u>1,129.60 (Balance of \$4,000.00 loan.)</u>
\$31,589.60

Fund of \$90,000.00 "Loan" for Macky Auditorium. Voted by the Eighteenth General Assembly—(50 Per Cent. Received).

Balance, October 1, 1912	\$6,197.09
Warrants paid from Oct. 1, 1912, to Sept. 30, 1914	\$6,140.84
Balance in hands of Treasurer Sept. 30, 1914..	56.25
	<u>\$6,197.09</u> <u>\$6,197.09</u>

CHARLES H. CHENEY,

Treasurer of the Board of Regents of the University of Colorado.

* The warrant for \$29,400, issued to Brown and Schrepferman, to apply on the general building contract has been recalled and notes given by the University, together with \$35,000 Colorado Funding Bonds, Series 1910, given as collateral security until the \$29,400 shall be paid.

BURSAR'S FEE REPORT.

From October 1, 1912, to September 30, 1914.

Receipts.

Cash on hand last report	\$ 293.05
Tuitions and matriculation from College of Liberal Arts and College of Engineering	39,513.00
Incidental fees	12,220.50
Tuition and fees from Law School	7,286.66
Tuition and fees from Medical School and Pharmacy..	11,495.00
Hospital Receipts	24,112.76
Summer School tuitions and fees	15,919.33
Chemistry fees	2,716.05
Engineering fees (1914)	266.00
Miscellaneous receipts	8,944.39
Room rents	2,019.11
Deposits	594.00
Fines	350.50
Sundry Laboratory fees	2,587.45
Express account from Registrar	100.00
High-School Visitor	100.00
	<hr/>
	\$128,517.80

Deposits with Treasurer, Etc.

Deposited with University Treasurer	\$127,415.94
Cash on hand	1,101.86
	<hr/>
	\$128,517.80

FRANK H. WOLCOTT,
Bursar.

BURSAR'S REPORT.

From October 1, 1912, to September 30, 1914.

Warrants issued in payment of expenses of the several departments of the University, during the biennial period, October 1, 1912, to September 30, 1914:

General Administration—Regents' service and mileage, President's and Secretary's salaries, salaries of the Registrar and his assistants, and all expenses of Registrar's office	\$ 35,288.93
College of Liberal Arts—Instruction and expense.....	165,300.33
Biology—Books, apparatus, supplies	1,806.77
Chemistry—Books, apparatus, supplies	9,493.00
Economics—Books	289.70
Education—Books, supplies (including clerical help in College of Education)	2,809.54
English—Books and apparatus	143.32
Geology—Books, apparatus, supplies	1,293.20
Germanic Languages—Books	257.00
Greek—Books	166.09
History—Books	300.55
Latin—Books	67.15
Literature—Books, apparatus	347.43
Mathematics—Books, apparatus	184.10
Museum—Books, apparatus, specimens, etc.....	2,212.81
Music—Books, supplies	27.45
Philosophy—Books, apparatus	101.62
Physics—Books, apparatus, supplies	1,230.39
Psychology—Books, apparatus, supplies	427.49
Romance Languages—Books	46.05
Zoology—Books, apparatus, supplies	138.97
University Extension—Books, supplies and expense..	1,395.11
College of Engineering—Instruction and expense	48,323.42
Civil Engineering—Books, apparatus, supplies	1,877.37
Electrical Engineering—Books, apparatus, supplies...	4,119.47
Mechanical Engineering—Books, apparatus, supplies..	2,194.44
Engineering Mathematics—Books, apparatus, supplies	108.42
General Engineering Drawing—Books, apparatus, sup- plies	339.58

Shops—Books, machinery, instruments, supplies	\$ 930.44
School of Medicine—Instruction, apparatus, supplies, hospital, dispensary, nurses' cottage and other ex- pense (largely reimbursed by medical tuitions and hospital receipts)	65,269.51
School of Law—Instruction, library and other expense (partly reimbursed by tuitions)	18,936.83
School of Pharmacy—Instruction, books, apparatus, supplies	5,160.32
Summer School—Instruction and expense (reimbursed by tuitions)	14,507.94
Library—Services, books, periodicals, binding and sup- plies	18,468.69
Physical Training—Salaries, apparatus and expense...	4,502.90
Buildings and Grounds—	
Salaries (janitors, heating and lighting service, and care of grounds).....	\$37,995.82
Repairs	6,075.56
Insurance	2,389.16
Water rent	1,689.80
Fuel	19,670.61
Horses	323.97
Tools	394.58
Unclassified	6,070.60
New Buildings	4,397.79
Improvements on buildings	4,140.92
Improvements on grounds	2,913.94
	\$ 86,062.75
Furniture and supplies	9,871.78
Printing	13,230.95
Stationery and Postage	4,890.28
Heat and Light Supplies	2,096.52
Telephone and Telegraph	1,993.67
High-School Visitation, Lectures by Faculty members, etc.	4,457.54
Advertising	3,651.93
Refunds (including fees to "Associated Students")....	12,679.18
General Unclassified (including interest)	15,606.36
Total for Biennial Period	\$562,607.29

Warrants issued not paid by October 1, 1912.....	\$ 2,975.29
Warrants issued not paid by September 30, 1914.....	1,786.02
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	\$ 1,189.27
Warrants issued from October 1, 1912, to September 30, 1914	\$562,607.29
Add	1,189.27
	<hr/>
Paid by University Treasurer	\$563,796.56
Total expenditure for Biennial Period	\$562,607.29
On new buildings (Museum, Denison and Hospital Wing, Auditorium)	4,397.79
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	\$558,209.50
Average annual expenditure, 1913, 1914 (not including new buildings)	\$279,104.75

FRANK H. WOLCOTT,

Bursar.

REPORT ON PERMANENT FUND.

From October 1, 1912, to September 30, 1914.

Balance October 1, 1912	\$31,480.63
Receipts from State Land Board	1,605.05
Accrued interest on warrants exchanged for bonds....	35,136.13
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Balance September 30, 1914	\$68,221.81
Amount invested in Colorado State Bonds.....	62,900.00
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Cash available September 30, 1914.....	\$ 5,321.81
Bonds covering the investment of \$62,900, are held as follows:	
With State Treasurer	\$27,900.00
With President of the University	35,000.00
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Total	\$62,900.00

M. A. LEDDY,
State Treasurer.

REPORT ON UNIVERSITY LANDS.

At the close of the biennial period, ending November 30, 1912, there remained in the University Fund 10,800.65 acres of land. During the biennial period of 1913-14, 120 acres have been sold.

There is now under lease as follows:

	Acres
For grazing purposes.....	2,105.96
For agricultural purposes	400.00
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Total acres under lease	2,505.96
The University lands are located as follows:	
Number of acres in the reservation	4,680.00
Number of acres outside reservation	6,000.65
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Total	10,680.65

VOLNEY T. HOGGATT,
Register.

INVENTORY OF UNIVERSITY PROPERTY.

October 1, 1914.

The following estimates, taken from inventories recently made, are presented as fair approximations:

Grounds.

Campus, sixty-three acres (estimated present value unimproved)	\$138,000.00
Twelve acres Stratton Field	12,000.00
Improvements, as fencing, grading, roads, walks, pipes, drains, lake, trees, bridges, athletic field	35,511.40
	<hr/>
	\$185,511.40

BUILDINGS.

(Approximate cost of each.)

Macky Auditorium, expended up to October 1, 1914, about (cost completed about \$300,000).....	\$247,500.00
Liberal Arts Building	40,000.00

Library	\$ 76,500.00
Gymnasium	6,000.00
President's House	9,000.00
Woman's Building	6,100.00
Men's Club Building	4,800.00
Woodbury Hall	25,000.00
Brick House (1037 Regent Street)	1,000.00
Hale Science Building	87,200.00
New Science Building	55,500.00
Chemistry Building	43,500.00
Pharmacy Building	2,000.00
Engineering Building	50,200.00
Engineering Shops Building	32,500.00
Heating, Lighting, and Power Plant, including building, boilers, machinery, tunnel, pipes, wiring in building and tunnel, and extension of pipes and wires beyond tunnel, but outside of buildings....	112,000.00
Medical Building	9,500.00
Anatomy Building (with refrigerator)	3,300.00
Hospital	16,700.00
Nurses' Home	3,500.00
Simon Guggenheim Law Building	55,000.00
House, Superintendent Buildings and Grounds, 1045 Regent Street	1,500.00
Denison Memorial Building	21,000.00
Observatory	200.00
Ice House	200.00
Stables and Sheds	1,700.00
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	\$911,400.00

Furniture—Implements.

Room furniture, as chairs, settees, desks, tables, movable cases, pictures, office furniture, hospital and dormitory equipment, shades, janitor's supplies, gymnasium apparatus (value)	\$ 58,356.87
Team, implements, tools, carpenter's supplies, plumber's tools and supplies (value)	4,561.85
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	\$ 62,918.72

Library.

Library (value)\$119,548.00

Apparatus, etc.

College of Liberal Arts:

Biology (including Zoology)	\$ 5,135.55
Chemistry	13,130.22
Economics	172.00
Education (including Training School)	228.60
Geology	4,535.00
German	80.75
Greek	391.00
History	35.00
Latin	10.00
Literature	680.78
Mathematics	836.00
Museum	2,990.00
Music	238.26
Physics	11,941.90
Psychology	2,180.51
Romance Languages	10.00

College of Engineering:

Civil Engineering	16,333.90
Electrical Engineering	19,598.68
Mechanical Engineering and Shops	19,268.35
General Engineering Drawing	882.47

School of Medicine:

Medical, Anatomy and Pharmacy	11,283.58
Henry S. Denison Research Laboratory	1,657.60
Medical School, Denver	6,886.75
Hospital	2,313.70

School of Law:

Equipment	954.20
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\$121,774.80

Collections.

Art	\$ 1,899.00
Geological and Mineralogical	5,714.00
Museum (including Biological collection)	25,966.40

\$ 33,579.40

Summary.

Grounds	\$ 185,511.40
Buildings	911,400.00
Furniture, Implements	62,918.72
Library	119,548.00
Apparatus, etc.	121,774.80
Collections	33,579.40
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	\$1,434,732.32

