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BUREAU OF EDUCATION

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REPORT OF A SURVEY OF THE UNIVERSITY OF ARIZONA

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LETTER OF THE COMMISSIONER OF EDUCATION TO CHANCELLOR CAMPBELL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., May 16, 1922.

MY DEAR MR. CAMPBELL: In compliance with a request from the Hon. Elsie Toles, acting for the board of regents of the University of Arizona, on February 4, 1922, I have had a careful study of the University of Arizona made.

I take great pleasure in submitting herewith the manuscript of the report. I trust the effort of the survey will prove of value to you and the board of regents in your administration of the university and that it will encourage a continued development of the higher education services for the citizens of the State. The report indicates that you have made excellent progress. I hope this may go on as your needs and opportunities require.

Permit me to thank you and through you the members of the board of regents, as well as all persons connected with the university, for the fine cooperation which those concerned have given in the work of the survey. This has made the task of the survey committee a very pleasant one indeed.

Cordially yours,

JOHN J. TIGERT,
Commissioner.

Mr. JOHN H. CAMPBELL,
Chancellor, University of Arizona, Tucson, Ariz.

INTRODUCTION.

On February 4, 1922, a request came from the State Superintendent of Public Instruction of Arizona, the Hon. Elsie Toles, representing the board of regents of the University of Arizona, to the Commissioner of Education asking that the Bureau of Education make a survey of the university. The invitation was accepted by the Commissioner of Education, who designated Dr. Parke R. Kolbe, president of the Municipal University of Akron, and Mr. L. E. Blauch, specialist in charge of land-grant college statistics, of the Bureau of Education, as a committee to conduct the survey with the advice of Dr. George F. Zook, specialist in higher education, of the Bureau of Education.

After a preliminary study of the situation from such data as were available, the committee proceeded to the University of Arizona to pursue its investigation. The committee was met by a committee representing the board of regents and was informed that a survey of the general educational and financial efficiency of the university was desired, with emphasis on the business and financial condition and administration of the institution. It was requested that special attention be given to the budget for the ensuing year.

Meanwhile a special session of the State legislature had been called to consider a peculiar financial condition. An act of the State legislature in 1921 provided a mill tax for the support of the university, but it later developed that the income therefrom did not synchronize with the expenditures of the university. To relieve this condition the State legislature was called into extra session. Straightway an economy program was put forward, and the State legislature sent a committee to the university to ascertain the financial needs of the institution. This committee met with the board of regents on February 25. The survey committee, at the request of the board of regents, prepared a statement and was present at the meeting to assist in the investigation.

The survey committee spent from February 20 to March 8 at the university. Data were obtained through personal investigation, questionnaires, and extended conferences with various officers of the university. At every turn the committee met the most cordial reception. It desires especially to acknowledge the courtesy and cooperation of Dr. F. C. Lockwood, acting president of the university; Dean G. M. Butler; Dean D. W. Working; Prof. A. O. Neal, regis-

trar; Mr. Thomas R. Blair, bursar; and Mr. Charles D. Anderson, executive secretary.

A preliminary report of its findings was made by the survey committee to the board of regents on March 8. The extensive data collected were then carefully studied, and the report was written. The method of study was to apply the technique which the Bureau of Education had developed in earlier surveys, with such modifications as the circumstances demanded and as seemed wise. The committee has tried to analyze the conditions and methods in use in the light of the best practice followed by standard institutions of higher learning. This report was read and criticized by Dr. William T. Bawden, assistant to the Commissioner of Education, and by Dr. George F. Zook. The final report is submitted herewith.

In 1917 the Bureau of Education conducted a survey of the University of Arizona under the direct charge of Dr. S. P. Capen, specialist in higher education. The report was duly submitted to the university officials, but unfortunately it was not published. The present committee has made free use of sections of the earlier report, for which acknowledgment is hereby made.

REPORT OF A SURVEY OF THE UNIVERSITY OF ARIZONA.

Chapter I.

THE UNIVERSITY OF ARIZONA, THE STATE, AND THE FEDERAL GOVERNMENT.

TOPOGRAPHY, INDUSTRIES, AND POPULATION OF ARIZONA.

Arizona is an immense State, fifth in size among the States of the Union. The conditions of soil, altitude, and climate are highly diversified. The few naturally or artificially watered valleys are extremely fertile. The southwestern portion is almost tropical, not only in temperature but also as regards the type of agriculture carried on there under irrigation. Vast stretches of desert; mountains, and high, barren plateaus make up the bulk of the State, however. Much of this land is well adapted for grazing, some of it for raising cereals and forage crops, and limited areas for other kinds of agriculture. Speaking broadly, irrigation is essential to agriculture, except for live-stock production and a limited amount of dry farming. In 1920, 8 per cent of the land in the State was in farms, as compared with only 1.7 per cent in 1910. For live-stock production the land privately owned and classified by the census as devoted to farming is supplemented by great tracts of the public range.

The State contains valuable mineral deposits, especially of copper, gold, and silver. How extensive and valuable these deposits are is not yet fully known.

Up to the present the manufacturing industries have been confined chiefly to smelting and refining, and to the few minor manufacturing operations required by small cities. Except as manufacturing develops to meet local needs, there appears to be no prospect of an increase in these industries. The State's geographical location and the scarcity of water power preclude it.

Agriculture and mining are then the two principal industries of the State, and apparently will long remain so.

Arizona is one of the foremost mining States in the Union. However, the existing period of depression has dealt most severely with both mining and farming. Hence figures of production available

through the computation of the 1920 census do not accurately represent conditions of to-day.

The population, as shown by the decennial census, has shown a steady increase, the greatest gain during the last decade being in the urban communities. (See Table 1.)

TABLE 1.—*Urban and rural population—1920, 1910, and 1900.*

Class of places.	1920		1910		1900		Per cent of total population.		
	Number of places.	Population.	Number of places.	Population.	Number of places.	Population.	1920	1910	1900
Total population	.....	334,162	.....	204,354	.....	122,931	100.0	100.0	100.0
Urban territory	15	117,527	9	63,260	4	19,495	35.2	31.0	15.9
Cities and towns of—									
25,000 inhabitants or more	1	29,053	.....	.....	.....	.....	8.7	.....	.....
10,000 to 25,000 inhabitants	1	20,292	2	24,327	.....	.....	6.1	11.9	.....
5,000 to 10,000 inhabitants	6	43,063	4	27,631	2	13,075	12.9	13.5	10.6
2,500 to 5,000 inhabitants	7	25,119	3	11,302	2	6,420	7.5	5.5	5.2
Rural territory	.....	216,635	.....	141,094	.....	103,436	64.8	69.0	84.1
Cities and towns of less than—									
2,500 inhabitants	15	15,122	13	16,406	10	8,949	4.5	8.0	7.2
Other rural territory	.....	201,513	.....	124,688	.....	94,587	60.3	61.0	76.9

The topography of a region and the industries which it can support determine in large measure the size and character of its population. Arizona has been a frontier Territory and State. The principal industries are mining and grazing, the one somewhat unstable and hazardous, the other requiring but few workers to control large operations. They have, until very recently, been the only occupations for which the State seemed to offer special opportunities. The population, naturally, has been small. Only three other States in the Union had fewer people in 1920. Within the past 15 years the number of inhabitants has increased very rapidly, owing to the development in limited areas of diversified and profitable intensive agriculture, and to the urgent and growing demand for copper. But while these movements of people have tended to bring other industries into being and to stabilize communities, nevertheless Arizona appears to have no immediate prospect of becoming a densely populous State. Below is given the number of inhabitants at each five-year period since 1895: Population, 76,640 in 1895; 88,243 in 1900; 140,276 in 1905; 204,354 in 1910; 247,299 in 1915; 334,162 in 1920.

The racial composition of the population is of interest. The 1920 census shows that about 76 per cent of the total population is native born, as against 86.8 per cent of the population of the United States.

Of particular importance in considering educational facilities and enrollments is the age distribution of the population. Below are

summaries showing the distribution among the age groups of the population of Arizona and the population of the United States:

TABLE 2.—*Age distribution of total population of Arizona in 1910, compared with the United States.*

Ages.	Arizona.		United States.	
	Number.	Per cent.	Number.	Per cent.
Total	334,162	100.0	105,710,620	100.0
Under 5	40,807	12.2	11,573,230	10.9
5 to 14	70,567	21.1	22,039,212	20.8
15 to 19	28,435	8.5	9,430,556	8.9
20 to 44	139,144	41.6	40,555,543	38.3
45 and over	54,184	16.2	21,983,380	20.7

Arizona has a large number of young children. The age group from 20 to 44 is the largest of all, both actually and relatively. The group over 45 is relatively small.

Something of the history and characteristics of the State may be read in the age distribution of the population. The industries of a State like Arizona attract adventurous men from all parts of the country. They are men in the most vigorous period of life. Many of them are without families. In fact, the uncertainties of mining and grazing tend to discourage family life; at any rate, they act as a deterrent in the formation of permanent settlements. That these conditions are largely passing, and that Arizona communities are becoming stable is suggested, however, by the relatively high percentage of young children. The large number of young children is probably in part due also to the relative preponderance of the foreign population, especially Mexicans.

It is, of course, apparent that the relatively large number of children under 15 years will have a considerable effect on school enrollments. It is a factor to be taken into account in determining what should be the outlay for secondary and higher education and in forecasting the prospects for growth of both secondary and higher institutions.

II. THE LEGAL RELATIONS AND GOVERNMENT OF THE UNIVERSITY.

1. STATE CONTROL.

The constitution of Arizona enjoins upon the legislature the enactment of such laws as shall provide for the establishment and maintenance of a general and uniform public-school system, including a "university (which shall include an agricultural college, a school of mines, and such other technical schools as may be essential, until such time as it may be deemed advisable to establish separate State institutions of such character)." In accordance with this injunction

the legislature has provided (Arizona Statutes, sec. 4479) that the university shall consist of five departments:

(1) The department of science, literature, and the arts.
(2) The department of theory and practice and elementary instruction.
(3) The department of agriculture.
(4) The normal department.
(5) The department of mineralogy and school of mines.

That this attempt at legislative classification of the functions of the university is unsatisfactory is evidenced by the present plan of organization which, growing up under the stress of the people's requirements, has apparently had some difficulty in adjusting itself to the prescribed schedule. This is particularly evidenced in the necessity of placing the schools of home economics, law, and education under the college of letters, arts, and sciences, a rather unusal procedure in university organization. Both law and custom would sanction the incorporation of the work in home economics in the college of agriculture, where the extension work in this same subject, supported by Federal funds, already has its place. There is probably no legal bar to teaching law in a college of letters, arts, and sciences (or science, literature, and arts, as it is defined in the State code), but the commoner educational practice of to-day reserves this "liberal arts" type of college for the nonprofessional and nonvocational curricula. For the same reason the school of education is usually coordinate with rather than subordinate to the college of letters, arts, and sciences. For the establishment of such a school, college, or "department" there would seem to be ample legal authority in items 2 and 4, providing respectively for "the department of theory and practice and elementary instruction," and "the normal department." These matters are, however, purely formal rather than basic.

The laws passed regarding the university by the State legislature, under the authorization of the State constitution, are on the whole admirable. It is true that they have been frequently amended, but in most cases these amendments have benefited the university. The recent legislation providing for appointment of the board of regents by twos, in alternating years, for eight-year periods, is in accordance with the best modern educational practice. The passing of a law fixing a definite mill tax levy assures the permanent support of the university and places the responsibility for the proper budgeting of funds where it belongs, namely, with the board of regents. The commitee believes that the university is legally in excellent position, and that the people of Arizona are to be congratulated upon organizing their university control in so efficient and modern a manner. Attention must, however, be called to the danger of too frequent

revisions of university laws. Future amendments should be submitted to the most careful scrutiny, both by the legislature and the board of regents, before adoption.

THE BOARD OF REGENTS.

The board of regents of the University of Arizona is now a definitely nonpolitical body, with secure tenure, and composed of leading citizens of the State. The committee finds evidence on every side that the board has striven industriously and successfully for the welfare of the university. In order to render even more valuable the sacrifice of time and effort necessary on the part of the members of the board of regents, the committee makes the following recommendations:

1. That the regents draw up a definite code of by-laws to govern their procedure, based upon the definition of their duties as found in the State code, and following the practice of governing boards in other institutions. These by-laws should specify particularly the degree of delegation of authority to the president, the bursar, and the faculty, especially in the expenditure of funds within budgeted limitations.

2. That the board hold regular monthly meetings on a definitely specified day each month.

3. That an executive committee of the board be appointed to consider university affairs of unusual or important character between the monthly meetings. This executive committee should in no way presume to do the work of the president of the university or to interfere in his work. It is merely a means of attending to matters which demand the attention of the board of regents between its sessions.

2. RELATIONS WITH THE FEDERAL GOVERNMENT.

The relations between the university, the State of Arizona, and the Federal Government are of several types, which can be set forth by a brief description of the funds which form the basis of these relations.

FEDERAL GRANTS IN AID FOR INSTRUCTION.

The first Federal grant in aid for instruction is dervied from the Morrill-Nelson fund, from which the State receives annually $50,000. This amount is turned over to the university for certain branches of instruction and facilities for that instruction. The types of instruction are defined in Federal acts of 1890 and 1907. The income is a direct grant, and the only requirement from the State and the university is that it be expended for the purposes specified. For the year 1920–21 the $50,000 constituted approximately 13 per cent of the operating educational expenditures of the university.

A second Federal provision arises from the sale of 150,000 acres of land granted to the State in 1910 in lieu of the Federal land grants of 1862 for colleges of agriculture and the mechanic arts in the several States. To the present date none of this land has been sold by the State. The Federal supervision over this grant is very general in nature and is by way of holding the State to the general purpose of the grant.

FEDERAL GRANT IN AID FOR THE AGRICULTURAL EXPERIMENT STATION.

A third Federal grant is made under the Hatch Act of 1887 and the Adams Act of 1906, from which the university through the State receives annually $30,000 for agricultural experimentation and research. It is expended through the agricultural experiment station of the university. For 1920–21 this Federal appropriation constituted approximately 28 per cent of the amount expended by the university for the purpose stated. The balance came from State and other sources.

THE COOPERATIVE RELATION.

The Federal appropriations and provisions so far described are characterized as grants in aid. The only requirement on the part of the State and the university is that the revenues be expended in accordance with the purposes of the acts mentioned. In 1914 a new type of relation between the State and the Federal Government was instituted under the Federal Smith-Lever Act for agricultural and home economics extension. This law grants annually to each State $10,000, and additional sums prorated among the States according to their respective rural populations. For a State to participate in the additional sums, its proportional allotment of these sums must be matched, dollar for dollar, with State or local funds. The agricultural and home economics extension work is thus a cooperative service rendered by the Nation and the State through the State university. For 1920–21 the amount expended by the university for this cooperative service was $63,103.59.

An extension of the cooperative relation mentioned resulted from the enactment of the Smith-Hughes law of 1917 providing Federal aid for secondary vocational education and for the training of vocational teachers. The training of these teachers in Arizona is carried on through the university. In the administration of the law the Federal Government deals with the State board for the control of vocational education, which board in turn deals with the university of Arizona and administers both the State and the Federal funds for this service. For the year 1920–21 the amount expended by the university was $11,621.81.

The University of Arizona deals directly with the Federal Veterans' Bureau in providing for the rehabilitation of soldiers. For the year 1920–21, it expended $9,566.63 for this service.

THE UNITED STATES MINING EXPERIMENT STATION.

One other relation remains to be described, that between the university and the United States Bureau of Mines Experiment Station. The station is entirely supported and controlled by the Federal Government, but it is comfortably housed in the mines and engineering building free of charge to the Federal Government. While the official relation between the station and the university pertains only to the housing there is excellent cooperation between the station and the Arizona Bureau of Mines, which is under the university, in conserving the use of equipment and in avoiding duplication of work. Since the Federal station specializes in low-grade copper ores, it is very obvious that the cooperation described and its service to the State are very fortunate.

The relation between the university, the State, and the Federal Government may thus be said to be of three forms: First, Federal money is given directly to the university through the State for teaching and for agricultural research. Second, there is a cooperative service rendered by the Federal Government and the State of Arizona through its university. Third, the Federal Government directly operates a research agency in a more or less informal relation with the university.

Chapter II.

THE ORGANIZATION OF THE UNIVERSITY.

I. GENERAL.

The university comprises the following colleges, schools, and departments:

- College of letters, arts, and sciences.
  - School of home economics.
  - School of law.
  - School of education.
- College of agriculture.
  - Agricultural experiment station, including—
    - Range study tracts, Tucson.
    - Date-palm orchard, Tempe.
    - Demonstration farm and date-palm orchard, Yuma.
    - Citrus grove, Yuma.
    - Prescott dry farm, Prescott.
    - Sulphur Spring Valley dry farm, Cochise.
    - University farm, Tucson.
    - Experiment and demonstration farm, Mesa.
  - Agricultural extension service.
- College of mines and engineering.
  - Arizona Bureau of Mines.
- State museum.
- Steward Observatory.
- United States mines experiment station.
- University extension division, including—
  - General extension service.
  - Correspondence courses.
- State pure-food laboratory.
- State school for the deaf, dumb, and blind.

The present status of the University of Arizona represents a well-advanced stage in the process of growth of a State university. The three common divisions of arts, agriculture and mining and engineering are already organized as independent colleges. Other professional colleges are emerging under the guise of schools of the college of letters, arts, and sciences. Extension work is well established throughout the State. Experimentation and research in various fields form a considerable part of the university's activities. No graduate school has been established, but a considerable number of graduate students are in attendance and the catalogue outlines the conditions under which the master's and doctor's degree may be

earned. The people of Arizona must realize that their institution is no longer the high school of early years, nor even the simple college of 20 years ago, but that it is a real State university, comparing favorably in scope with the higher educational systems of most of the other States of the Union. This growth is well shown in the following tabular presentation appearing in the University of Arizona student publication for January 25, 1922:

II. GROWTH OF THE UNIVERSITY.

Presidents, students, professors, graduates, and buildings.

Years.	President.	Students.	Professors.	Graduates.	Buildings erected.
1891-92	Freeman	32	6		University Hall.
1892-93		38	8		
1893-94	Comstock	57	7		North Hall. West Cottage. East Cottage.
1894-95		47	9		President's Home.
1895-96		100	10		South Hall.
1896-97	Billman	149	9	3	
1897-98	Parker	156	11	1	
1898-99		133	10	4	
1899-1900		225	12	4	
1900-1901		225	12	9	Mechanic Arts.
1901-2		215	12	8	
1902-3	Adams	220	12	10	
1903-4	Babcock	205	11	5	Library. Herring Hall. Dining Hall.
1904-5		194	15	1	
1905-6		225	26	10	
1906-7		215	30	6	
1907-8		237	34	6	
1908-9		201	39	6	Science Hall.
1909-10		200	42	10	
1910-11		195	44	11	
1911-12	Wilde	200	46	15	
1912-13		331	46	8	Arizona Hall.
1913-14		375	48	8	
1914-15	Von Klein Smid	451	52	20	Barracks Agricultural Building.
1915-16		633	60	48	
1916-17		780	68	48	New Mechanic Arts Building.
1917-18		755	84	41	Y Hut. Bird Cage.
1918-19		1,015	78	31	Mines Building.
1919-20		1,616	86	64	Maricopa Hall.
1920-21		1,732	95	75	Steward Observatory.
1921-22		2,264	107		Cochise Hall.

Like most other State universities, the present University of Arizona is not the result of any initially adopted plan of development, but rather represents the wishes of the people of the State as expressed through the needs of their various interests. In one thing particularly is Arizona to be congratulated, namely, in her steadfast adherence to the plan of building up a single State university in one place, rather than a number of schools at various places throughout the State. Many times those States which have divided their higher educational efforts geographically have had to pay the penalty of educational jealousies and unrest, as well as that of increased expense. The surveys of the Bureau of Education have always in-

dorsed the policy of a single State university, and the committee feels that Arizona is following the best possible course in centralizing her work.

As a result of legislative enactment, the State school for the deaf, dumb, and blind has been made a part of the State university. In this one particular the committee believes that a separation should take place. The work of a school of this type, desirable as it may be, has nothing in common with university instruction, and its maintenance should not be charged against the university budget. The committee therefore recommends that the State school for the deaf, dumb, and blind be separated and be placed under control other than that of the University of Arizona.

III. THE DIVISIONS OF THE UNIVERSITY.

THE COLLEGE OF LETTERS, ARTS, AND SCIENCES.

The core of every State university and of nearly every university on private foundation is formed by the college of arts and sciences (appearing under diverse appellations), which offers instruction in the humanities, the arts, the social sciences, and the natural sciences, leading to the bachelor's degree. Its purpose is not to give special vocational training, but to offer general education. This may serve in some cases as the foundation of a later specialized professional training. In any event, it is designed to enlarge the student's knowledge of the basis and processes of civilization and of the laws of nature, to stimulate his intellectual interests, to cultivate his mental independence, to accustom him to study; in fine, to render him a more intelligent, useful, and happy citizen. The college of arts and sciences is not only the center of almost every university, it is the germ from which most universities have sprung. It has generally been the first division of the university to be established. Frequently it has shown the most rapid growth of all. It has been of late the prolific parent of new technical and semitechnical schools and colleges, as, for example, colleges of commerce and journalism. But in spite of the multiplicity of vocational divisions now commonly included in the organization of the larger universities, the position of the college of arts and sciences throughout the United States is now stronger than ever. Both absolutely and relatively a larger proportion of the youth of the land is in attendance at these institutions than at any previous period. It is to the public interest that still larger numbers should avail themselves of the training offered by such colleges in the future. The upbuilding of a successful and progressive democracy depends upon the possession of a high degree of intelligence and of capacity for sound judgment of public affairs by a constantly increasing proportion of the population. The colleges of

arts and sciences have proved themselves better adapted than any other instrument yet devised for the development of these qualities. State legislatures have generally recognized this fact. On the whole they have made liberal provisions for general higher education at State expense.

The college of letters, arts, and sciences at the University of Arizona has exhibited a development similar in some respects to that through which the corresponding divisions of other State universities have passed, in other respects quite different. As organized in 1890 the university consisted of an agricultural experiment station, a college of agriculture, and a college of mines and engineering. Like most new universities in pioneer States, however, it appeared that the institution must first prepare the majority of its students to undertake real college work. A preparatory department was established at the outset and was maintained until 1915, when the high-school facilities in the State justified its discontinuance. During the first 18 years of the university's existence the students in this department outnumbered the collegiate students. The college of letters, arts, and sciences gradually evolved out of the preparatory department. It thus came into being subsequent to the creation of the two principal technical divisions of the university.

Of late the college has had a very rapid growth (see p. 89). In scope of work and efficiency of instruction the committee believes that the college of letters, arts, and sciences of the University of Arizona compares favorably with other standard colleges of the same type throughout the United States. Its organization is good, and the offerings of its various departments are in general comparable with those to be found at other State universities. However, this college which should be the very center of the institution, both as regards the physical plant and the educational plan, is a homeless and scattered organization, housed in various buildings primarily dedicated to other purposes. The committee believes that this is the most serious fault to be found with the university's organization and equipment as a whole. The college of letters, arts, and sciences, whose departments serve every other college and school of the university, should unquestionably be located in a separate building, where its offices and classrooms, excepting the sciences, may be housed under one roof, and from which it may serve its sister colleges efficiently. The committee recommends that the board of regents, in planning for any change or development in the university, consider among the first of its problems that of concentrating the work of the college of letters, arts, and sciences in a building or group of buildings primarily used for this purpose.

The peculiar situation by which three professional schools (home economics, law, and education) are included in the organization of

the college of letters, arts, and sciences has been treated in a previous chapter. A brief discussion of these three schools follows:

THE SCHOOL OF HOME ECONOMICS.

Three schedules of work are offered in this school, one in foods and nutrition, one in textiles and clothing, and one general course in home economics. All lead to the degree of bachelor of science in home economics. The school is well organized and in general is adequately housed and equipped. It numbers 64 students in its regular major courses and 46 additional students from the other departments of the university electing one or more courses. There are also 17 irregular specials, 10 extension students, and 6 correspondence students. Four faculty members spend their entire time in instruction, one spends part time, and one supervises practice teaching in home economics in the public schools in connection with the work of the school of education (Smith-Hughes fund). The courses offered are comparable with those of other universities. A practice house is maintained.

A rather striking lack of correlation is observed in the fact that there is at present no connection between the school of home economics and the university dining hall, which serves more than 300 students. The committee recommends that the school of home economics ascertain the probable need for graduates in institutional cookery and management in the State and vicinity, and, if the field seems reasonably broad, submit a plan by which the university dining hall can be used as a practice field for training in this branch of work. Such cooperation between the practical and theoretical activities should entail little, if any, additional expense.

Most of the graduates of the school of home economics engage in teaching or home making. The calling of dietitian in hospitals or other institutions has attracted only one person. At present the question of placing graduates is not a difficult one. As the number grows, a careful study of the employment possibilities of Arizona for this type of training should be encouraged.

THE SCHOOL OF LAW.

The survey of the University of Arizona, conducted by the Bureau of Education in 1917, questioned seriously the wisdom of establishing law courses leading to the LL. B. degree. It advised either the abandonment of the degree curriculum as then organized, or a petition to the legislature to authorize a college of law. In the meanwhile neither recommendation has been carried out. However, the courses in law have been organized into a school functioning as a department of the college of letters, arts, and sciences. This school

has a faculty of four giving their entire time to the teaching of law, and a student body of 55 candidates for the law degree and 19 others electing courses in law. Only one course is given by a person not a member of the regular university staff.

The requirements for entrance to the school of law specify the completion of one year of academic work. The degree of LL. B. is conferred upon completion of three additional years of work (78 hours) in the school of law. The degree of J. D. (juris doctor) is conferred—

upon those candidates for a degree in the school of law who have satisfactorily pursued and obtained credit in courses of study in the school of law totaling 78 semester units and who either have been granted the degree of bachelor of arts or bachelor of science * * *, or are pursuing the six-year combined course of collegiate and legal studies offered by this university. Provided, however, that candidates for the degree of juris doctor must attain a grade above the grade 3 in at least 75 per cent of their total units of credit in law courses of study.

The college of law is at the present time not a member of the Association of American Law Schools, but has now conformed to the standards of that organization in all respects except the library (15,000 volumes), and hopes to meet the library requirement soon. In order to attain this standard the law library has been considerably increased, but the provisions for consultation and reference work by professors and students are still inadequate, and no regular librarian is in immediate attendance. The offices and classrooms are dispersed among several buildings.

The committee is impressed with the earnest spirit in the school of law and with the excellent training and experience of its faculty members. The position of the school in the general university organization, however, remains somewhat anomalous. Since existing legislation seems to offer no opportunity for the establishment of the school of law as a separate unit of the university, the present committee can only repeat the recommendation of the former survey, namely, that the legislature be petitioned to authorize the establishment of such a college. This legislation would not necessarily increase the expense of the university, since a college of law already exists in fact.

The amount and the quality of the work now required for the LL. B. degree undoubtedly compare favorably with the requirements of many standard law schools of the country. The conditions which surround the bestowal of the degree J. D. are less satisfactory. This degree is by no means standardized in the procedure of various law schools throughout the country. It may mean one thing in one university and another thing in a second. As a matter of practice, it is questionable whether the mere differentiation of grade of excellence in work should be a determining factor between the LL. B. and the J. D., although it is realized by the committee

that the University of Arizona can find precedent elsewhere for this practice. The school of law of the University of Arizona, however, is a recently created organization. It has not yet been officially admitted to the Association of American Law Schools, although it undoubtedly will soon deserve this recognition. The committee feels that under these conditions it is unwise to offer the J. D. degree, and recommends that it be discontinued for the present.

THE SCHOOL OF EDUCATION.

The work in education, previously a department, was organized into a school, functioning as a division of the colleges of letters, arts, and sciences, in 1920. In September, 1922, it will take its place as an independent college of the university. In the various classes in education there are 212 students (eliminating duplicates), 29 of whom are majoring in education. Students "are expected to have attained junior standing before being admitted to the courses in the school of education." The school is attempting "to meet the needs of the State in the preparation, training, and certification of teachers, supervisors, and administrative school officers." The present organization, as it appears in the catalogue for 1920–21, follows:

ORGANIZATION AND SCOPE.

As at present organized the school of education through the cooperation of other departments of the university is enabled to offer courses along the following lines, each course preparing for a definite type of position:

I. Division of Secondary Education, preparing—
   (*a*) Teachers and heads of departments in academic subjects in high schools and junior high schools.

II. Division of Vocational Education, preparing—
   (*a*) Teachers of agriculture, industrial arts, and home economics in junior high schools or for departmental work in the upper grades in eight-grade elementary schools.
   (*b*) Teachers and heads of departments in agriculture, industrial arts, and home economics in high schools or normal schools.
   (*c*) Teachers and directors of Smith-Hughes vocational work in high schools.
   (*d*) Farm and home demonstrators.
   (*e*) Organizers and directors of boys' and girls' club work.

III. Division of Supervision and Administration, preparing—
   (*a*) Supervisors and superintendents for city school systems.
   (*b*) Supervisors and superintendents for county (rural) school systems.
   (*c*) Principals for junior and senior high schools.
   (*d*) Teachers and supervisors of physical education in public schools.

The school of education of the University of Arizona stands alone in the State in the type of work which it is giving, and does not duplicate the field of the State normal schools at Tempe and Flag-

staff. There can be no doubt of the need in Arizona for a school of education of the kind maintained at the University of Arizona.

The rapid growth of the secondary school system in the State, which is now affiliated with the North Central Association of Colleges and Secondary Schools, requires a constant supply of well-prepared high-school teachers, teachers in vocational subjects, and school administrators. No political unit so geographically large and with a population of the size of Arizona's should be forced to depend entirely upon other States to train its teachers. The committee believes that a college of education at the university is not only justifiable, but vital in its importance to the State and its influence upon education in Arizona.

An estimate of the aims and purposes of the school of education, as conceived by its officers and faculty, may be gained from the following quotation from the current catalogue:

> The chief purpose of the school of education is to enable the university to meet the needs of the State in the preparation, training, and certification of teachers, supervisors, and administrative school officers. However, students not preparing to teach may receive certain training in education as a part of their general preparation for the duties of life and intelligent citizenship.
>
> The courses of study are based upon the assumption that the teacher or school officer should have, first of all and fundamental to all subsequent training, a broad and liberal education; second, that he should have thorough and substantial scholarship in the subjects he proposes to teach; and third, that such education should be supplemented by professional study designed to give a knowledge of the pupils to be taught, the problems to be met in the art of teaching, and the new meaning of the subjects of instruction. For the prospective teacher, this policy places the emphasis upon the subject he intends to teach, the student majoring in such subject and taking education only as an auxiliary study. For supervisors and school executives, however, it is advisable to major in education, either as a part of a four-year course leading to a degree, or preferably in addition to such a course.

The committee indorses entirely the principles just quoted. It desires, however, to call attention to the fact that the program outlined on page 14 is a very extensive one. The work in education has been developed within the short space of two or three years from a department into a degree-granting college. In such a rapid process of expansion, many basic principles of administration and practice must be determined. Relations with other colleges of the university must be established on the basis of mutual agreement. The committee believes that further extension in the functions, or field of subject matter offered, should be most carefully considered while the new college is defining its relations within the university organization and finding its proper sphere of usefulness in the State.

THE COLLEGE OF AGRICULTURE AND THE AGRICULTURAL EXPERIMENT STATION.

The development of agricultural instruction and research at the University of Arizona has taken a somewhat unusual course. The university was organized subsequently to the passage of the Hatch Act of 1887. As the State (then Territorial) College of Agriculture and Mechanic Arts, the university was entitled to an annual appropriation under the Hatch Act of $15,000 for the establishment and maintenance of an agricultural experiment station. This amount was increased by $15,000 annually under the provisions of the Adams Act of 1906. Arizona was almost exclusively a mining Territory at the time of the organization of the university. The latent agricultural possibilities of the region were not realized. Indeed, the science of agriculture as applied to the treatment of arid lands was still in its rudimentary stages. There was consequently no demand for collegiate courses in scientific agriculture. Under these circumstances the decision was made to establish first of all the experiment station and to postpone until later the organization of courses of instruction in agriculture. For 17 years the agricultural experiment station represented the sole effort of the university in the field of agriculture.

During this period and subsequently the station has carried on investigations relating to dry farming, live-stock production and feeding, range conservation and improvement, intensive agriculture under irrigation, and poultry. In addition to the work done in the vicinity of the university, it has conducted experiments, and more recently demonstrations, at seven other farms and substations in various parts of the State where different conditions of soil, climate, and water supply prevail. The station has sponsored much of the legislation passed by the State legislature bearing on range improvement, in particular the 640-acre grazing homestead law. It has contributed largely not only to profitable farming in the State, but also to the general knowledge of effective methods of live-stock production in desert regions and of agriculture under irrigation.

Instruction in agriculture began in 1908 with the establishment of a two-year curriculum. In 1911 a four-year curriculum leading to the degree of bachelor of science in agriculture was added.

The college now has 135 undergraduate and 5 graduate students. (For comparative figures see p. 89.) Thirty-eight students have been graduated in the four-year course since its establishment in 1911. While these figures seem comparatively small, it must be borne in mind that the work of the experiment station was established long before the teaching function was assumed, and that experiment and research still constitute a major part of the activity of the combined organizations.

The interrelation between the teaching function of the college and the experimental and research activity as represented by the experiment station is close. Many faculty members divide their time between the two, and it is extremely difficult to draw a definite line between the organizations of college and station, so closely have they become intermingled. The fact that the area of farm land in the State has increased more than fourfold during the decade 1910–1920 has without question been due in part to the experimental work of the university through its agricultural college and experiment station. This increase has brought with it a great number of problems which demand solution, so that perhaps more pressure is brought to bear upon this college for increases in experimental and research facilities, than upon any other division of the university. The regents have wisely adopted a liberal policy in meeting such demands. It is evident, however, that the reduction in the university's income must necessarily curtail expansion here as in other branches of activity.

COLLEGE OF MINES AND ENGINEERING.

Mining is and apparently will long be the dominant industry of Arizona. From the beginning the university has made provisions for the training of mining engineers. Quite appropriately, mining has been emphasized beyond the other branches of engineering. Not only in the legislative act specifying the departments of the institution, but in the title of organization of the engineering college of the university, this emphasis appears. The officers of the university appreciate the extraordinary advantages for the development of a strong college or school of mines which the location of the university affords. They also realize that in a State with as small a population as Arizona (and hence limited funds for university support) it would be unwise to attempt to develop equally many different lines of technical instruction. The forms of technical training which can be utilized in the leading industries of the State should have first consideration. Other technological curricula may to a certain extent be made contributory to these. It has been, therefore, the policy to make the college of mines and engineering primarily a mining school and gradually to bring it to a position of leadership among the mining schools of the country. The committee applauds this policy. The University of Arizona may achieve a national reputation for the highest excellence in one or perhaps two technical branches. But it can only do so by concentration of effort; and indeed it is only by concentration that it can fully subserve the vocational needs of its constituency.

Under the direction of the college of mines and engineering is placed the Arizona State Bureau of Mines, the dean of the college acting as

its director. The work of this bureau has been of extraordinary importance in the development of Arizona. Since the work of the United States Geological Survey has been able to reach but a small part of the State, questions regarding the geology of still unsurveyed sections are coming in to the State university in great numbers. These are answered by the bureau of mines on the basis of the considerable amount of original work done by that organization in mapping geological conditions in the less-known sections. A geological map of the entire State is in process of preparation at the bureau, and a base map has already been issued. The college and the State bureau cooperate closely with the United States mines experiment station, supported by Federal funds and housed in the mining and engineering building.

During the past five years the college of mines and engineering has made remarkable progress. An excellent building has been erected in part by State funds and in part by private subscriptions from the mining companies. A building for mechanic arts was erected in 1918, where laboratories for machine work, wood work, and forging are located. The college's facilities for training in mining engineering are excellent, and in some particulars of the very highest rank. The equipment in the mechanical and electrical laboratories, while fairly adequate, is scarcely comparable with that in most State universities. The work in geology, mineralogy, and petrology is, as is natural, highly developed. The school has an excellent museum in these departments, which is now being adequately classified and displayed.

The faculty is largely confined to full professors, since the relatively small attendance has, until now, scarcely justified the employment of other instructors in addition to the department heads. This has resulted in a high-grade type of work, since all students have been in direct contact with experienced and highly trained specialists in each department of work. The desire of the board of regents to make this college of mines and engineering a leader among schools of the type is being gradually realized. Arizona furnishes an unsurpassed field for the location of such a college. The material equipment in buildings and in mining engineering has been brought to a high standard. The faculty is well chosen. It will, however, be scarcely possible to bring to the service of the university many of the leading national figures in mining education at the salaries now paid by the university. The addition of a few more such outstanding men to the faculty would contribute greatly to the value of the training given and to the estimation and rank of the college. As a matter of administrative policy, it would doubtless be unwise to pay disproportionate salaries from the regular university resources. The college will therefore have to look to private sources for endow-

ments sufficient to attract to its service men who have attained the highest distinction in the sphere of mining education. The committee heartily indorses the work of the college of mines and engineering. It meets directly and efficiently one of the greatest single needs of the State.

EXPERIMENTATION AND RESEARCH.

The spirit which underlies independent investigation is very strong at the University of Arizona. The physical presence in the immediate organization of divisions devoted primarily to this interest, such as the agricultural experiment station, the United States Bureau of Mines experiment station, and the Arizona Bureau of Mines offers a natural and most desirable incentive toward such work throughout the whole institution. Arizona has contributed liberally toward the conduct of research, realizing that her future as a State depends to a large extent on the studies carried on in mining, engineering and agriculture at the State university.

Eight experimental farms, tracts, and orchards are listed under the agricultural experiment station, the unusual number being claimed as necessary on account of the variety in climate and conditions of rainfall and irrigation throughout the State. It has been impossible for the committee, in the brief period at its disposal, to visit these experimental stations. Repeated suggestions are, however, heard as to the possibility of abandoning at least one of the farms. The committee, through lack of closer study of the situation, has no recommendation to make in this matter, but wishes to suggest its further investigation by the regents.

The work of the Arizona Bureau of Mines has already been briefly discussed in this chapter under the description of the college of mines and engineering. The research in this bureau and in the agricultural experiment station is almost entirely of an industrial or practical type, as is natural in a State university. Pure science is, however, not unrepresented in the work of other departments of the university. The archæological work of the State Museum has been noteworthy, and the recent completion of the Steward Observatory, with its 36-inch reflecting telescope, will permit a program of astronomical research for which the climate of Arizona is peculiarly adapted. The committee wishes to indorse heartily the progressive spirit which has led the people of Arizona to devote considerable funds to the development of that research and experimentation which should be so vital a part of the work of a State university.

EXTENSION.

The extension work of the university is centered in three departments: The Arizona Bureau of Mines, the agricultural extension service, and the general extension service. The bureau of mines

publishes bulletins of interest to miners and prospectors, classifies rock and mineral specimens, makes geologic and topographic maps, gives lectures, and holds institutes in mining camps, and in general disseminates publicity relating to Arizona's mineral industries. The agricultural extension service maintains a fully developed system of county home demonstration workers, county agricultural agents, boys' and girls' club workers, and extension specialists in various branches. Both of these services are undoubtedly justified by the nature of Arizona's two greatest industries and fill a definite need within the State.

An attempt has more recently been made to organize a general extension division, to bring other departments of the university within reach of all the people in the State. The program includes correspondence work, university extension classes and lectures, visual education, loan package library service, high-school debating leagues, and the dissemination of general information. The work has been fairly successful, although it has had to contend with the obstacles of difficulty of travel in Arizona and lack of sufficient personnel to offer courses and supervise instructional activities. The opportunity for service is undoubted. It is, however, questionable whether the present method of counting extension work as a part of the instructor's regular term load will ever arouse in the members of the faculty the enthusiasm so necessary for the success of such a project. The committee is of the opinion that general extension work should find its field to a large extent in the cities of the State, where population is most concentrated and to which the other extension divisions do not extend their activities. It recommends that the possibility of holding extension classes and lectures in the cities be carefully considered. Such classes can be made to a large degree self-supporting and should entail little, if any, additional financial burden upon the university.

Chapter III.

INTERNAL ADMINISTRATION.

In studying the internal administration of the university, the committee was commissioned by the board of regents to ascertain in so far as possible the degree of "educational and financial efficiency" now existent in the institution and to suggest changes in organization and practice wherever such changes might seem advisable. The regents desired that the committee pay especial attention to the budget to be prepared for the year 1922–23. As a result the committee gave considerable time to personal conferences with the deans of the colleges of letters, arts, and sciences, of agriculture, and of mines and engineering, during which all department heads were asked to submit their plans and budgets, and these were discussed in detail. While the committee naturally exercised no budget control, it drew up for the regents and submitted in its preliminary report a summary statement of proposed increases and decreases in departmental expenditures based upon the details gathered in these conferences. In this way it was possible to gain a definite knowledge of budgeting practice at the university.

In general, the committee has the impression that conditions at the university are good, both as regards educational efficiency and financial practice. The university has passed through a period of unusual expansion, as a result of unusual increase in attendance and public demand. The administration has been efficient, but highly personal. Many details usually delegated to others in institutions of similar size have been handled in the president's office. Expenditures and policies of importance have been intrusted to his judgment. The committee is of the opinion that excellent results have been obtained in this way, largely through the untiring industry and the wisdom of the former president. As a matter of future policy, however, a plan of greater delegation of authority by the president is believed to be wise. As has already been recommended, the responsibilities and duties of the board of regents should also be more clearly defined, and the relation between regents and president more definitely outlined.

I. ACADEMIC CONTROL.

Recently a new plan of internal academic administration was proposed by the faculty and adminstrative officers and approved by the board of regents.[1] The plan which provides for a considerable delegation of responsibility and sets up methods of procedure and certain safeguards, is conceived in the spirit of modern university control and represents in most particulars a thoroughly excellent and efficient scheme of administration. Unfortunately the departure of the president from office soon after its adoption has thrown the entire burden of decision upon the acting president and upon the administrative committee. As a natural result, many nonacademic details have been referred by these authorities to the board of regents for solution and the local members of the board have been forced to carry an unusually heavy load of responsibility. When a permanent president is chosen, it should be possible to carry out most of the provisions of the new plan of administration successfully. Certain comments upon the plan, however, will readily suggest themselves to those who have had experience in similar situations.

The administrative committee apparently numbers 10, possibly 11, persons. This is perhaps an over-large number for ready action and for assembly in case of emergency. It should be remembered that this body has no legislative function. Its duties are advisory, and final jurisdiction remains with the faculty. In view of this, a committee of five or seven, with power to associate with itself temporarily any persons with special knowledge bearing on the case in hand, would seem better adapted to the duties as outlined.

The main objection to the plan of administration as it now exists lies, in the opinion of the committee, in the reference of all details of legislation to so large a body as the entire university faculty. It is the experience of many larger institutions that most questions of detail in academic procedure have to be settled in smaller groups or committees. The general university faculty should indeed meet, possibly once a month, and should discuss broad questions of university policy according to programs systematically laid out in advance by its own committees. It should have the right to decide these policies, when decision is necessary, but it should not be called upon to meet every week or oftener to pass upon such matters as the offering of a new subject, the exact amount of credit to be allowed to this or that student, or the infraction of an academic rule. Such really vital general questions as the establishment of a new college or department, the attitude of the institution toward scholarship, student activities, the honor system or the point system, should undoubtedly engage the attention of the entire faculty, but most

[1] See Appendix I for the plan as adopted.

questions of petty legislation or administrative detail can be more readily and satisfactorily settled in smaller groups. Just where the division of responsibility should come is a matter which might well be decided by the president, the deans, or the administrative committee, with the safeguard that appeal from the decision of any less inclusive body might at any time be taken to the university faculty by any faculty member. The committee believes that the business of the university would be considerably expedited by the formation of a faculty senate or council with legislative power, to consist of all heads of departments, or if this body still be too large, of a limited number of elected delegates from each college or division. In making this recommendation the committee does not desire to limit in any way the academic status or rights of any faculty member. The right of appeal to the entire faculty, as mentioned above, should provide a satisfactory substitute for the present system, which in the minds of at least some of the faculty members of the University of Arizona is cumbersome and unwieldy.

THE REGISTRAR'S OFFICE.

One of the features of American university development is the evolution of the administrative machinery. From small and often one-man concerns, higher educational institutions have grown into complicated enterprises. Consequently, one type of work after the other has been delegated to deans, bursers, cashiers, registrars, etc. So recent has been this evolution, and so continuing is it now, that the duties of these functionaries are not always clearly defined.

Especially is this true of the position of registrar. The office began as a maker and repository of student records; that is, it was chiefly clerical in nature. With the ever-increasing complexity of administration, the former position has in many institutions evolved into an important administrative one. In fact, university administration is now more and more being thought of as consisting of two great divisions dealing respectively with finance and personnel. In the evolution above mentioned the financial management for obvious reasons has often greatly overshadowed the personnel or academic side of administration. Fortunately there is a change occurring in this matter, and the personnel side is becoming increasingly prominent. In this shifting, the registrar is taking his place alongside those others, such as deans, comptrollers, etc., whose business it is to see that the university runs smoothly and that its real work is properly done.

The functions of a registrar are several. First, there is the making, keeping, and analysis of student records and statistics. So much of a record of a student's life history must be on file as is necessary and helpful in directing his course and conduct in the university.

This is a most necessary service. Because it entails much routine and much contact with students, it requires a well-organized system.

Then there is the important function of the analysis of records, which is occupying an increasingly prominent place in the development of university policies. It is precisely in this that the registrar is becoming a functionary of no second-rate importance. He thus becomes the right hand of the whole administration, for through him much of the institution's real work can be learned, verified, and evaluated. The proper use of his records assists in removing university administration from a basis of mere general impressions and rumors to a basis of objective fact. Thus the registrar is in a strategic and influential position.

A second function which is usually assigned to the registrar is that of passing on the fulfillment of entrance requirements. The survey of the University of Arizona, conducted by the Bureau of Education in 1917, recommended that this work be delegated to the registrar, and this recommendation was adopted. Such a plan probably represents the most efficient method of caring for this work. It may be stated here that the registrar at Arizona is also the high-school visitor for the university. This arrangement helps to give him the necessary contact with the schools from which the university draws its students. With the small number of high schools in the State, this appears to be an excellent arrangement both for the high schools and for the university.

A third function performed by the registrar of the university is that of secretary to the faculty. This is another service which the committee holds to be properly located, as it keeps the registrar in intimate contact with the work of the faculty in determining the curriculum, standards, etc.

Finally, the committee is of the opinion that the registrar's office is well administered. The records since the present arrangement has been effected are very well classified and kept, and they are readily available. There is a fine appreciation of the work of the office. Studies are constantly being made to show the effectiveness of the policies in vogue. An effort is also being made, so far as time permits, to classify and study the earlier records. The board of regents will do well to maintain this office at high efficiency.

THE EXECUTIVE SECRETARY.

Commensurate with the nation-wide development of the registrar's office during the last two decades has been that of the duties of the executive secretary. As institutions increased in size and complexity of organization, it became increasingly necessary for the president to have some one to whom he might delegate those administrative details which he no longer had time to supervise in person. As is

natural under such conditions, the executive secretary is often an emergency man, taking on burdens in this field or that, as circumstances may dictate. Needless to say, an individual of the greatest personal ability and administrative judgment is required for this important office. At Arizona the executive secretary devotes the greater part of his time to the problem of purchasing and has become, in fact, the purchasing agent of the institution. This highly important activity the committee believes to be well organized and administered. An analysis of his other duties is difficult, by reason of their variety. It is evident, however, to even the casual observer that the present incumbent of this office has developed his activities to such an extent that the office of executive secretary has become one of the really important administrative positions at the university. Eventually, with the further growth of the institution, it is possible that a purchasing agent should be added to the organization of the university business office, leaving the executive secretary more time for general administrative detail.

II. FINANCIAL AND BUSINESS CONTROL.

The financial administration of the university has been very seriously hindered (as has been the case in many other public institutions for higher education) by a shifting plan of income and by the introduction, at various periods, of changing systems of accounting. The fact that Arizona is a young State has naturally led to the frequent introduction of new laws and plans for the support of the university. Various administrations have imposed such schedules for accounting and reporting as seemed best to them, and as a result it has never been possible to set up a permanent system of classification of expenditures. Hence comparisons from year to year on a uniform basis are very difficult to make.

The general tendency of these changes, ending with the introduction of the mill-tax principle, has undoubtedly been for the good of the university. However, it is manifestly impossible to pursue, and to plan for the future, any definite academic financial policy when such vital questions remain subject to sudden change as the system of tax support, the control of receipts from internal sources (fees, sale of products, etc.), the reversion of unexpended balances, and the system of accounting.

The State of Arizona needs first of all in the conduct of its university a definite permanent policy on the part of the legislature in these particulars. Not until such a policy is adopted and adhered to for a number of years can adequate comparisons of receipts and expenditures by years be set up, and not until such comparisons can be made will it be possible for the people of the State to gain easily an intelli-

gent comprehension of the financial affairs of their university as related to a succession of years or to the expenditures of other State universities. A legislative recess in the process of revising university legislation would enable the university regents to devote their undivided attention to efficiency in the conduct of the university rather than to the necessity of constant readjustment in the plan of financial support and control.

THE BUDGET.

The material welfare of every university is so intimately related to proper budgeting procedure that the budget may be truly called the foundation of academic financial success.[2] Budgeting implies nothing more formidable than an accurate estimate and proper classification of anticipated annual income and expenditure. Until the influence of certain great private educational foundations began to be felt, university and college accounting could scarcely be counted as an exact science. Much of the former diversity and lack of system has now disappeared under the better methods encouraged by accountants trained in academic as well as financial procedure. Budgeting, accounting, and reporting should be simply various applications of some standard system of classification of accounts. As a matter of actual practice, the system of accounting employed by a State or other political subdivision, being primarily adapted to other public offices and functions, is seldom suited to the uses of a university. Often it is subject to change with each new administration. Hence it is difficult for a public university to reconcile its practice with changing requirements on the part of the State and at the same time with sound academic procedure.

It is partly for these reasons that the University of Arizona lacks a unified system of internal budget administration. There is at present no uniform system of classification of proposed expenditure for the purpose of securing advance estimates from the various departments in making up the annual budget. Each college has its own system, in fact in some cases *each department* classifies proposed

[2] "The importance of the working budget can scarcely be overemphasized. The necessity for something of the sort is so apparent that institutions where there is no real budget system frequently have a working budget, in one form or another. It bears the same relationship to the operations of the year as the working plans for a building bear to the construction of that building. The complete working budget may be looked upon as a guidebook to all the activities of the college, setting forth their relative importance in terms of money and their relationship to one another. It presents in a more effective way than that afforded by any other device an analysis of the entire organization and work of the institution, and it gives one a better insight into the management, the extent, and variety of its activities, and its general efficiency than may be had in any other way.

"So important is the working budget that it may be considered as the center of the entire business administration of the college. The hopes of all departments are embodied in it, so far as there is any possibility of their realization within the period covered by it. The work of every division and every enterprise at the college revolves about it. It merits, therefore, the best attention that can be given to it; and it is not too much to say that the manner in which it is worked out and followed is an index to the efficiency of the institution."—*J. A. Burrus*, in "*A Study of the Business Administration of Colleges.*" *University of Chicago Dissertation, 1921.*

expenditures according to its own method. The committee is informed by department heads that in many cases (at least this year) they have no knowledge of the amount finally allotted to them. In order to secure uniformity and rigid budget control, the committee makes the following recommendation:

That at the time of making the annual budget all department heads be supplied with *identical blanks* containing some simple scheme of classification of expenditures, adapted to all departments. That these estimates be returned by the departments to the dean, and that the deans, in personal conference with the heads of departments, if necessary, prepare budgets for their respective colleges. These budgets should then be submitted to the president and reduced or increased by him, as necessary, in conference with the deans, to meet the financial limits available for the university. It should be emphasized that the departmental estimate form should be identical in all colleges and from year to year, in order to allow direct comparisons with other departments and previous years.

When the budgets have been finally agreed upon, and passed by the regents, the dean should report to each department head the exact sum allowed. Department heads should then be furnished with requisition blanks, to be filled out in duplicate. The department head should carry on each requisition a statement of the balance still available in the fund as allowed. Each department requisition should require the approval of the dean and the certification of the bursar that sufficient balance is available in the department fund for the payment. Only unusual requisitions, or those of doubtful wisdom, need be referred to the president by the dean or bursar.

Exception should be made to the above system in the matter of the authorization of traveling expenses. The committee recommends that the incoming president and the deans prepare an annual plan by which the number and character of necessary trips, particularly those outside the State, may be determined in so far as possible for each year in advance, and that this plan be presented annually to the board of regents for their action. Unforeseen emergencies may be passed upon by the president, and his action reported to the board.

As a measure of immediate necessity the committee, in conference with the bursar, prepared a budget classification of proposed expenditures, which is printed elsewhere.[1] In making the classification it was necessary to evolve a system which followed in general the divisions of the scheme of accounting prescribed by the State of Arizona and which made the necessary adaptation to academic conditions.

There remains for discussion only the departmental book budget. Two general plans for the purchase of departmental books prevail

[1] See Appendix II.

in American universities. The first appropriates in the budget a stipulated sum directly to each department, to be spent at the discretion of that department. The second appropriates a lump sum to the library to be distributed by the librarian and the library committee to the departments, taking into consideration the needs and present status of each. Under both plans the allowances are based upon departmental requests, but under the first plan the final decision as to apportionment lies with the regents, under the second plan with the library committee. The second plan, which is now in use at Arizona, is naturally preferable, since it allows the development of a library policy with a view to the intelligent consideration of all needs by the librarian and a committee chosen for its ability to make such decisions. It is unnecessary to add that when the distribution has been made, each department head should be at once notified of the amount at his disposal for the year.

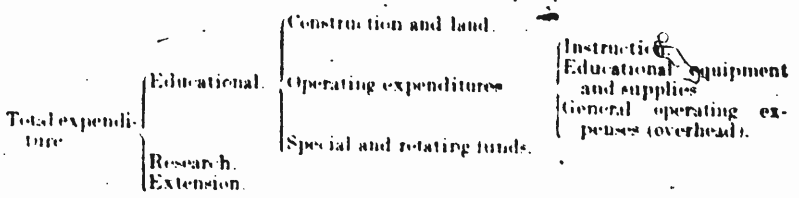
FINANCIAL REPORTS.

The importance of proper financial reporting is second only to that of proper budgeting and accounting. This is particularly true in a public institution, supported by the efforts of thousands of taxpayers who may justly desire an accounting of expenditures sufficiently nontechnical and clearly enough classified to be intelligible to the layman. Such a report may contain numerous schedules, each of value in its own way, but whatever else is included, there should be presented at least these: A general balance sheet setting forth all assets and liabilities; a statement of current income and expenditures (with careful analyses of both) for the current year and the year preceding; a comparative statement of operations for all units producing income (farms, dormitories, dining halls, etc.), showing gain or loss; and a report on all student-activity funds administered by the university.

In order that these schedules may be set up and the results compared from year to year, a permanent accounting system and classification of expenditures is, as has been already emphasized, absolutely essential. In reading the following comments regarding financial reporting practice at the University of Arizona, it should be kept in mind that the deficiencies to which attention is directed are at least in part due to the numerous changes already mentioned as operative in the case of the university and entirely beyond its control.

The work of the committee has been somewhat hindered by the fact that with the introduction of the mill tax in 1921 a new system of budgeting and accounting was introduced at the university, rendering comparison with past years very difficult. The system now in use makes it possible to ascertain the total expenditures of each department and activity. The committee believes that it

would be desirable for the university in reporting annual expenditures to its constituency to make a definite division between the expenditures for the main varieties of its work—instruction, research, and extension. The following plan, used by the Bureau of Education in many of its surveys, is suggested for this purpose:



The committee has met considerable dissatisfaction in the State with the system used by the university in reporting its expenditures. The complaint is frequently made that the annual financial report of the board of regents is incomprehensible to the layman and gives no adequate summarized information regarding the purposes for which the university is spending its money. The committee believes that this complaint is to a certain extent justified. An examination of the annual report of the board of regents for the fiscal year ending June 30, 1921, shows that the only classification of income and expenditures attempted is that by funds. No attempt is made to summarize expenditures under such common and generally accepted heads as administration, salaries, capital outlay, operation, maintenance, etc. It is quite impossible to ascertain from the annual report, for example, the amount paid to the faculty or the cost of maintaining any of the colleges or schools. The committee believes that this difficulty arises entirely from the fact that the basis of classification is the fund from which the income arises, rather than the purpose of expenditure. It is true that the purposes are detailed under each fund, but it is scarcely to be expected that the public will do the work necessary to summarize general heads of expenditure from items scattered through nearly 50 different funds. The committee believes that the new system of accounting, introduced by the bursar under the mill tax, will allow proper summarization of expenditures by purpose rather than source of income.

The committee is also of the opinion that a study should be made each year of the student clock-hour cost in each teaching department of the university, in accordance with the plan outlined in the bureau's survey contained in Bulletin, 1916, No. 26, page 74; Bulletin, 1917, No. 19, pages 108–113, and in Higher Education Circular No. 17, August, 1919. Such studies will furnish data for basing intelligent decision on departmental requests and furnish information as to increase or decrease of costs of instruction from year to year.

The committee is of the opinion that the accounts of the university are well kept, and that its financial affairs are carefully and honestly administered. The bursar is particularly to be commended for the monthly audit of funds issued by his office, by means of which a running check on expenditures is possible.

Finally, the committee recommends that the university adopt a budget plan similar to that outlined in this report, with such modifications as experience may render desirable; that the definite, final budget allowances be reported promptly to the deans and heads of departments and that expenditures be limited to these budget allowances; also that an entirely new and much more detailed system of financial reporting be adopted, covering the schedules previously suggested in this discussion.

THE GENERAL OFFICE.

Under this title are included those general university business activities which at the University of Arizona center around the bursar's office, but which are not included in the department of accounting.

The general office of so large an institution as the University of Arizona has a multitude of duties to perform. Clerical and stenographic service, purchasing, the dissemination of information, etc., are but a few of the many responsibilities which have to be assumed. To this office come calls for service from all the various activities of the university, in so far as these are not attended to in such specialized offices as those of registrar or bursar. The efficiency of an institution may even depend to a great extent upon the organization of proper machinery to care for these miscellaneous, but often highly important, needs.

The stenographic and clerical force at Arizona is distributed throughout the offices of various administrative departments. Thus for example the bureau of mines and the agricultural college and experiment station have their own clerical assistants. In fact the principle of dispersion has been carried so far that a general office exists in name only, rather than in reality. Certain clerical functions of a general nature are performed in the registrar's office and others in the bursar's office. A great part of the burden, however, falls upon the president's secretary, assisted in small measure by student help. To her comes the work from all departments to which no specific clerks are assigned. In addition, such varied activities form a part of her duties as the distribution of mail, copying board minutes, copying county scholarship examinations and university examinations (in part). The committee has gained the impression that the organization for performing all these miscellaneous general clerical activities

is entirely inadequate. While the principle of dispersion is believed to be the proper one in so far as location of activity is concerned, it is felt that clerical assistants throughout the university should be recognized as parts of a central office organization. This organization should center in a general office under the direction of a capable office manager, who in conference with the various administrative heads should seek to bring about an equitable distribution of both work and assistance. It is impossible to foresee all details of such organization, but the committee, from the knowledge which it has gained, believes that two things are desirable: A more adequate office force for general university purposes and a more centralized organization of all clerical assistants on the university campus. It recommends that the board of regents make a careful study of the situation through the agency of the president and the administrative officers.

THE COLLEGE BOOKSTORE.

The task of buying and selling textbooks forms an important part of the problem of university administration. If the university disclaims all responsibility and allows outside stores to assume entire charge, prices are often too high and service may be poor. If the university assumes entire responsibility, a considerable expense for administration and service is incurred. In recent years the cooperative principle, by which the bookstore carries the expense of its own overhead and is managed by an individual or stock company under strict financial supervision by the university business office, has grown in popularity. After proper allowance for rent, heat and light, depreciation of furniture and fixtures, dead stock, and cost of administration, any balance remaining is divided among the student stockholders on the basis of original capital investment, or as a proportionate rebate to purchasers. At the University of Arizona a somewhat similar plan is in use. However, while a rebate is made to student purchasers, the entire burden of ordering and the paying of bills falls upon the university business office, and no charge is made against the bookstore for this service. The committee recommends that these duties be performed by a clerk or manager hired by the bookstore and paid from bookstore funds and that complete monthly reports of all bookstore financial transactions, checked by a system of sales slips, inventories, and semiannual balance sheets, be made to the university business office. In this way the bookstore will carry the overhead expense which properly belongs to its administration, and the university office will be relieved of considerable detail and expense which is not properly a charge against it.

PURCHASING, STORAGE, AND INVENTORY.

It is the opinion of the committee that the great task of purchasing for the university is well organized and in efficient hands. The university lacks, however, a centralized receiving station for deliveries and a warehouse which would permit purchase in quantity, safe storage, and accurate inventory of supplies on hand. Deliveries at present are made more or less at random to various buildings on the campus, with consequent confusion and delay in receipt of needed supplies and apparatus.

The property of the university as represented in apparatus and supplies in various departments is of great value. Some departments keep accurate, running card inventories of this cost of property. In others the system is not so carefully administered. Probably the issue of uniform inventory cards to each department, with required report at regular intervals, would improve the system.

Some improvement and saving can doubtless be effected when a new chemistry laboratory is built, by centralizing in a *single* stockroom the purchase and storage for all university departments using chemicals. Such a stockroom should of course be administered by the department of chemistry.

Burrus[4] summarizes the proper steps in purchasing and inventory as follows:

> A complete system of handling and accounting for supplies requires that proper provision be made for: (*a*) Requisitioning, including interdepartmental business; (*b*) obtaining quotations; (*c*) issuing purchase orders; (*d*) following up orders; (*e*) receiving and checking; (*f*) distributing to departments; (*g*) recording all transactions; and (*h*) making and keeping records of inventories; and it is recommended that all institutions scrutinize their present methods with reference to these requirements to discover where improvements can and should be made.

MISCELLANEOUS SUGGESTIONS.

At present the University of Arizona charges no tuition fee to residents of Arizona, while nonresidents pay tuition at the rate of $15 each semester. All students pay an incidental and hospital fee of $13 each semester, $5 of which goes to the Student Activity Fund. Thus the nonresident student pays in all only $46 annually to the university for education. The committee believes that this fee should be considerably increased in the case of nonresidents. Arizona, by the nature of its climate, attracts a large number of tourists and health-seekers, resident in the State for considerable periods, but not permanently. Since there are no private colleges nor universities in the State, the entire burden for the higher education of this largely nonproductive class falls upon the State university. In view of these facts the committee recommends that the board of

[4] A Study of the Business Administration of Colleges. University of Chicago dissertation, 1921.

regents give consideration to the advisability of increasing the fee for nonresident students to meet more adequately the cost of their training.

The issue of catalogues, bulletins, and reports of various sorts by the University of Arizona has reached considerable proportions. It is impossible to determine without closer study whether the installation of a small printing establishment is as yet economically warranted. At least a multigraph could doubtless be used to advantage. Provision for this should be made in the organization of a general university office.

III. PLANT UTILIZATION.

When the visitor first comes to the campus of the university he is likely to be impressed with the size of the plant. The buildings are numerous and large. So much is this the case that the mere onlooker is likely to conclude that they can easily accommodate the activities of the faculty and students who are in evidence. As he looks further, however, he is soon disillusioned as he discovers the great variety of activities in which the university engages. Five of the large buildings, for example, are dormitories. The agriculture building has large sections devoted entirely to the work of the agricultural experiment station, to the agricultural extension service, to the State museum, and to the central administrative offices. The mines and engineering building accommodates the Arizona Bureau of Mines, and the United States mining experiment station, the latter of which requires extensive space. The main building contains the State pure-food laboratory, the university bookstore, and the university branch of the United States post office. As a result of all these eliminations, the space left for professorial offices and for instruction is necessarily very limited, and the crowded condition of the teaching work is apparent to the committee after careful study of the use of classrooms and laboratories.

The assignment of classes to hours and to rooms is in charge of a faculty committee of two, an arrangement which the survey committee heartily approves. It further commends the policy of continuing the membership of this committee for a long time, as the work requires a vast amount of information on the room possibilities, the curricula, and the interests involved, a type of information which can be acquired only through long practice. The importance of this work, especially in an institution where the working space is very limited, can scarcely be overestimated in keeping affairs running smoothly.

Several principles actuate the work of the room committee in allotting rooms and hours. First, so far as possible, the actual classroom work is assigned to the forenoon hours, and the laboratory

work is carried on in the afternoon. This plan is usually the most acceptable, and the soundness of it is readily conceded, especially in a climate as warm as that of Tucson. When necessity demands, however, afternoon classes should not be avoided. It may not be amiss to call attention to the fact that the public schools succeed with afternoon classes even during the early fall and late spring. Another principle which actuates the room committee in its work is the consideration of faculty members' desires. Members of the faculty are requested to suggest on a blank the hours desired for their classes and to state conflicts to be avoided. This consideration makes for harmony, and is to be commended so far as it does not interfere with the best interests of the university. Finally, the room committee gives first recognition to required courses in alloting space and hours. The wisdom of this is obvious, as it must be made possible for students first of all to arrange their schedules to carry their required work.

A hundred per cent use of rooms is impossible in any university, because of certain limitations, such as conflicts for students in arranging their schedules, the limited number of teaching members of the faculty, which limits the number of sections of particular courses, and the fact that certain courses require one or two days of field work a week. In addition to these items is also to be mentioned the fact that many rooms are equipped for special purposes and can not readily be used for other work.

Since the possibilities of the use of rooms are complicated by so many factors and frequently very limited, no tabular statement is presented herewith. Numerous rooms, however, it may be said, are used for 20 or more forenoon periods out of a possible 24 periods of the week. This represents a very high degree of use indeed. For reasons above stated, the classrooms are not used so freely in the afternoons. With all conditions in mind the survey committee is of the opinion that the assignment of classrooms and laboratories is well administered, and that the room space is efficiently used.

The use of space for faculty members' offices and work rooms was not carefully investigated. It is, however, quite apparent that this situation is anything but satisfactory. A number of the rooms used for offices are large and were not intended for this purpose. This is unfortunate, as it necessitates a number of faculty members occupying the same room, an arrangement which should be only temporary. The lack of office space has also resulted in overcrowding the available rooms. In this connection the survey committee suggests a yearly study of office use and needs by an essential unprejudiced university committee. Good working quarters are an essential if members of the faculty are to achieve the highest results for the university.

The committee has but few suggestions to make regarding the use of rooms. The room used for faculty meetings could perhaps be used more frequently for classes, as it is now used only a few hours a week for this purpose. The committee also suggests that consideration be given to fitting up at least a part of the ground floor of the agricultural building for temporary classrooms and laboratories.

BUILDING PLANS.

The university has adopted a well-balanced plan of arrangement of buildings on the campus. The result is pleasing to the eye and well adapted in most particulars to the convenience of students and faculty members. Additional land is available for extension, and the board of regents has exercised a farsighted policy in continually enlarging the campus.

The question of what buildings are most immediately necessary is much discussed at the University of Arizona. The consensus of opinion among regents, faculty, and legislators undoubtedly favors the increase of library facilities as the most necessary addition to the physical plant. On the whole, the committee agrees with this feeling. Certain other needs, however, are very pressing. The desirability of a home for the college of letters, arts, and sciences has already been referred to, and this is of vital importance. The present Science Building, housing the departments of chemistry, physics, and biology, is not only overcrowded, but by its construction and lack of proper fire escapes constitutes a real and dangerous fire menace to the university. Since this building is probably to be continued in use in some capacity or other for many years to come, the immediate addition of fire escapes is imperative.

The housing facilities and the equipment of the department of physical training for both men and women are entirely inadequate and unworthy of a State university. To say that the possibility of outdoor work during the entire year obviates the necessity for gymnasium facilities is a misstatement, since no amount of games or sports can replace gymnasium work, particularly in remedial training for those students who do not ordinarily take voluntary part in competitive athletics and who usually need physical development most of all. The university should include in the building plans for the future a well-equipped gymnasium sufficiently large to care for men and women, to accommodate indoor athletic contests and possibly to furnish an auditorium of sufficient size to seat the entire student body. When this building is available, the committee recommends the institution of the requirement of physical training for all freshmen and sophomores, in addition to the work of the Reserve Officers' Training Corps.

During the coming year it is probable that enough money will be available to increase library housing facilities. If the sum which can be used does not exceed $100,000, the committee believes that the plan of adding fireproof stacks to the present library building is a good one. It is to be hoped, however, that a greater sum may be realized by strict adherence to a policy of economy in so far as it is consistent with the proper growth and development. If a sufficient total sum can then be realized, the committee makes the recommendation that a new library building be constructed to house, at least temporarily, in addition to the library, the State museum, and possibly the administrative offices of the university; also that the present library building be remodeled, if possible, for use as classrooms for subjects in the college of letters, arts, and sciences, and for additional much-needed instructors' offices. While such a plan will by no means permanently solve the question of securing a home for the college of letters, arts, and sciences, it will at least concentrate its work to a certain degree, and will add to the present limited number of classrooms and offices on the campus.

FUTURE POLICY.

In conclusion, the committee wishes to make a recommendation concerning the administration and development of the university for the immediate future. The university has just passed through a period of great expansion in equipment, faculty, and curriculum. This increase has been justified by the growth of the student body and the demands of the people of the State. The present time, however, is a period of financial and business depression. The tax valuation of property in Arizona has decreased, and the incomes have been diminished. In view of this the committee feels that, in justice to the already existing departments of the university, it would be an error to add new departments, schools, or activities for the next few years to come. Whatever income is available should be used for the development of the university as it now exists, rather than for the establishment and maintenance of new departments and interests.

Chapter IV.

THE FACULTY.

I. TRAINING AND EXPERIENCE.

The determination of faculty efficiency is perhaps the most difficult task in the investigation of a college or university. Definite standards for training and experience are not lacking, but no formal system of measurement can adequately determine such factors as personality, independent study, devotion to duty, and the esprit de corps so necessary to actual educational accomplishment. The committee has made no attempt at systematic classroom visitation. Certain commonly accepted tests have been relied upon to determine the fitness of the faculty for intellectual leadership. These are academic training, teaching experience, and productive scholarly activity as indicated by publications. (See Appendix III.)

In order to interpret the data correctly the reader must bear in mind that the degree of master of arts (or science) is usually conferred for the successful completion of one year's (in rare cases, of two years') work beyond the undergraduate curriculum and the degree of doctor of philosophy for not less than three years of graduate work. However, the doctor's degree (and even the master's degree) is not so common in engineering, agriculture, home economics, and some other professional or vocational fields as it is in the work of the traditional liberal arts type. With these facts in mind, the faculty requirements as outlined by the North Central Association of Colleges and Secondary Schools, of which the University of Arizona is a member, may be accepted as a standard of judgment. These are stated as follows:

> The minimum scholastic requirement of all college teachers shall be equivalent to graduation from a college belonging to this association and graduate work equal at least to that required for a master's degree. Graduate study and training in research equivalent to that required for the Ph. D. degree are urgently recommended, but the teacher's success is to be determined by the efficiency of his teaching as well as by his research work.

Quite recently (March, 1922) the National Conference Committee on Standards of Colleges and Secondary Schools has formulated a statement regarding faculty preparation which is here reproduced:

> The training of the members of the faculty of professorial rank should include at least two years of study in their respective fields of teaching in a recognized graduate school. It is desirable that the training of the head of a department should be equivalent to that required for a doctor's degree, or should represent a corresponding professional or technical training. A college should be judged in large part by the ratio which the number of persons of professional rank with sound training, scholarly achievement, and successful experience as teachers bears to the total number of the teaching staff.

Including the administrative officers, the academic preparation of the faculty members of the University of Arizona may be summarized as follows with reference to the highest degree taken in course:

Doctors of philosophy	17
Doctors of law	2
Masters of arts or science	33
Mining engineers	2
Civil engineers	1
Bachelors of arts or science	25
No degree	2
Total	82

From the purely formal standpoint it is at once apparent that nearly one-third of the entire faculty hold no degree higher than the bachelor's. Excluding the engineering degrees, these are distributed as follows:

College of letters, arts, and sciences	10 of a total of 40
School of education	2 of a total of 5
School of law	2 of a total of 4
School of home economics	3 of a total of 4
College of agriculture	7 of a total of 15
College of mines and engineering	1 of a total of 11
Department of physical training	2 of a total of 3
Total	27 of a total of 82

Of the above 27 members, 10 hold full professorial rank. Nearly all of these are outside the college of letters, arts, and sciences. It must be stated, however, that in the case of at least some of the faculty members falling within this class, the degree is an unreliable index of the worth of the individual, since it fails to indicate adequately the scholarly attainment which has produced some of the most important research credited to the university. Generally speaking, however, this is true only of those whose training lies in the past, when graduate work in America was less completely developed than is now the case. The committee recommends that in making future additions to the faculty, particularly in the college of letters, arts,

and sciences, the standards for preparation and training as expressed by the North Central Association and the National Conference Committee be carefully observed.

Data which were compiled show that the leading universities of the country have contributed to the training of the faculty members of the University of Arizona. (See Appendix III.) A wise policy has been followed in drawing teachers not exclusively from the West nor from the East, but from all parts of the United States, and in a few cases from foreign universities. As is to be expected in a young institution, the graduates of the University of Arizona itself are sparsely represented. Certainly there is no evidence of faculty "inbreeding" at Arizona.

Particularly to be commended is the length of teaching experience characteristic of most of the faculty members. But a small proportion have taught less than five years, and in most cases the experience has been gained not only at Arizona but elsewhere. Of the total 82 reporting, 54 have had some teaching experience in elementary, secondary or normal work, a most useful contact for a faculty member in a State university.

The visible productive activity of the faculty may be summarized as follows for the past two-year period: Excluding administrative officers, 18 persons of full professorial rank have published articles of a research or nonresearch character, while an equal number have not; those of the rank of associate professor are equally divided, 3 and 3; of the 18 assistant professors, only 5 have manifested the results of productive activity by publication; among the instructors, 6 of a total of 11 have published nothing. Apparently, then, less than half of the entire faculty has given attention to this sort of academic activity during the past two years. The committee does not wish, in making this analysis, to be understood as assuming the position that continual publication is unqualifiedly essential in determining the usefulness or acceptability of a faculty member. The subject has been so thoroughly discussed elsewhere that the proper relation of research and investigation to efficient teachers is generally understood. Many of the best teachers in the universities of the United States have devoted little or no time to research. However, the position of the State university differs somewhat from that of other institutions of higher education. It must naturally assume leadership in its State not only in the dissemination of knowledge, but also in the progress of investigation. This is particularly true in a State like Arizona, where the State university is the only fully developed institution of higher learning within the Commonwealth. In matters of practical experimentation the University of Arizona has already assumed a generally recognized leadership within the State. Its efforts should not be halted there. Contending, as it must, against such obstacles as geographical remoteness, modest library facilities,

and occasional heavy teaching schedules, the faculty of Arizona will, nevertheless, be measured with the faculties of other State universities in accordance with its contributions to the sum of human knowledge.

The State of Arizona owes to its own citizens and to its sister States the duty of supporting productive research in those fields of learning in which it is particularly well qualified. The faculty of the State university thus has the double duty of educating the young and of broadening the sphere of human knowledge.

II. REMUNERATION AND SERVICE.

The remuneration of faculty members, while it may not be comparable with the financial rewards to be gained in other professions, should be at least sufficient to insure a comfortable living, and thus to attract persons properly prepared to teach. Without question the salaries of college teachers everywhere have been considerably increased during the past five years. While directly comparable figures are not available, considerable information may be gained from two tables dealing with salaries in public higher institutions in 1915–16 and 1919–20, respectively:

TABLE 3.—*Average maximum and minimum salaries in 90 State colleges and universities in 1915–16.*[1]

Positions.	Number of members in faculty.				
	Under 26.	26 to 50.	51 to 100.	101 to 200.	Over 200.
President[2]	$3,828	$4,578	$5,023	$5,932	$8,139
Deans, maximum	2,050	2,909	3,054	3,109	5,128
Deans, minimum	2,050	2,238	2,409	2,418	3,147
Professors, maximum	2,423	2,300	2,645	2,770	4,189
Professors, minimum	1,742	1,776	1,879	1,883	2,256
Associate professors, maximum	1,780	1,825	1,922	2,043	2,530
Associate professors, minimum	1,367	1,550	1,691	1,700	1,750
Assistant professors, maximum	1,514	1,658	1,688	1,750	2,303
Assistant professors, minimum	1,350	1,393	1,314	1,305	1,469

[1] From "The Educational System of South Dakota," Bul., 1918, No. 31, U. S. Bu. of Educ.
[2] In the majority of cases the president's house is also provided.

The following table is taken from Bulletin, 1920, No. 20, of the Bureau of Education, dealing with "Salaries in Universities and Colleges in 1920." It deals only with faculty members in public institutions:

TABLE 4.—*Salaries in universities and colleges.*

Title of position	Number of persons.	Minimum salary.	Maximum salary.	Average salary.	Median salary.	Most frequent salary.
President or chancellor	77	$2,500	$12,500	$6,647	$6,000	$6,000
Dean or director	367	1,200	10,000	3,819	3,500	3,000
Professor	2,460	300	10,000	3,126	3,000	3,000
Associate professor	822	300	4,000	2,514	2,500	3,000
Assistant professor	1,705	500	4,000	2,083	2,000	1,800
Instructor	2,138	300	3,100	1,552	1,500	1,800
Assistant	855	75	2,500	801	750	1,200

Examination of these two tables shows that the average salary for professors, associate professors, and assistant professors in 1919–20 was considerably larger than the average salary for the same ranks in 1915–16, except in the largest institutions. Even in these the average salary for associate and assistant professors in 1915–16 was lower than is the average for the same ranks in all institutions in 1919–20. The permanence of this new higher salary level in public schools and colleges everywhere is being questioned during the present period of deflation and falling wages.

In view of the conditions just explained the committee made a careful study of the salaries and duties of the faculty of the University of Arizona, particularly with a view to comparison with conditions in other institutions.[5] The study shows that the highest salary paid to a professor without administrative duties is $4,000; to an associate professor, $3,100; to an assistant professor, $2,900; and to an instructor, $2,200. However, these salaries are exceptional in each class, and the larger number of salaries are several hundred dollars lower in each of the respective ranks. The committee believes that the salary scale for faculty members at Arizona corresponds fairly well with salaries paid in other State institutions comparable to Arizona in size. Some dissatisfaction was expressed by faculty members regarding inequalities said to be existent between salaries based on 10 and on 12 months' service, respectively. The committee recommends the establishment of definite maximum salary limits in each academic rank, to be differentiated in just proportion dependent upon the number of months of service annually.

The highest salary paid to an administrative officer (except the president) is $5,000, the sum received by each of the deans of the three colleges. The committee believes that the eventual maximum limit for these positions should be somewhat increased, not only because the responsibilities are heavy, but in order that men who might otherwise be attracted away from the academic field to more lucrative professional service elsewhere may be retained in the service of the university.

THE TEACHING LOAD.

The North Central Association's maximum teaching load of 16 semester hours a week serves as the standard at the University of Arizona, and an honest effort is being made to allow no teaching schedules in excess of this figure. However, the size of classes and the nature of the work play so large a part in determining the difficulty of the actual performance that some closer standard of measurement must be used.

[5] See Appendix IV.

The estimation of the teaching load is always a very difficult problem. So many imponderable factors enter into the situation that any purely mechanical method of measurement will give only approximately correct results. Nevertheless, it is often necessary in the administration of every educational institution to adopt some method of comparison of the teaching load borne by various faculty members, both in order that injustice may be avoided and that funds may be efficiently apportioned. In estimating the teaching loads of faculty members the Bureau of Education has adopted a unit called the "student clock hour." It may be defined thus: One student under instruction in lecture, quiz, or laboratory for at least 50 minutes net represents one student clock hour; for example, therefore, 20 students meeting four hours a week in recitation represent 80 student clock hours. The student clock hour reckons laboratory, lecture, and quiz exercises equally hour for hour. For instance, a student spending one hour in lecture, one hour in quiz, and four hours in laboratory in a week can be counted as receiving six student clock hours of instruction. Table 5 illustrates conditions at the University of Arizona.

The figures there given under the heading "student clock hours" are valuable as an index of the distribution of the teaching load. As is usual in every institution, those departments where work is required of freshmen, or largely elected by them, bear the heaviest loads, as for example the department of English. Conspicuously low student clock-hour figures must of course be interpreted in the light of the proportion of time given to teaching, as indicated by the part of the salary so chargeable. The elective system makes it difficult to obtain any great degree of uniformity in the teaching load, as indicated by the student clock hour. It is, however, possible to establish for purposes of comparison a theoretically proper average term load. The investigations which the bureau has made of various institutions throughout the country has led it to suggest:

> That in an institution where research work is encouraged and expected it is reasonable to expect also a departmental average of 250 student clock hours per instructor per week. This, it is believed, might be a fair working average for the larger modern State universities. In a distinctively undergraduate college, on the other hand, where research is limited and where little or no graduate work is conducted, a departmental average of 300 student clock hours per instructor is regarded as a reasonable norm. In this connection it is worth while to note that usually an institution whose program is made up largely of laboratory work will generally record a larger number of student clock hours per instructor than an institution most of whose program consists of nonlaboratory courses.[6]

To illustrate the conditions at the University of Arizona Table 5 was compiled.[7] In it there are several slight inaccuracies due to the

[6] Survey of the University of Nevada, Bu. of Educ., Bul., 1917, No. 19.
[7] Compiled from the data of Appendix IV.

fact that the amount of salary for instruction is an estimate by the dean of each college.[a] Several members of the faculty gave instruction to small groups, but no part of their salaries is listed therefor. One-third of the salary of one member is listed for instruction, but, according to the reports, he taught no classes. In spite of these slight inaccuracies it is believed, however, that the total result of the summary is approximately correct.

TABLE 5.—*Instructors, salaries, and student clock hours, 1921-22.*

Departments.	Full-time instructors.[a]	Total student clock hours taught by instructors.		Average student clock hours per instructor for the year.[b]
		First semester.	Second semester.	
Agricultural chemistry	0.45	203	116	455
Agriculture		38	9	
Agronomy	.69	147	152	216
Animal husbandry	1.01	218	255	236
Art	.54	138	178	220
Astronomy and physics	1.53	730	819	505
Biology	3.00	1,611	986	411
Chemistry	3.79	843	630	191
Civil engineering	2.05	466	485	232
Classical languages	.65	98	78	134
Dairy husbandry	1.16	141	110	108
Education	3.50	838	1,317	264
Electrical engineering	1.00	229	193	205
English composition and rhetoric	4.47	1,784	1,497	367
English literature	2.00	1,255	1,279	632
Entomology	.33			
Geology	1.00	503	545	525
Germanic languages	.35	83	68	216
History	1.20	540	614	379
Home economics	3.56	1,198	1,476	345
Horticulture	1.02	235	275	265
Law	3.75	552	554	140
Mathematics	4.00	909	813	221
Mechanical engineering	1.00	334	304	310
Mechanic arts	1.67	826	814	491
Metallurgy	.50	347	157	508
Mineralogy and petrology	.80	249	253	627
Mining engineering	.52	164	289	415
Optical mineralogy	.21	90	42	314
Philosophy	1.00	135	240	168
Physical education for women	2.00	1,330	1,215	644
Plant breeding	.20	60	10	175
Plant pathology	.16	40		125
Poultry husbandry	.52	12	95	108
Psychology	1.00	547	123	235
Public speaking	1.00	237	238	238
Romance languages:				
French[c]	2.35	757	602	308
Spanish	5.65	2,109	1,897	360
Social science	5.41	2,180	2,361	411
Total	65.50	22,497	20,798	
Average				330.5

[a] Based on the proportion of salary which was paid for instruction.
[b] Half of the total number of student clock hours for the first and second semesters divided by the number of "full-time instructors."
[c] The estimates were secured from the bursar, who keeps them listed on the salary roll.

Previous surveys made by the Bureau of Education allow comparisons to be made with a few other institutions, which are listed in Table 6. Enough comparative material is there presented to show that the average faculty load at the University of Arizona is materially higher than the reasonable norm suggested by the bureau. It is not, however, as high as at the University of Washington, which had an unusually high teaching load per instructor. Table 7 shows how these teaching loads were distributed. In a rapidly growing State the tendency toward overcrowding is an ever-present danger, to be met only by constant yearly additions to the faculty. That this policy has been consistently and wisely followed at the University of Arizona is evidenced by Table 8, showing the total faculty numbers by rank for the past 10 years. The summer school is not included.

TABLE 6.—*Comparison of average faculty loads.*

Institutions.	Average student clock hours per instructor.		Range of departmental averages.	Year of report.
	First semester.	Second semester.		
University of Iowa	264	240	71–501	1914–15
Iowa State College	325	305	87–528	1914–15
University of Washington	337	330	94–648.4	1914–15
Washington State College	194.3	234.5	22–383.6	1914–15
University of Nevada	221.6	218	27–451	1915–16
College of Hawaii	202	.....	9–465	1919–20
University of Arizona [1]	330.5	.....	103–687	1921–22

[1] Data are for the year instead of for semesters.

TABLE 7.—*Distribution of average departmental faculty teaching loads.*

Departmental averages of student clock hours per instructor.	Number of departments.
100 to 199	8
200 to 299	11
300 to 399	7
400 to 499	5
500 to 599	3
600 to 699	3

TABLE 8.—*Numbers of members of the faculty, 1912–1922.*

Titles.	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20	1920–21	1921–22
Deans	.....	.....	2	3	3	3	3	3	3	3
Professors	17	21	20	21	31	37	39	41	42	46
Associate professors	.....	2	2	5	4	7	8	7	7	10
Assistant professors	7	7	10	20	14	19	11	13	18	19
Instructors	13	10	13	12	10	10	9	12	13	15
Faculty assistants	.....	.....	.....	3	6	4	5	4	10	7
Fellow assistants	.....	.....	.....	6	2	4	3	6	2	7
Total	37	40	47	70	70	84	78	86	95	107

The figures just given show perhaps an unusually large proportion of faculty members of professorial rank. The relative number of instructors is especially small as compared with assistant professors, associate professors, and full professors. From the standpoint of efficient teaching this is an excellent situation. However, it is evident, that any further immediate enlargement of the faculty should be, generally speaking, by the addition of instructors or assistant professors, rather than by increasing the number of those of higher rank.

SIZE OF CLASSES.

The teaching load and student costs are matters directly affected by an institution's policy in regard to size of classes. Unnecessary multiplication of subjects means too many small classes and unduly high student costs. Overcrowding results in too heavy teaching loads and an inefficiency in instruction which is by no means justified by low student cost. Classes of less than five students can rarely be justified in an undergraduate institution except, occasionally, in required work for advanced students. The committee agrees in general with the statement made in the "Survey of the State Higher Institutions of Iowa," Bulletin, 1916, No. 19, page 120:

> Many small classes indicate in some cases the lack of adequate study of the curriculum or schedule by the administrative officers, and in others an undue effort by departments to serve the whims or the convenience of students in order to build up departmental enrollment. Large classes, on the other hand, unless they are lecture classes, usually entail inferior educational results. Classes of over 30 are at least open to question. Any considerable number of them generally shows a need for more instructors, or a poor distribution of students and instructors.

Detailed data are given elsewhere to illustrate conditions in the various departments of the university.[9] A count shows 29 classes during the first semester and 35 classes during the second semester which contained fewer than 5 students. Of the total number, 16 classes are for graduate students. Most of the others are to be found in the professional schools, where the attendance is comparatively small and the subjects prescribed for graduation. In the college of letters, arts, and sciences, the following departments have had undergraduate classes with fewer than 5 students each during the year: Biology 2, chemistry 3, classical languages 2, history 4, mathematics 4, French 1, Spanish 2. While it is desirable that even this number be reduced, the committee believes that the proportion of small classes at Arizona is not unduly large.

The conditions at the other extremity of the table are not so favorable. During the first semester 66 classes, and during the second semester 53 classes, contained more than 30 students each. Some of these are, of course, lecture sections. However, overcrowding is to be noticed unmistakably in the departments of English composition, English literature, French, Spanish, and the social

[9] See Appendix V.

sciences. Such conditions, while occasionally temporarily unavoidable, should receive prompt attention by administrative authorities, since the quality of work done must inevitably suffer if they be allowed long to continue.

III. GENERAL CONCLUSIONS.

It is the impression of the committee, after personal contact with the faculty of the University of Arizona and after careful study of the information at its disposal, that those in charge of the university have succeeded in attracting to its service an unusually capable and well-prepared group of teachers and investigators. The loyalty of the faculty to the university is marked and the esprit de corps is excellent. Generally speaking, faculty conditions at Arizona compare most favorably with those in other standard institutions.

It is to be regretted that a feeling has arisen in some places in Arizona that any faculty member engaging in extra curricular activities, either remunerative or otherwise, must therefore necessarily be neglecting his university obligations. Without question instances have occurred at Arizona and elsewhere in which such neglect of academic duties has actually taken place. It would, however, be most unwise to condemn for this reason all activities of faculty members not directly connected with campus life. A teacher should before all else be a good citizen, interested in his community, his State, and his fellow men, nor should he begrudge service in their interest. Contacts of this sort give that very broadening factor which is lacking in the lives of so many members of the teaching profession.

There is, however, another reason why certain faculty members should be allowed reasonable participation in employments beyond the confines of the campus. The technical sciences, such as chemistry or engineering, require from those who teach them constant contact with their changing phases in daily life. The mechanical or mining engineer can not keep pace with his subject by reading a textbook alone. He must be abroad in shop and mine not only to observe, but actually to perform the operations of his profession, if he is to keep fresh his ability to instruct the student. Many institutions, particularly in the larger centers of population, point with pride to the reputations which their faculty members have gained as consultants in the great technical problems of the commercial world. The old saying "He, who can, does; and he who can not, teaches," should be made inoperative in the modern teaching profession. Only he who can "do" can teach. It is as unreasonable to divorce the teacher from the commercial manifestations of his technical subject as it would be to forbid the teacher of literature access to the library or the graduate school. The safeguarding of university time and interests may be left with reasonable security to the judgment of the regents and the administrative officers of the institution.

Chapter V

STUDENTS AND STANDARDS.

I. THE UNIVERSITY AND THE SECONDARY SCHOOLS OF THE STATE.

The University of Arizona is the capstone of the State system of public education. As such it has a very intimate relation with various State agencies and activities. This relation is especially intimate with the secondary schools, both public and private, for upon them to a large extent does the university depend to prepare those who later become its student members. In the earlier days of the university it to a very important degree did the work of preparing students for college, but with the development of secondary schools in the State the university ceased this preparatory training. In a general way the number of students in the future who will seek entrance to the university can be forcasted from data on secondary schools. This is especially so because of the unique position which the university occupies, it being the only collegiate institution in the State, with the exception of the Phoenix Junior College.[1] It is therefore necessary briefly to outline the progress of secondary education in the State.

The development of the public high schools of Arizona dates from 1895, when the Territorial legislature enacted a law which permitted a school district of 2,000 or more inhabitants to maintain a high school. Two or more adjoining districts, with the necessary population, under the law might unite to form a union high-school district to provide a high school. Progress under this law was slow for several years, but, owing to a combination of social and economic factors and to changes in the law and to the granting in 1912 of State aid for the teaching of vocational subjects, public secondary education had a very rapid development following 1900, and especially subsequent to 1905.

[1] The enrollments in the junior college of the Phoenix Union High School have been as follows:

	1920-21	1921-22
Freshmen	14	60
Sophomores		8
Others above high-school grade		17
Total	14	85

The private high schools are likewise a factor in the preparation of students for the university, though they are not so important in this respect as are the public schools. Since the college preparatory course was discontinued by the university in 1914, the university no longer renders such service.

Attention may also be directed to the fact that in a new State like Arizona, where immigration is large, many who attend the institutions of higher learning have taken their secondary work outside the State. So far as data are available, more than half of the students in the university during the first semester of 1921–22 were graduated from high schools in other States and in foreign countries.[2]

The summary shown in Table 9, which was compiled from reports of the Commissioner of Education and from other sources, illustrates the progress made in secondary education in the State. This shows a very rapid growth indeed, the secondary enrollment more than doubling itself every five years from 1905 to 1920. Among a number of factors which were responsible for this development, two may be pointed out. First, there was an amazing increase in the population 15 to 19 years of age (the approximate high-school age) during the period under consideration, as is shown in Table 10. In Arizona this increase was 173 per cent, while that for the United States was only 25 per cent and that for Arizona's neighboring States was but 70 per cent.

TABLE 9.—*Secondary enrollments in the State of Arizona, not including the State normal schools.*

Institutions.	1900	1905	1910	1915	1920
Public high schools	172	286	1,135	2,415	5,675
Private high schools	43	55	240	498	319
University of Arizona, preparatory course	115	165	94	.....	.....
Total	330	506	1,469	2,913	5,994

TABLE 10.—*Population 5–19 years of age, inclusive.*

Years.	United States.	Colorado, Utah, and New Mexico.	Arizona.
1900	7,556,089	92,128	10,412
1910	9,063,603	140,966	17,389
1920	9,430,536	156,665	28,435
Increase in per cents:			
1900–1910	20	53	67
1910–1920	4	11	63
1900–1920	25	70	173

[2] See Table 23. This is further emphasized by the fact that in 1920 there were 623 graduates from Arizona secondary schools. The freshman class at the university the next year numbered 386, which number is 62 per cent of the number of high-school graduates in the preceding year. Some of these students were then residents of the State, while others were not. Of the 356 high-school graduates in 1916, it was reported that 111 attended college the next year; that is, 31 per cent.

A second factor which made possible the great increase in secondary-school enrollments was the relatively small proportion of the population 15 to 19 years of age which was in secondary schools in the earlier years of the twentieth century, as is evident from Table 11. From this it is to be observed that the percentage of population of approximately secondary-school age which was in secondary schools of Arizona was lower than the percentage for the United States and very much lower than for the neighboring States.

TABLE 11.—*Enrollments of secondary-school pupils in public high schools and private high schools and academies.*

Years.	United States.		Colorado, New Mexico, and Utah.		Arizona.	
	Total enrollments.	Per cent of population 15–19.	Total enrollments.	Per cent of population 15–19.	Total enrollments.	Per cent of population 15–19.
1900	630,018	8	9,184	10	215	2
1910	1,032,464	11	21,796	15	1,375	8
1920	2,421,462	26	47,010	30	6,162	22

Is the progress in secondary education likely to continue at the rapid rate of the past 5 or 10 years? Probably it will for the next 5 or 10 years. The first factor pointed out is likely to exert its influence, though there is the slight possibility that the part of the increase due to immigration may be checked. The second factor also seems to indicate a probable continuation of rapid secondary-school development, since, with all the progress made by 1920, the proportion of persons of secondary-school age who were in secondary schools was low when compared with the country as a whole and with Arizona's neighbors.

The high-school system is well articulated with the university. Of the 43 high schools in 1921, 34 were fully accredited by the university, and the 8 others were accredited for such part of the four-year course of study as they were able to offer. For the great majority of students in the high schools the way is open for entrance into the university. The State normal schools are also included in the university scheme of accrediting, and graduates from those institutions enter the university and receive advanced standing.

II. STANDARDS OF ADMISSION, RETENTION, AND GRADUATION.

The standards for admission of students are in keeping with those of the best institutions. In 1912–13 the total number of secondary units required for entrance was 15. These were as follows:

I. Prescribed subjects:	Units.
English	3
Algebra	1½
Plane geometry	1
History and civics	1
Science	1
Foreign language	2
Total required	9½
II. Elective	5½

This (15 units) was the maximum requirement for all the colleges, but the college of mines and engineering required both physics and chemistry as science subjects. This plan has been continued with practically no changes until the year 1921–22, when the following arrangement was made:

Number of prescribed and elective units.

Colleges.	Units prescribed.	Units elective.
College of letters, arts, and sciences	9	6
College of agriculture	7	8
College of mines and engineering	10	5

The university is a member of the North Central Association of Colleges and Secondary Schools, to which it was admitted in 1916. Since that date it has maintained the standard of that association.

Entrance on condition is possible, but no quantitative conditions are granted. A student may be conditioned in two units of prescribed subjects, provided he represents a total of 15 units of acceptable credits.

Admission is by certificate or by examination, graduates of approved high schools of Arizona being admitted upon certificate. Those lacking satisfactory credentials are required to take an entrance examination on the work required for admission.

SPECIAL STUDENTS.

An exception to the regular admission requirements is made in the case of persons over 21 years of age who can not meet the entrance requirements. These may be admitted to the university as special students and may elect, with the consent of the instructor in charge, such courses as they are prepared to undertake with profit. Special students 25 years of age may, by permission of the faculty, become

candidates for degrees, subject to the fulfillment of such entrance requirements as the faculty may determine. Soldiers honorably discharged from the United States Army may enter as special students without meeting the age requirements.

CONTINUANCE IN COLLEGE.

Another evidence of the university standard is to be found in the rule on scholarship and its administration. The university catalogue for 1920–21 (p. 61) gives the following statement:

Continuance in college.— All students shall be required to carry, with a grading above D,* at least 50 per cent of the work for which they are registered. Students who are unable to do so shall be barred from class privileges for one semester. Such students may be granted a card of honorable dismissal, in which a statement regarding deficiency in work shall be expressly included. Students coming from other institutions of similar standing with dismissals of this kind will be required to give continued evidence of ability to carry successfully the work in the courses which they elect.

If the monthly delinquent list at any time during the year shows a student delinquent in more than 50 per cent of the units for which he is registered, said student shall be given one month's time to remove such delinquencies; and if the following delinquent list again shows him delinquent in more than 50 per cent of the units for which he is at that time registered, he shall be suspended from the university for the remainder of the semester.

The number of those who came under this rule during the year 1920–21 is listed in Table 12.

TABLE 12.—*Summary of 50 per cent failures during the year 1920–21.*

Colleges.	First semester.			Second semester.			Year.			Total, excluding duplicates.
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.	
Literature, arts, and sciences	37	8	45	24	11	35	61	19	80	74
Mines	22	.....	22	12	.....	12	34	.....	34	32
Agriculture	11	.....	11	33	.....	23	34	.....	34	33
Total failures	70	8	78	59	11	70	129	19	148	139
Second trial duplicates	.....	.....	.....	.....	.....	.....	9	.....	9	.....
Net failures	.....	.....	.....	.....	.....	.....	120	19	139	139
Total registration	.....	.....	969	.....	.....	916	.....	.....	.....	.....
Per cent failing	.....	.....	8.05	.....	.....	7.64	.....	.....	.....	.....

The first semester 78, or 8 per cent of the total number of students registered, failed to meet the scholarship requirement. Thirty-eight of these, in consideration of various extenuating circumstances, were granted permission to carry work the second semester. Nineteen returned, and 10 were successful the second semester, but 9 failed

*"D" is "a failure that may be removed by extra-class requirements or by examination given only at the time set for condition examination, but the grade may be filed only at or after the time set for a condition examination." (Catalogue, pp. 60–61.)

again. The second semester the proportion of students failing was not quite as high as during the first. These failures were distributed according to Table 13. The highest proportion of failures was among special students, a condition that may be expected. Next in order stand the freshmen. It seems somewhat singular that there should be so many failures among upper classmen and graduate students. Upon further analysis it appears that the greatest proportion of those failing were in the college of agriculture (see Table 14).

TABLE 13.—*Distribution of 50 per cent failures, 1920–21.*

Classes.	First semester.	Second semester.	Total for the year excluding duplicates.	Total enrollment for year, excluding duplicates.	Per cent of total enrollment failing.
Freshman	38	30	61	386	15.8
Sophomore	14	11	25	223	11.2
Junior	4	5	9	184	4.9
Senior	2	1	3	84	3.6
Graduate	1	2	3	53	5.7
Special	16	11	26	147	17.7
Regular unclassified	3	10	12	94	12.8

TABLE 14.—*Distribution, according to colleges, of 50 per cent failures, 1920–21.*

Colleges.	Number enrolled.	Number of 50 per cent failures.	Per cent of the number enrolled who failed.
Literature, arts, and sciences	849	75	8.7
Mines and engineering	230	32	13.9
Agriculture	112	33	26.8

The proportion of students failing seems somewhat large. This may be due partly to the enforcement of a high standard of scholarship. There may, however, be other causes for it. Students may be admitted on certificates who are inadequately prepared to carry university work. This may be easily surmised from the fact that the high schools, for the most part, are new, and consequently some may not have attained stable standards. Undoubtedly also there are members on the university roll, as in most institutions of learning, who attend from motives not in keeping with the high purpose of the university. On the other hand some of the difficulty may perhaps rest on the university. Is there the amount of supervision which is desirable for young people who find themselves thrown on their own resources in a new environment? Is all of the instruction of high grade and in keeping with high standards? Are the courses adapted to the ability of the students taking them and are students admitted

only to courses for which they are prepared? The committee merely suggests these possible causes of failures. It has made no attempt to investigate them. It is suggested that a detailed study be made of these failures, with a view to finding wherein the lack of adjustment lies.

REQUIREMENTS FOR DEGREES.

The requirements for degrees vary with the degrees. The following are the total number of units which are demanded.[1] These standards include four units of compulsory military training.

	Units
Bachelor of laws	108
Bachelor of arts	124
Bachelor of science	124
Bachelor of science in chemistry, engineering, or metallurgy	144

The freest election permitted is for the degree of bachelor of arts, for which 52 units are prescribed and 72 units are elective. The amount of elective work is larger than these numbers indicate, for within the 52 prescribed units many choices are permitted. The least amount of election permitted is in the technical curricula, in several of which the work is almost entirely prescribed; as, for example, in civil, mechanical, and mining engineering only 6 of the 144 units are elective and in electrical engineering only 5 units are elective. In each of the engineering curricula one year of foreign language is prescribed, but no courses in social sciences are included. The committee suggests that it might be wise to consider this lack of civic training. It is, of course, in keeping with prevailing practice to prescribe most of the work in engineering curricula.

Two years of foreign language are prescribed in two of the home economics curricula, and in the third curriculum one year of foreign language is required. In neither of these courses of study is there a requirement of social sciences or history, but a number of electives, varying from 24 units to 32 units, make it possible for students to secure such courses.

Four advanced, or graduate, degrees are offered—master of arts, master of science; engineer of mines, and doctor of philosophy, the latter being offered only in departments that possess special advantages for original investigation. The requirements for those degrees, like the requirements for the baccalaureate degrees, are high and reputable.

[1] "A unit usually represents one hour of classroom instruction a week for a semester, and assumes three hours of application; it may stand for one hour of classroom work and two hours of preparation, or for three hours of laboratory work, or for such distribution as the particular course may demand."—(*Catalogue, 1920-21, p. 68.*)

REGULAR UNCLASSIFIED STUDENTS.

Provision is also made for those who meet entrance requirements and who desire to pursue work in the university without following a regular prescribed course of study. The following statement from the 1920–21 catalogue (p. 58) gives the plan:

> Students over 25 years of age, who have met the entrance requirements but who do not wish to become candidates for a degree, are, upon presentation of a satisfactory written statement of reasons for taking special work, admitted to the university as unclassified students. Students who are not yet 21 years of age, who have met the entrance requirements, are admitted as unclassified students only when the request to pursue a special course is accompanied by the written approval of parent or guardian.

III. CLASSIFICATION AND DISTRIBUTION OF STUDENTS.

Allusion has several times been made to the fact that pronounced changes have occurred in the recent development of the university. During the past 10 years this is reflected in the general organization of the university. In 1912–13 the university consisted of departments, as follows:

1. A general college course leading to the degree of A. B. or B. S.
2. Agriculture: Four-year and short courses.
3. Engineering: Civil, electrical, mechanical; metallurgy; mechanic arts.
4. Agricultural experiment station.
5. Preparatory department.

The organization for 1915–16 shows for the first time the university divided into three colleges, together with a number of other departments along the broad general lines of the scheme at present in operation (see p. 8). In 1919–20 the "department of law" was made a "school of law" and the "department of home economics" was made a "school of home economics." The year following the "department of education" became a "school of education."

The preparatory department had the following history during the past 10 years: The work of the first year was discontinued after June, 1912, and that of the second year after June, 1913. No preparatory students were reported after 1913–14, but, beginning with 1914–15, there was a group of "special students" which corresponded somewhat to those who would have been listed in a preparatory department, had there been such.

The evolution briefly outlined reflects the changed attitude of the citizens of the State toward the university. From a small institution which was principally a secondary school even as late as 1908–9, and which was thought of as a local school and frequently spoken of as "Tucson University" it has become a real State university in every sense, and it commands the high respect of the citizens of the State. Its growth in this respect has been little short of marvelous.

There are three classes of undergraduate students: Regular, regular unclassified, and special. A regular student is one who has fulfilled the entrance requirements. The other types have been defined elsewhere.[5]

The registration in the university since its opening is exhibited in Table 15. This portrays some of the development of the university.

TABLE 15.—*Enrollments in the University of Arizona, 1891-92 to 1921-22.*

Years.	Total.	College.[1]	Preparatory.	Special	Farmers' short course.[2]	Extension	Summer school.	Correspondence.	Students' Army Training Corps.
1891-92	31	9	22						
1892-93	38	19	19						
1893-94	57	29	28						
1894-95	47	24	23						
1895-96	100	35	65						
1896-97	151	25	126						
1897-98	146	29	117						
1898-99	133	31	102						
1899-1900	161	36	115						
1900-1901	225	33	192						
1901-2	215	63	142						
1902-3	198	76	122						
1903-4	205	56	149						
1904-5	194	29	165						
1905-6	226	63	163						
1906-7	215	73	142						
1907-8	237	70	167						
1908-9	201	92	100		9				
1909-10	200	97	94		9				
1910-11	195	108	83		4				
1911-12	301	206	95		6				
1912-13	331	189	71		77				
1913-14	375	156	69		103				
1914-15	451	305		102	143				
1915-16	633	350		113	163			7	
1916-17	780	457		62	247			14	
1917-18	755	440		34	201			20	
1918-19	1,442	650		55	277		18	15	427
1919-20	1,698	817		248	347		78	143	
1920-21	1,732	1,023		147	307		179	125	
1921-22	2,264	1,183		164	283	158	282	168	

[1] Includes graduate students. [2] One week in length. [3] Total, excludes duplicates.

A more detailed classification is shown elsewhere.[6] There has been a steady growth in both the graduate and the undergraduate enrollments. The increase from 1915–16 to 1921–22, a period of six years, was as follows:

	Per cent.
Graduate	242
Undergraduate	188
Graduate and undergraduate	191
Freshman class	263

The data also indicate that almost three-fourths of the students of the university are taking their work in letters, arts, and sciences (see Table 16).

[5] See p. 89. [6] See Appendix VI.

TABLE 16.—*Enrollments, graduate and undergraduate, by colleges, 1921–22.*

Colleges.	Enrollment.	Per cent of whole.
Letters, arts, and sciences	967	72
Mines and engineering	240	18
Agriculture	140	10
Total	1,347	100

THE AMOUNT OF WORK TAKEN.

The salient features of the amount of work as measured by the number of credit hours are set down in Tables 17 and 18. From these it is evident that approximately 38 per cent of the students enrolled are taking fewer than 15 credit hours of work. This does not seem to be a large proportion, especially since during the second semester there are usually a number of seniors who lack only a few credit hours of having completed the requirements for the degree. The greater number taking the small number of credit hours are special and regular unclassified students. The distribution of students' work according to colleges is shown in Table 18.

TABLE 17.—*Number of credit hours taken by undergraduate students, second semester, 1921–22.*[1]

Number of credit hours.	Number of students.			Total.	Per cent of total.
	Regular.	Special.	Regular unclassified.		
1- 4	6	14	44	64	6.2
5- 9	16	21	6	43	4.2
10-14	206	70	5	281	27.3
15-19	574	26	2	602	58.5
20 and over	39			39	3.8
Total	841	131	57	1,029	100.0

[1] Not including 12 students in music.

TABLE 18.—*Number of credit hours taken by undergraduate students in second semester, 1921–22.*[1]

Number of credit hours.	Agriculture.	Number of students.		Total.
		Letters, arts, and sciences.	Mining and engineering.	
1- 4	1	63		64
5- 9	4	36	3	43
10-14	18	228	35	281
15-19	35	448	119	602
20 and over	3	18	18	39

[1] Not including 12 students in music.

ATTENDANCE THROUGHOUT THE YEAR.

How uniform is the attendance throughout the year, and how the enrollments shift, may be noted from Table 19. Thus, while the total registration for the first semester of 1920–21 was 951, at no time were there more than approximately 900 in attendance, and at the close of the semester there were only 875 remaining, which indicates a withdrawal of 8 per cent of the number registered. The attendance was somewhat larger during the first semester than during the second, and the highest enrollment tended to be from four to six weeks after the opening of the semester.

SPECIAL STUDENTS.

Mention has already been made of the admission of "special students." (See p. 50.) Data on these students are exhibited in Table 20. There were no such students prior to 1913–14, for in the earlier years students who could not meet entrance requirements registered in the preparatory department. The highest percentage of special students was in 1914–15. The high number in 1919–20 was probably due in part to the special provision regarding men honorably discharged from the United States Army. The number of special students is not excessive, especially in a State where high schools are not yet easily accessible to all parts. The highest percentage of special students is in the college of agriculture.

TABLE 19.—*Attendance totals in two-week periods, 1920–21.*

Periods.	Registered during period.	Withdrew during period.	Balance.
September:			
Second half	911	6	903
October:			
First half	6	9	900
Second half	4	11	900
November:			
First half	6	112	893
Second half	9	7	897
December:			
First half	6	9	894
Second half	3	6	891
January:			
First half	6	14	883
Second half		8	875
February:			
First half	854	6	848
Second half	20	6	862
March:			
First half	7	6	863
Second half	4	4	863
April:			
First half	2	7	858
Second half	3	7	854
May:			
First half	1	12	843
Second half		3	841

TABLE 20.—*The number of special students.*

Years.	Agriculture.			Literature, arts, and sciences.			Mining and engineering.			Total.		
	Total enrollment.	Special students.	Per cent of total which were special.	Total enrollment.	Special students.	Per cent of total which were special.	Total enrollment.	Special students.	Per cent of total which were special.	Total enrollment.	Special students.	Per cent of total which were special.
1913-14										203	47	23
1914-15										308	102	33
1915-16										463	113	24
1916-17										519	62	12
1917-18										474	34	7
1918-19										705	55	8
1919-20	126	65	51	713	116	16	249	67	27	1,088	248	22
1920-21	112	20	18	835	100	12	218	22	10	1,165	142	12
1921-22	140	44	31	967	107	11	240	13	5	1,347	164	12

REGULAR UNCLASSIFIED STUDENTS.

The numbers of regular unclassified students are given in Table 21. Since 1918–19 the proportion of the total enrollments under this classification has materially decreased. This seems to indicate an increasingly serious purpose on the part of those who attend the university, if one may judge from the courses of study undertaken. The fact that numerous persons come to Tucson to spend the winter and register for some courses at the university may be responsible for some of the regular unclassified students.

THE GEOGRAPHICAL DISTRIBUTION OF STUDENTS.

The geographical distribution of students can be studied in two ways, either of which has its shortcomings First, the students may be distributed according to the permanent addresses which they give on registration. Two errors arise in such a distribution. First, students register from Tucson when in fact their permanent addresses may be elsewhere. There are families which move to Tucson in order that the sons or daughters may remain at home while attending the university. In such cases Tucson is a sort of permanent-temporary residence. The errors mentioned may be partly overcome by redistributing, according to the high schools from which they graduated, those who registered from Tucson but who are not graduates from the Tucson High School. The other basis of distribution is the location of the high school from which the university students graduated. Several difficulties obtain in using this plan. A number of students did not graduate from high schools, and on a number of others the information is not sufficiently complete to permit classification. Then, too, there is much moving about in a State, and especially in a new State like Arizona there is much immigration, all of which means that the second basis of dis-

tribution has decided limitations. With these limitations in mind, data of two varieties are presented.

A study of the residence of college students (excluding professional and normal school students), made by the Bureau of Education for the year 1896–97, showed that 58 Arizona students were in college that year. Of this number, 32 were at the University of Arizona and 26 were in institutions outside the State. At the same time 3 students from outside the State attended the University of Arizona. A similar study of the residence of students in universities, colleges, and professional schools (excluding independent theological and teachers training institutions) for the year 1920–21 showed the following results:

Number of residents of Arizona attending institutions of higher learning	1,174
Number of residents of Arizona attending the University of Arizona	835
Number of residents of Arizona attending institutions of higher learning in other States	339
Number of persons from other States attending the University of Arizona	336

It is thus obvious that the State of Arizona is providing its share of higher education but no more. The number leaving the State is not excessive in view of the fact that many probably left to secure special types of training, such, for example, as medicine, pharmacy, dentistry, etc. Then, too, others leave the State to attend distant institutions for the broadening influences of living in other sections of the country. The State reciprocates by training students from other States and from foreign countries.[7]

TABLE 21.—*Number of regular unclassified students.*

Years.	Agriculture.			Literature, arts, and sciences.			Mining and engineering.			Total.		
	Total enrollment.	Regular unclassified.	Per cent of total which were regular unclassified.	Total enrollment.	Regular unclassified.	Per cent of total which were regular unclassified.	Total enrollment.	Regular unclassified.	Per cent of total which were regular unclassified.	Total enrollment.	Regular unclassified.	Per cent of total which were regular unclassified.
1915-16										463	72	16
1916-17										519	62	12
1917-18										474	61	13
1918-19										705	200	28
1919-20	121	14	12	671	139	21	242	10	4	1,098	163	15
1920-21	108	5	5	789	89	11	215			1,165	94	8
1921-22	135	9	7	903	105	12	227	6	3	1,347	120	9

[7] The study for 1896–97 showed that in Arizona there were 1,351 people to each college student. In this respect Arizona ranked forty-second among the States, counting from the State having the smallest number of people per student. For 1920–21 there was one student in higher educational institutions for each 284 people in the State, and the State ranked thirty-third. It had made a decided relative gain in 24 years.

The number of residents of Arizona who were in attendance the first semester of the year 1921–22 at the University of Arizona, as compared with the population, varies greatly with the several coun-

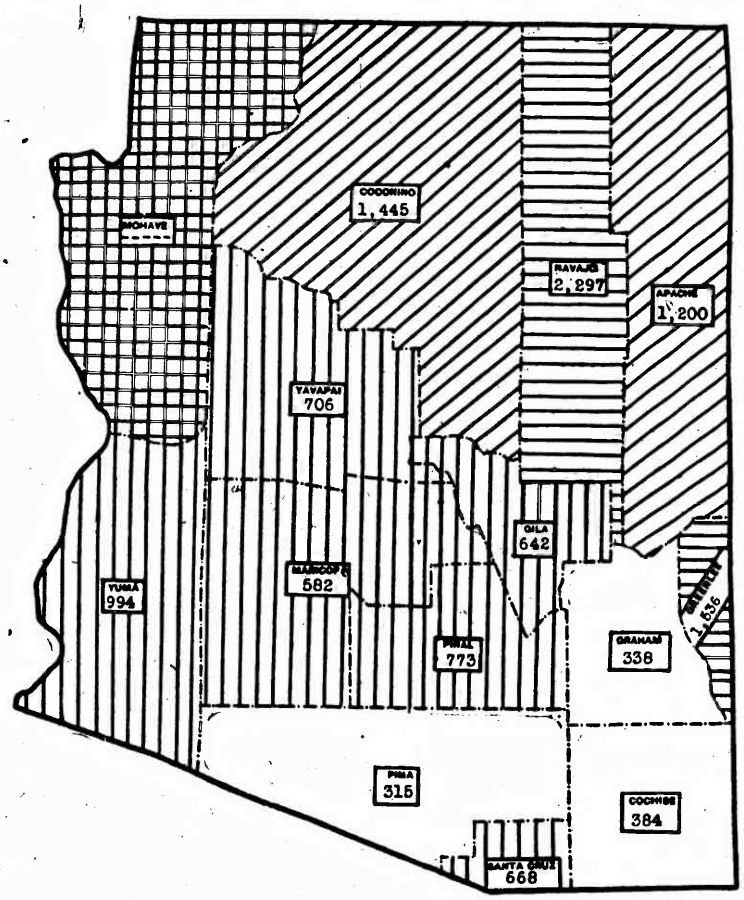


FIGURE 1. DISTRIBUTION OF 580 ARIZONA RESIDENTS WHO ATTENDED THE UNIVERSITY OF ARIZONA, FIRST SEMESTER OF 1921-22, BASED ON RESIDENCE (NUMBER OF PERSONS PER STUDENT FROM THE RESPECTIVE COUNTIES. FOR THE DETAILED DATA SEE TABLE 22.)

LEGEND

1 - 499 500 - 999 1000 - 1499

1500 AND OVER NONE

ties. (See Table 22.) Mohave County had no students in the university, while Pima County, in which the university is located, had one university student for every 315 people in the county. The data are shown in graphic form in Figure 1.

TABLE 22.—*Distribution of students in University of Arizona, first semester, 1921–22, based on residence.*[1]

Counties.	Students at university, 1921–22, first semester.	Total population of the county, 1920.	Population of the county per student at the university.
Pima	110	34,608	315
Graham	30	10,148	338
Cochise	121	46,465	384
Maricopa	154	89,576	582
Gila	40	25,678	642
Santa Cruz	19	12,689	668
Yavapai	34	24,016	706
Pinal	22	16,130	773
Yuma	15	14,904	994
Apache	11	13,196	1,319
Coconino	7	9,982	1,445
Greenlee	10	15,362	1,536
Navajo	7	16,077	2,297
Mohave	.....	5,259	.....
Total Arizona	580	334,162	514
Other States	497	.....	.....
Foreign countries	21	.....	.....
Insufficient information	69	.....	.....
Total	1,167	.....	.....

[1] Of Pima County residents not graduates of high schools in Pima County, 218 are distributed according to the location of the high schools from which they graduated; for 69 other such Pima County residents, the data are insufficient to permit classification.

From Table 23 it becomes apparent that, of those University of Arizona students who graduated from high schools, the majority received their preparatory training outside the State. This is to be explained principally by the large immigration into the State.

TABLE 23.—*Distribution of undergraduate and graduate students in the University of Arizona, 1921–22, according to the high schools from which they graduated.*

Location of high schools.	Number of students.
Arizona	510
Other States	503
Foreign countries	25
Insufficient information	30
Not high-school graduates	246

NUMBER OF DEGREES GRANTED.

In no way is the growth of the university more clearly obvious than in the increased number of graduates from the various courses. (See Table 24.)

TABLE 24.—*Number of degrees conferred by the University of Arizona, 1895–1921.*

Degrees.	1895–1916	1917–1921	Total.
Baccalaureate degrees	178	269	447
Graduate and professional degrees	13	20	33
Total	191	289	480

More degrees were conferred in the past 5 years than in all the first 22 years of the history of the university. As in the number of students, so also in the number of students graduating, the college of letters, arts, and sciences exceeds the sum of the other colleges. (See Table 25.) The general college course is the most popular of the courses offered by the university.

TABLE 25.—*Number of degrees granted, 1912–1921.*

Years.	Bachelors' degrees.						Graduate and professional degrees.			Total degrees.
	Agriculture.	Letters, arts, and sciences.			Mining and engineering.		Agriculture.	Letters arts, and sciences.	Mining and engineering.	
		General.	Home economics.	Law.	Mining and metallurgy.	Engineering.				
1912	1	7			4	1		2		15
1913	1	10			5	1				17
1914		4				3		1		8
1915	1	12			4	1			1	19
1916	8	21				10		6	2	47
1917	7	21	2		6	8		4		48
1918	7	22	1	2		9		3	1	41
1919	5	34	2	1	5	4		3	1	55
1920	3	38	6	3	7	2	1	1	1	62
1921	5	51	5	6	6	5		3	2	83

Thirty-three graduate and professional degrees have been conferred by the university. (See Table 26.) While the degree of doctor of philosophy is offered, the degree has not yet been conferred.

TABLE 26.—*Number of graduate degrees conferred.*

Name of degree.	Number.
Master of arts	16
Master of science	15
Engineer of mines	1
Civil engineer	1
Total	[2] 33

[1] In 1897.

[2] This does not include the degree of juris doctor, of which four have been conferred. The degree of J. D. is in reality not a graduate degree.

CONCLUSIONS.

From the foregoing discussion several conclusions are obvious. Secondary education in the State has moved forward by leaps and bounds. Along with the rapid increase of attendance at secondary schools, the enrollments at the university have gone up at a rapid rate. In all probability this development will continue in the immediate future. It seems clearly to indicate that the State of Arizona will in the near future be called upon to expend increasingly large sums to provide for the higher education of its citizens who desire such training and who are prepared to receive it.

A second conclusion pertains to the standards of the university. These are reputable as to admission, continuance of students on the rolls of the university, and graduation. Such data as are available lead the committee to the opinion that the standards are without doubt conscientiously and wisely administered.

Chapter VI.

INCOME, EXPENDITURES, AND COSTS.

During the year 1920–21 (and previously) the university derived its income from the State in the form of legislative appropriations for specific purposes. In 1921–22 a tax law was in force granting a levy of 1 mill on the assessable property of the State. For 1922–23 it seems probable, at the time when this report is written, that a mill tax of 0.85 mill (instead of the 1.3 mill originally granted) will be allowed upon a somewhat decreased assessment. At the special meeting of the legislature now in session the continuance of the mill-tax principle is said to be seriously threatened. Such factors, namely, the institution of a mill tax; the change in the mill tax allowed; its possible withdrawal entirely; the variation in the assessed valuation—all these render the amount of the income of the university somewhat doubtful and make it difficult to determine upon any policy very far in advance. Such experience is, of course, not peculiar to the University of Arizona, but is probably common to most tax-supported institutions during the present period of deflation. In addition, the University of Arizona receives income from Federal funds and from a number of other miscellaneous sources which may, for purposes of classification, be referred to as "other income."

The Federal income is of course stable and increases slightly from year to year. The income from "other sources" includes fees, farm sales, gifts, etc., and is subject to considerable variation, but it represents a comparatively small portion of the total budget. The income from the State, on the other hand, is a major portion of the entire budget, and here is the variable factor upon which the development and progress of the institution is forced to depend. In the year 1920–21 the State tax income for the university amounted to $762,398.81. In 1921–22 it is estimated at $774,139.10. The rate of 0.85 mill proposed for 1922–23 under the pressure of economic conditions will, on a reduced State duplicate estimated at $775,000,000, bring in only $658,750. The consequent reduction in the total income will naturally curtail the building program which the board of regents has undertaken in order to meet the needs of the increasing student body.

In view of the fact that the laws of Arizona do not permit the State to issue bonds for the erection of university buildings, an enforced cessation of the building program, if long continued, would undoubtedly seriously injure the university. It must be borne in mind that by forbidding the issuance of bonds, Arizona is committed to a "pay-as-you-go" policy, i. e., each year's income should include a certain proportion to be devoted to capital outlay. Failure to include this proportion for a succession of years would naturally mean an accumulation of liability in the matter of proper provision for growth. Such a course, if long continued, would be as bad business policy as the issuance of bonds without proper provision for the annual payment of interest and sinking-fund charges.

EXPENDITURES AND COSTS.

The total expenditure of the University of Arizona for the academic year 1920–21 (the latest period for which complete figures are available) amounted to $997,056.59. It must be emphasized from the first that this figure does not represent solely the cost of teaching students on the campus. Hence it would lead to entirely false conclusions to divide this sum by the total student attendance in an effort to arrive at a "student cost." Thus, for example, expenditures for extension work on farm experimentation bear no more relation to the number of students on the campus than they do to the number of people in the State. Nor should expenditures for capital outlay (new buildings, permanent improvements, etc.), be charged to annual student cost. The expenditures of a State university may usually be classified under three main purposes: Educational expenditures on the campus, research and experimentation, and extension. The standard classification used by the Bureau of Education in its surveys, when applied to the expenditures of the University of Arizona for the year 1920–21, is shown in Table 27.

Under that classification, the item of "total operating expenditures," amounting to $387,578.46, is the only part of the entire schedule which is properly chargeable to the annual cost of educating the student body in regular classes on the campus of the university. The total attendance of students in regular classes on the campus for 1920–21 was 1,165. However, the standard method employed by the Bureau of Education for reckoning attendance in order to determine student cost is to ascertain the maximum attendance in each of the two semesters, and use the average of these two figures as the divisor. The attendance at the University of Arizona for the first semester of 1920–21 was 903, and for the second semester 863, the average being 883. Dividing the "total operating expenditures" of $387,578.46 by this figure, we arrive at $438.93 as the student per capita cost for the year in question.

TABLE 27—*Summary of expenditures, 1920-21.*

Total expenditures, $997,056.59.	Educational expenditures, exclusive of research and extension, $645,871.24.	Construction and land, $154,341.39.	
		Total operating expenditures, $387,578.46 ($438.93 per student).	Educational equipment and supplies $47,766.47. ($54.09 per student).
			Instruction $171,934.50 ($194.72 per student).
		Special rotating funds, $104,951.39.	General operating expenses,[1] $167,877.40 ($190.12 per student).
	Research expenditures, $136,290.96.		
	Extension expenditures, $100,152.58.		
	Other items, $112,741.81.	Hatch sales	$2,435.50
		Farm sales	13,325.75
		Experimental farm sales	20,874.93
		Deaf and dumb	44,450.39
		Summer school	4,750.26
		Vocational rehabilitation	9,566.63
		Museum	11,308.95
		Refunds	6,029.40

[1] This item contains the cost of such things as salaries for administration (general university officers, librarians, janitors, and working staff); fuel, printing, freight and express, furniture and fixtures, postage, power, light, heat, repairs, telegraph and telephone, general traveling expenses, etc.

It is of interest to compare this "total operating expenditure per student" with costs of other institutions, as determined by the same method in other surveys carried on by the Bureau of Education:

TABLE 28.—*Per capita cost of instruction in the institutions surveyed by the Bureau of Education, in minimum-maximum order.*

1. Alabama Girls' Technical Institute, 1916-17	$103.54
2. Alabama Polytechnic Institute, 1916-17	140.19
3. Alabama Polytechnic Institute, 1917-18	153.86
4. University of Alabama, 1916-17	155.09
5. Alabama Girls' Technical Institute, 1917-18	164.74
6. Iowa State Teachers' College, 1913-14	168.00
7. Iowa State Teachers' College, 1914-15	170.00
8. University of Alabama, 1917-18	186.30
9. Washington State University, 1914-15	192.77
10. Washington State University, 1913-14	223.49
11. South Dakota State University, 1916-17	241.29
12. Iowa State College, 1913-14	270.00
13. Iowa State College, 1914-15	271.00
14. South Dakota State University, 1915-16	271.30
15. Iowa State University, 1914-15	274.50
16. Iowa State University, 1913-14	275.00
17. Washington State College, 1914-15	289.79
18. South Dakota State School of Mines, 1916-17	350.12
19. Washington State College, 1913-14	358.37
20. *Arizona State University, 1915-16*	400.73
21. *Arizona State University, 1920-21*	438.93
22. South Dakota State College, 1915-16	441.21
23. Nevada State University, 1914-15	443.18
24. South Dakota State College, 1916-17	468.35
25. Nevada State University, 1915-16	522.77
26. South Dakota State College of Mines, 1915-16	564.32
27. College of Hawaii, 1918-19	693.33

In evaluating a table such as that just given, it must be borne in mind that nearly all the figures with which the 1920–21 cost at Arizona is compared represent considerably earlier periods, when supplies, salaries, and operating expenses were less costly. Hence it is probable that costs at these other institutions in 1920–21 exceeded considerably

the figures given for earlier years. Several years ago a figure of $275 was suggested by the Bureau of Education as an average per capita cost for a State institution of moderate size and of recognized standards. This figure would doubtless be inadequate at the present time. It is remarkable, indeed, that from the year 1915–16 to that of 1920–21 the per capita cost of instruction at Arizona increased only $38.20, or less than 10 per cent.

Before leaving the item of operating expenditures, it will be worth while to compare the proportions of the whole devoted to the three subdivisions: (*a*) Educational equipment and supplies; (*b*) instruction; (*c*) general operating expenses or "overhead." (See Table 29.)

From this table two facts may be observed—the proportion of operating costs devoted to instructional salaries at Arizona is smaller than that at the other institutions cited, and the proportion for "overhead" is larger. A glance at the totals for operating expenditure at the various institutions listed shows that the actual sum for "overhead" at Arizona is larger than at the University of Washington, or at the Iowa State College, although both have much larger budgets for total operating costs, and is nearly equal to that at Iowa State University, which also spends considerably more for the combined total of the three items concerned. The committee has tried, during the limited time at its disposal, to find out just why this is so, and has come to the conclusion that, aside from any possibility of extravagance, several factors contribute to a high overhead cost at Arizona. The practice in the charging of repairs varies at different institutions. Some repairs may by nature be practically new construction, and they are often so charged. It is estimated by the bursar's office that about $15,000 worth of repairs, here listed under "overhead," might with equal propriety be charged to construction. The committee is also informed that the cost of upkeep of grounds, sewer lines, water lines, etc., on account of the number of new buildings being constructed (necessitating the changing of water mains, sewer lines, conduit lines, roads, etc.) was particularly heavy during the year in question, as was the charge for new furniture, on account of the furnishing of new dormitories. In addition, it must be borne in mind that the campus at Arizona entails an expense for upkeep probably quite beyond that in States where irrigation is unnecessary. Materials in Tucson are high, and wages during 1920–21 had increased in much greater proportion over the period when the other surveys were made than had instructional salaries during the same period.

All of these facts undoubtedly throw some light upon the apparently excessive overhead expense. Exact conditions, however, can be ascertained only by the comparison of figures for several years of operation at Arizona and by careful analysis of expenditures and their purposes. The committee believes that this matter merits careful and prolonged study by the board of regents, the incoming president, and the general administrative force of the university.

TABLE 29.—*Comparative analysis of operating costs.*

Subdivisions of operating costs.	University of Washington, 1914–15.		State College of Washington, 1914–15.		Iowa State University, 1914–15.		Iowa State College, 1914–15.		University of Nevada, 1915–16.		University of Hawaii, 1918–19.		University of Arizona, 1920–21.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
(a) Educational equipment and supplies	$60,960.83	12.0	$29,010.01	10.4	$100,332.91	15.2	$172,218.11	25.0	$28,277.45	16.2	$8,368.17	12.7	$47,798.47	12.3
(b) Instruction	322,547.48	63.5	159,092.10	57.1	388,253.73	59.0	362,291.87	52.8	83,771.97	48.1	43,091.97	65.3	171,814.59	44.4
(c) General operating expense or "overhead"	124,350.76	24.5	90,496.34	32.5	169,946.69	25.8	152,634.75	22.2	62,106.14	35.7	14,496.16	22.0	167,877.40	43.3
Total operating expenditures	507,859.07	100	278,598.45	100	658,613.31	100	687,144.73	100	174,155.56	100	65,956.00	100	387,578.46	100

In dealing with the question of the cost of higher education in Arizona, it will be of interest to see how the State's expenditures for this purpose compare with expenditures for the same purpose in other States. Such a comparison is difficult to make on an equitable basis, and it is well to state frankly at the outset that the different systems in use in the various States in appraising property render the table which follows subject to considerable inaccuracy as an index of the real situation. If, however, we bear in mind that column 2 represents the total valuation on which taxes are levied, rather than the actual wealth of the State, and accept the figures of column 4 as representing the relation between this valuation and the amount spent for higher education, we can at least obtain a general idea of the situation in the various States:

TABLE 30.—*Relation of the cost of higher education to the assessed valuations of the States for 1919–20.*

States and Territories.	Total appraised valuation of real and personal property for the State, 1919–20.	Total amount spent for higher educational institutions, excluding normal schools, 1919–20.	Amount for higher education per $1,000 of appraised property valuation.
Massachusetts	$5,344,153,657	$918,739	$0.17
Maryland	1,392,944,923	247,526	.18
Kentucky	2,248,356,058	428,040	.19
Hawaii	287,016,792	54,487	.19
Louisiana	726,291,145	210,042	.29
Maine	637,493,433	220,983	.35
South Dakota	2,095,154,178	750,658	.36
Missouri	2,481,746,046	913,297	.37
Tennessee	720,369,281	273,000	.38
Wisconsin	4,570,698,530	1,926,160	.42
Vermont	262,101,147	113,173	.43
Georgia	1,079,296,826	479,918	.44
Arkansas	553,485,062	250,000	.45
Montana	1,668,024,106	791,501	.47
West Virginia	1,140,284,372	562,561	.49
Kansas	3,437,541,848	1,867,103	.54
Virginia	1,353,273,322	733,008	.55
Alabama	675,162,062	375,716	.56
Arizona	854,455,062	488,958	.57
Porto Rico	254,169,242	145,921	.57
California	4,755,445,417	2,682,597	.59
Colorado	1,580,267,667	1,051,238	.64
Indiana	2,233,701,065	1,436,050	.64
Wyoming	298,538,152	203,858	.69
Iowa	4,005,388,492	2,807,733	.70
Illinois	4,100,174,907	2,871,500	.70
New Mexico	371,559,631	263,850	.71
North Carolina	1,029,993,778	743,843	.72
Michigan	4,126,114,527	3,209,144	.73
Texas	3,000,500,942	2,238,121	.74
Florida	469,588,938	350,710	.80
Oklahoma	1,664,448,745	1,631,783	.98
Nevada	214,000,000	241,708	1.13
North Dakota	496,978,049	567,580	1.14
Mississippi	649,644,340	787,707	1.21
Idaho	377,985,027	493,890	1.28
Minnesota	1,919,797,044	2,948,851	1.54
Utah	674,290,211	1,127,566	1.67
Oregon	990,435,472	1,823,653	1.84
Washington	902,525,341	1,825,291	2.02
South Carolina	360,499,911	806,685	2.24
Nebraska	568,456,926	1,532,425	2.69

From the results of this table and those of Table 31, it is possible to draw the conclusion that Arizona belongs neither to the most generous nor to the most penurious of the States in her expenditures for higher education. Rather she has steered a middle course. The belief which the committee encountered in a few places in Arizona to the effect that the expenditures for the university are out of all proportion to the wealth of the State, or to its ability to pay, seems to be quite contrary to the facts of the situation. Of the neighboring States, both Nevada and New Mexico spent more per $1,000 of appraised valuation than did Arizona, while Utah with a smaller assessed valuation devoted more than twice as much money to higher education. While it is true that property in these States may be appraised at a lower valuation than that in Arizona, yet the difference is striking enough to do away with the belief that Arizona has, in the past, been extravagant in her support of higher education. During the past two years, however, the appropriations have been somewhat increased, and the State now undoubtedly ranks well up among those Commonwealths which support their universities generously.

The relation between population and expenditure gives another basis for comparative study of the efforts of the States in supporting higher education. (See Table 31.)

As might be expected, the most sparsely populated of the Western States are to be found near the top of the list in per capita expenditure. Both Nevada and Utah spend much more than Arizona on the per capita basis, while New Mexico is low in the list. Montana follows Arizona closely, and Wyoming and Colorado are not far behind. These States are here mentioned especially because all belong to the Rocky Mountain section, with reasonably similar conditions as regards topography and population. The conclusion is, of course, that education costs more per individual in States of this type than in most of the more densely populated and better-developed sections of the Middle West. Among the States of the Rocky Mountain division, however, Arizona has neither the first nor the last place. Her policy in the support of higher education has been generous, but not extravagant. She has had to give of her resources perhaps more freely than many of her eastern sisters richer in population, industry, and agriculture, but in this respect she has done only what the other States in her vicinity have done as well.

TABLE 31.—*Relation between expenditures for higher education and population in various States.*

State or Territory.	Total amount spent for State higher educational institutions, excluding normal schools, 1919-20.	Population at census of 1920.	Per capita expenditure.	Rank.
Nevada	$241,708	77,407	$3.12	1
Utah	1,127,866	449,396	2.51	2
Oregon	1,823,653	783,389	2.33	3
Arizona	468,958	334,162	1.40	4
Montana	701,801	548,889	1.44	5
Washington	1,825,291	1,356,621	1.35	6
Minnesota	2,948,851	2,387,125	1.24	7
Nebraska	1,532,425	1,296,372	1.18	8
South Dakota	750,658	636,547	1.18	8
Iowa	2,807,733	2,404,021	1.17	9
Colorado	1,051,238	939,629	1.12	10
Idaho	483,930	431,866	1.12	10
Kansas	1,867,103	1,769,257	1.06	11
Wyoming	203,358	194,402	1.05	12
North Dakota	567,680	646,872	.88	13
Michigan	3,209,144	3,668,412	.87	14
Oklahoma	1,631,743	2,028,283	.80	15
California	2,682,597	3,426,861	.78	16
New Mexico	253,850	360,350	.73	17
Wisconsin	1,936,100	2,632,067	.73	17
Indiana	1,438,070	2,930,390	.49	18
South Carolina	816,685	1,683,724	.48	19
Texas	2,238,121	4,663,228	.48	19
Illinois	2,871,500	6,485,280	.44	20
Mississippi	787,707	1,790,618	.44	20
West Virginia	562,561	1,463,701	.38	21
Florida	350,710	968,470	.36	22
Vermont	113,173	352,428	.32	23
Virginia	733,018	2,309,187	.32	24
Maine	230,983	768,014	.29	24
North Carolina	743,843	2,559,123	.29	24
Missouri	913,297	3,404,055	.27	25
Massachusetts	918,739	3,852,356	.24	26
Hawaii	58,487	255,912	.21	27
Kentucky	426,040	2,416,630	.18	28
Georgia	479,918	2,895,832	.17	29
Maryland	247,536	1,449,661	.17	29
Alabama	378,716	2,348,174	.16	31
Arkansas	250,000	1,752,204	.14	31
Louisiana	210,042	1,798,509	.12	32
Tennessee	273,000	2,337,885	.12	32

APPENDIX I.

PLAN OF ADMINISTRATION APPROVED BY THE BOARD OF REGENTS.

PREAMBLE.

To maintain and promote relationships of candor and mutual confidence between the administration and the teaching staffs of the university; to define these relationships; to encourage the spirit of cooperation between colleges, departments, and individuals; to avoid uncertainty of duplication of accountability; to maintain distribution of authority commensurate with responsibility; and to insure to each member of the faculty a voice in the formation of policies consistent with the democratic ideals of the University of Arizona, this plan of administration is adopted and established. This statement of what the president and the faculty of the University of Arizona believe to be desirable policies, having been approved by the board of regents, shall be in force during the pleasure of the board.

1. THE PRESIDENT.

The president of the university shall be the executive head of the university, the chairman of the university faculty and of the administrative committee, and a member of the faculty of each minor division of the university. He shall be elected by the board of regents for an indefinite term, after consultation with the committee elected by the assembled deans and heads of departments. He shall be responsible to the board of regents for the execution of all policies determined upon by them. He may act with freedom within the lines of general policies laid down by the board of regents, but in any particular matter on which the board has passed he shall follow the specific action taken. He shall be responsible for all budget recommendations, as hereinafter provided. He shall make to the board of regents an annual report, which shall deal with the progress and problems of the institution. He shall make nominations to the various administrative positions and to the teaching staff, after consultation with the deans and heads of departments, as hereinafter provided. In case of exigency he shall make appointments, so that the work of the university shall not be interrupted. He shall appoint

all standing committees and shall be a member of all committees except as provided herein. The president shall be responsible for the enforcement of the rules and regulations of the university, though in specific instances he may delegate this function to other administrative officers or committees. He shall make such recommendations to the board of regents and to the faculty as he may deem advisable for the proper conduct and development of the work of the university. Under authority of the board of regents he shall issue diplomas conferring degrees, but only upon the recommendation of the university faculty.

2. ADMINISTRATIVE COMMITTEE.

There shall be an administrative committee, consisting of the president, the deans, the registrar, and three or more faculty members appointed annually by the president. The administrative committee shall meet on the call of the president and shall be presided over by him. The registrar shall serve as secretary of the administrative committee and shall report its proceedings at the next ensuing meeting of the university faculty, with the exception of such parts as may, in the judgment of the committee, require secrecy. It shall be the duty of the administrative committee to assist the president in the administration of the regulations established by the faculty. The administrative committee shall, however, have no legislative function. It shall not make or amend rules, though it may in the capacity of an administrative body suspend the action of a rule in a particular case. Final jurisdiction over offenses against the rules of the faculty shall rest with the administrative committee. The administrative committee shall assist the president in preparing budget recommendations.

3. THE DEAN OF THE COLLEGE.

The dean of each college shall be the director of its educational activities. He shall be appointed for an indefinite term by the board of regents, upon nomination by the president of the university after conference with the assembled heads of departments and professors in the college concerned. He shall be the presiding officer of the faculty of his college. He shall be the ex officio representative of his college in the administrative committee. He shall formulate and present to the faculty or to the president policies for consideration; but the rights of no member of the faculty shall be abridged in bringing any matter whatever to the faculty or to the president. He shall transmit to the president the budget recommendations for his college, and shall report budget action as hereinafter provided. He shall make reports upon the work of his college, including a detailed annual report to the president before the close of the academic year.

He shall oversee the progress and look after the academic welfare of the students in his college. He shall be the ordinary medium of communication for all official business of his college. With the approval of the president, he shall represent his college in administrative conferences or nominate a representative in his stead. In cooperation with the department concerned, he shall nominate members of the teaching staff.

4. THE DEAN OF WOMEN.

The dean of women shall be appointed for an indefinite term by the board of regents, upon recommendation of the president of the university. She shall be a member of the administrative committee. She shall be the advisor of women students, and it shall be her duty to aid in the advancement of their welfare.

5. THE DEAN OF MEN.

The dean of men shall be appointed for an indefinite term by the board of regents, upon the recommendation of the president of the university. He shall be a member of the administrative committee. He shall be the advisor of men students, and it shall be his duty to aid in the advancement of their welfare.

6. THE REGISTRAR.

The registrar shall be appointed for an indefinite term by the board of regents, upon recommendation of the president of the university. Subject to the regulations established by the faculty, the registrar shall have full charge of admission to freshmen rank, and with the approval of the dean of heads of departments, of admission to advanced standing. The registrar shall be ex officio secretary of the faculty and shall keep in his office a copy of the minutes, open to inspection by any member of the faculty.

7. THE UNIVERSITY FACULTY.

The university faculty shall be made up of its teaching force, research workers, and administrative officers. On academic matters it shall constitute the legislative body of the university. It shall regulate all changes in the curriculum and under existing legal restrictions prescribe all rules pertaining to the entrance requirements of students, make or approve all rules relative to the conduct and discipline of the student body, determine appeals from the acts of the faculty of the several colleges, make recommendations to the board of regents for all degrees to be granted, and exercise such other powers as the board of regents shall confer upon it. Every person engaged in instruction, research, or administrative work in the

university may participate in its discussions. The right of voting, however, shall be confined to the administrative officers and members of the teaching staff above mentioned and including full instructors.

8. THE COLLEGE FACULTY.

The college faculty shall consist of the president, the dean, the registrar, the dean of men, the dean of women, and the teaching and research staff serving under the administrative authority of that college, and one representative from each of the other university departments giving required work in any of the courses leading to a degree offered by that college, this representative to be selected by the department concerned. Each college faculty shall hold regular meetings at least once every two months during the college year, and elect a secretary to keep a record of such meetings. This record shall be kept in the dean's office and shall always be open to inspection of any member of the college faculty.

The college faculty shall be charged with the immediate government of its respective college and shall have authority to establish laboratory and other course fees, subject to the approval of the president; to make recommendations relative to the application of scholarship rules; to act upon petitions requesting substitution for requirements peculiar to the college; to prepare recommendations to the university faculty through the proper committees of that faculty covering proposed new courses, changes in the curriculum, and other matters; to assist the dean in making budget recommendations; to regulate policies relative to the work of the college, provided that these shall not conflict with policies already established by the university faculty or the administration; and to act upon such other matters as shall concern the college solely.

9. THE DEPARTMENT.

The department shall be organized on the headship plan. The head of the department shall be elected by the board of regents on nomination by the president after consultation with the dean or deans concerned. The tenure of office of the head of a department shall be indefinite, unless otherwise provided by agreement. He may, however, be removed by the president on the recommendation of the dean or deans concerned; provided that before such removal he shall have the right to an investigation by the judiciary committee of the charges against him. He shall be the official representative of the department and have general direction of the department. He shall have power to determine, with the approval of the president, such matters as do not affect relations with other departments or colleges that properly come under the supervision of larger administrative units. He shall be responsible for the organization of the

work of the department; for the quality and the progress of the work; and for the formulation and execution of departmental policies. He shall make department reports, prepare department budgets, and be responsible for the expenditure of department funds through approved channels, and for the care of department property.

Members of the teaching staff, other than heads of departments, shall be elected by the board of regents on nomination by the president after consultation with the heads of departments and the dean or deans concerned.

Instructional duties within the department shall be determined by the head of the department in consultation with the deans and members of the departments concerned. All such determinations shall be subject to the approval of the president. The head of the department shall recognize the individual responsibility of the other members of the department for the discharge of the duties committed to them by their appointment and shall so act as to allow proper scope to their ability and initiative. The relationship existing between the head of the department and other instructors within the department is a professional and academic one, matters of salary and academic rank being responsibilities of the board of regents, who act upon general policies, for the most part applicable to all departments alike and upon recommendation of the president.

10. LIBRARY ADMINISTRATION.

The librarian shall be appointed in the same manner as professors. He shall have custody of and be responsible for all books belonging to the university library or to the department library. He shall be responsible for the proper administration of the university library and shall report directly to the president and to the library committee. He may make to the president nominations for the library staff and shall, with his approval, determine the duties of his assistants. He shall keep a record of all facts of historical interest concerning the university.

The library committee shall be composed of the librarian and seven other members appointed by the president. It shall prepare the library budget and each year determine and publish the distribution to the department of all library funds.

11. THE UNIVERSITY BUDGET.

The university budget shall be prepared by the president and the administrative committee, after receiving from each dean the budget recommendations of the various heads of the departments.

The president shall transmit this prepared budget to the board of regents, and at the same time shall deliver a copy to the dean of each

college. Immediately upon final action upon the budget by the board of regents, the president shall in each instance inform the deans as to the nature of the action taken by that body and shall report to them in writing all changes made in the budget by them.

Upon receiving the budget or report upon budget action by the president, it shall be the duty of the dean to notify all members of the faculty of his college and to hold the budget open for inspection.

12. THE JUDICIARY COMMITTEE.

There shall be a judiciary committee composed of five members, heads of departments, excluding deans. The university faculty shall elect by ballot without nomination one member of the faculty of each of the colleges and two members from the university faculty at large.

The regular tenure of members shall be three years, and until their successors be elected and qualify, except that upon the adoption of this article two members shall be elected for a term of approximately three years, and two members shall be elected for a term of approximately one year.

The regular elections shall be held during the second week of February in each year. Each member shall be elected by separate ballot, and a majority of the votes cast shall be required to elect a member. A member may be recalled by a vote of two-thirds of the entire faculty.

In case of death, resignation, removal, absence on leave, or permanent disqualification of any member of the committee, it shall be the duty of the faculty at the next meeting after such a vacancy occurs to elect a successor who shall serve during the unexpired term.

In case any member of the committee is a party to a controversy to be considered by the committee, it shall be the duty of the faculty to elect a member pro tempore to serve in the place of such member in the determination of such case.

It shall be a function of the judiciary committee to represent the faculty members before the board of regents at such times, as in the opinion of the board of regents, the president, or the faculty, such representations seem to be necessary or desirable.

It shall be the function of this committee to investigate the case of any member of the faculty whose services are to be terminated for reasons that to him seem insufficient. The committee shall have power to summon witnesses and collect evidence in such cases and shall present their findings of fact in writing, with recommendations to the board of regents. The minority of the committee shall have the privilege of presenting separate recommendations to the board of regents.

It shall be a function of this committee to act as a court of mediation in cases of differences arising between members of the university faculty, departments, or colleges. It shall be the duty of the committee to acquaint the contending parties with the full charges brought, to collect evidence, to examine witnesses, to make a thorough investigation, and to pronounce judgment in the presence of the contending parties. In pronouncing such judgment, the committee shall state in writing the reasons for its decision. Any member may file a dissenting opinion, giving reason for his dissent. Appeals from the judgment of the judiciary committee may be taken to the board of regents.

13. TENURE OF OFFICE.

Subject to legal limitations imposed by the statutes of Arizona, the appointment of president, dean, registrar, or full professor after the first year shall be for an indefinite term except by special agreement.

Associate and assistant professors shall be appointed for limited terms, except by special agreement. The first appointment ordinarily shall be for one year. Subject to legal limitations, reappointment ordinarily shall be for three years.

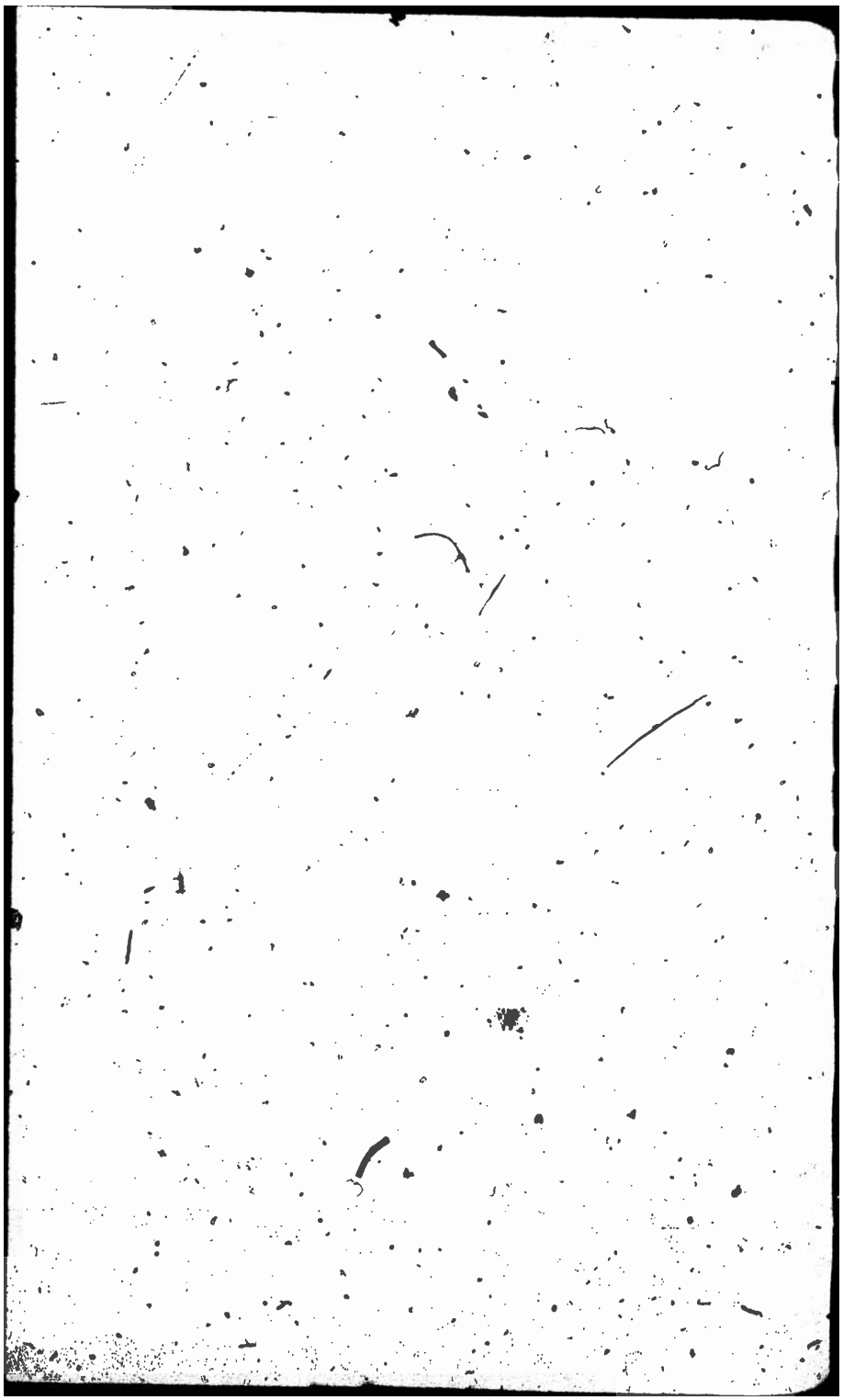
Instructors and assistants shall be appointed for a term of not longer than one year.

Renewal of appointments to the faculty shall be made as early in the year as practicable, preferably not later than March 15.

In case members of the faculty are not to be reappointed, whenever possible notice shall be given to them as follows: To instructors and assistants, not later than March 1; to assistant professors and associate professors, not later than January 1; and to full professors, not later than November 1 of the last academic year of the term for which the appointment was made. The board of regents, however, reserves the right to exercise its legal authority in the summary removal of any member of the faculty in case of misconduct or failure to perform duty faithfully and efficiently.

14. SABBATICAL LEAVE.

As a recognition of efficient service and better to fit the individual for his professional work, the university shall, whenever possible, upon conditions approved by the board of regents, grant each seventh year as a leave of absence to professors, associate and assistant professors. The acceptance of sabbatical leave involves a moral obligation to return to the university unless agreement to the contrary has been made with the president of the university and the board of regents.



APPENDIX H.

PROPOSED BUDGET CLASSIFICATION OF EXPENDITURES FOR THE UNIVERSITY OF ARIZONA.[1]

(1) SALARIES AND WAGES:
- Administration—
  - President and secretary.
  - Bursar's office.
  - Registrar's office.
  - Executive secretary and stenographer.
  - Dean of men.
  - Dean of women and assistants.
  - Other employees.
  - Board of regents.
- Divisions (Departments and Colleges)—
  - Colleges—
    - Administration—
      - Dean or director.
      - Secretaries, clerks, stenographers.
    - Instruction—
      - Deans, directors, professors, associate professors, assistant professors, instructors, fellows, graduate assistants, student assistants.
    - University farm—
      - Foreman, laborers.
  - Experimentation and Research Work—
    - Administration—
      - Dean or director.
      - Secretaries, clerks, stenographers.
    - General research and experimentation work—Deans, directors, professors, assistant professors, instructors, fellows, graduate assistants, student assistants.
    - Experimental farms—
      - Foreman, laborers.
  - Extension—
    - Administration—
      - Director.
      - Secretaries, clerks, stenographers.
    - General extension work—
      - Extension specialists.
      - County agents.
      - Home demonstration agents.
      - Boys' and girls' club workers.
      - Clerks and stenographers.

[1] This scheme is proposed by the survey committee, not as a model university budget form, but to fit the peculiar situation of the University of Arizona.

(1) SALARIES AND WAGES—Continued.
Divisions (Departments and Colleges)—Continued.
Extension—Continued.
Library—
Librarian, assistants, student assistants.
Museum—
Director, assistants.
Observatory—
Director, assistants.
Physical plant—
Superintendent of buildings.
Superintendent of grounds.
Campus engineer and assistants.
Gardeners.
Laborers.
Deaf and dumb school—
Principal, matron, teachers, laborers.

(2) OPERATION:
Stationery.
Postage.
Telephone and telegraph.
Freight and express.
Entertainments, lectures, concerts.
Printing.
Insurance.
University week.
Commencement.
Auto expense.
Dues, subscriptions, memberships.
Publicity and advertising.
Consumable supplies and miscellaneous.
Laboratory supplies.
Small tools and appliances.
Seeds, plants, etc.
Fuel.
Food.
Rent.
Janitor supplies.
School supplies.
Medical service and supplies.
Feed.
Miscellaneous.
Stable account.
Light and power.
Electrical supplies.
Irrigation supplies and water.

(3) MAINTENANCE:
Furniture and fixtures, repairs and replacement.
Equipment repair and replacement.
Building repairs.
Bookbinding.
Power lines, pipe lines, and conduit repairs and replacement.
Miscellaneous supplies and materials.

(3) MAINTENANCE—Continued.
Grounds.
Machinery and tools—Repairs and replacement.
Fencing—Repairs and replacement.
(4) CAPITAL:
Buildings.
Furniture and fixtures.
Equipment.
Books.
Grounds improvements.
Power lines, pipe lines, conduit lines.
Machinery and tools.
Irrigation ditches.
Fencing.
Archaeological materials.
Live-stock.
(5) TRAVEL:
Administration (officers and heads of departments).
Field men.
Miscellaneous employees.

In making a university budget it is of course necessary to secure from all departments estimates of expense based upon the same scheme of classification as that used in the general plan. The detail may, however, be considerably reduced, since appropriations should be made only by the main heads of expenditure. The following sheet is proposed for departmental estimates:

BUDGET SHEET FOR DEPARTMENTAL ESTIMATES.

College or Department } of .....
.....

Approved: .....
Dean or Director.

	Amount.
(1) *Salaries* (to be filled out by dean or director), including increase or decrease in personnel	.....
(2) *Operating Expense*, estimated total amount	.....
(Operating expenses include, among others, the following: Stationery, postage, freight and express, printing, auto expense, consumable supplies, laboratory supplies, seeds and plants, etc.)	
(3) *Maintenance*, estimated total amount:	
a. Furniture and fixture repairs and replacement	.....
Equipment repairs and replacement, etc	.....
b. Book binding	.....
(4) *Capital:*	
a. New furniture, equipment, machinery, tools, etc. (Each item must be detailed with estimated cost of each.)	.....
b. Books	.....
(5) *Travel:*	
Administration	.....
Field work	.....
Miscellaneous	.....

APPENDIX IIIa.

Training, experience, and publications of administrative officers.

Titles.	Department or division.	Academic training.		Number of publications.		College training.			Years of elementary, secondary, and normal teaching.
		Highest degree in course.	Institution which conferred highest degree.	Research, 1921–22.	Nonresearch, 1921–22.	Years at University of Arizona.	Years elsewhere.	Total.	
Dean	Letters, arts, and sciences.	Ph. D.	Northwestern University.	....	10	6	15	21	.....
Do	Mines and engineering	E. M.	Colorado School of Mines	....	24	7	12	19	.....
Do	Agriculture	A. M.	University of Denver	....	6	3	8	11	2
Director	School of law	LL. B.	Northwestern University.	....	....	7	....	7	.....
Do	School of education	M. A.	Yale University	....	....	2	7	9	7
Do	School of Home economics.	B. S.	Columbia University	....	....	9	....	9	11
Do	Agricultural experiment station.	A. M.	University of Nebraska	....	....	21	....	21	8
Do	Steward Observatory	A. B.	Trinity College	5	4	16	....	16	1
Dean	Dean of men	J. D.	University of Chicago	....	....	6	2	8	6
Do	Dean of women	Ph. D.	University of Wisconsin	....	2	2	7	9	15
Registrar	.....	M. S.	Franklin College	....	3	5	2	7	20
Director	Women's physical education.	A. B.	University of Nebraska	....	....	1	12	13	3
Do	Athletics	M. A.	University of Arizona	....	....	8	....	8	4

[1] Also listed under members of the faculty engaged in teaching.

APPENDIX IIIb.

Training, experience, and publications of members of the faculty engaged in teaching.

Title.	Department.	Academic training.		Number of publications, 1921-22.		College training.			Years of elementary, secondary, and normal teaching.
		Highest degree in course.	Institution which conferred highest degree.	Research.	Nonresearch.	Years at University of Arizona.	Years elsewhere.	Total.	
Professor	Agricultural chemistry	Ph. D.	University of Gottingen	3	1	17	6	23	.....
Do	Agronomy	B. S. A.	Kansas State Agricultural College.	.....	2	4	5	9	.....
Do	Animal husbandry	Ph. D.	University of Illinois	2	23	8	5	13	.....
Do	Art and literature	M. A.	Columbia University	.....	.....	6	19	25	.....
Do	Chemistry and optical mineralogy.	Ph. D.	Stanford University	4	.....	24	2	26	1
Do	Chemistry	B. S.	University of Illinois	.....	.....	6	2	8	.....
Do	Civil engineering	C. E.	Rensselaer Polytechnic Institute.	.....	.....	2	24	26	.....
Do	....do	M. S.	University of California	.....	.....	10	.....	10	.....
Do	Classical languages	Ph. D.	University of Chicago	3	.....	3	20	23	3
Do	Dairy husbandry	B. S. in Agriculture.	Purdue University	.....	1	8	2	10	1
Do	Education	A. M.	Grinell College	.....	.....	2	.....	2	20
Do	....do	S. B.	Iowa State College of Agriculture and Mechanic Arts.	.....	.....	1	4	5	17
Do	Electrical engineering	M. S.	Lehigh University	.....	.....	4	9	13	.....
Do	English composition and rhetoric.	M. A.	Butler College	.....	1	12	10	22	5
Do	English literature	M. A.	Harvard University	.....	.....	4	19	23	.....
Do	Entomology	Ph. D.	University of Wisconsin	3	4	7	13	20	.....
Do	Geology	Ph. D.	Yale University	2	.....	6	5	11	3
Do	German	Ph. D.	University of Wisconsin	.....	2	2	7	9	15
Do	History and social science.	A. M.	Ohio Wesleyan University.	1	.....	9	3	12	2
Do	Home economics	M. A.	Columbia University	1	4	8	6	14	3
Do	Horticulture	M. S.	University of Minnesota	3	7	4	8	12	.....
Do	Law	J. D.	University of Chicago	.....	.....	1	2	3	4
Do	....do	J. D.	....do	.....	.....	6	2	8	6
Do	....do	LL. B.	Harvard University	.....	.....	3	.....	3	.....
Do	Mathematics	Ph. D.	University of Colorado	.....	.....	7	11	18	5
Do	Mechanical engineering	M. M. E.	Cornell University	.....	.....	4	20	24	2
Do	Metallurgy	S. B.	Massachusetts Institute of Technology.	.....	.....	6	7	13	.....
Do	Mining and engineering	E. M.	Colorado School of Mines	.....	.....	5	12	17	.....
Do	Plant breeding	M. S.	University of Wisconsin	2	.....	6	1	7	5
Do	Plant pathology	M. S.	University of Chicago	3	5	12	2	14	5
Do	Philosophy	M. A.	University of Kansas	.....	.....	4	9	13	2
Do	Psychology	Ph. D.	University of Pennsylvania.	2	1	3	2	5	1
Do	Public speaking	B. S.	University of Minnesota	.....	.....	1	3	4	6
Do	Romance languages	M. A.	University of Missouri	.....	8	18	6	24	1
Do	....do	A. M.	Columbia University	.....	.....	11	1	12	3
Do	Social science	Ph. D.	University of Illinois	1	.....	6	5	11	.....
Associate professor.	Mathematics	A. M.	Kansas Wesleyan University.	.....	.....	17	9	26	4
Do	....do	Ph. D.	University of Chicago	.....	.....	2	8	10	6
Do	Mechanic arts	A. M.	University of Utah	.....	.....	5	.....	5	16
Do	Physics	B. S.	De Pauw University	1	1	3	22	25	1
Do	Poultry husbandry	B. S. A.	Oregon Agricultural College.	1	4	2	5	7	.....
Do	Romance languages	Ph. D.	University of Missouri	1	.....	2	14	16	.....

Training, experience, and publications of members of the faculty engaged in teaching— Continued.

Title.	Department.	Academic training.		Number of publications, 1921–22.		College training.			Years of elementary, secondary, and normal teaching.
		Highest degree in course.	Institution which conferred highest degree.	Research.	Nonresearch.	Years at University of Arizona.	Years elsewhere.	Total.	
Assistant professor.	Agronomy	B. S. A.	Kansas State Agricultural College.	....	2	3	....	3	2
Do	Animal husbandry	B. S.	Montana State College of Agriculture and Mechanic Arts.	1	....	2	....	2	.....
Do	Biology	M. A.	University of Nebraska	4	....	1	4	5	2
Do	do	B. S.	William and Mary College.	....	....	2	1	3	1
Do	Chemistry	M. S.	University of Arizona	5	....	4	1	5	.....
Do	Education	B. S.	Columbia University	....	2	2	7	9	5
Do	English composition and rhetoric.	A. M.	do	....	....	5	....	5	11
Do	English literature	Ph. D.	Stonyhurst College, England.	....	....	1	7	8	.....
Do	History	Ph. M.	University of Chicago	....	....	8	....	8	13
Do	Horticulture	B. S.	University of Idaho	....	....	4	....	4	1
Do	do	B. S. A.	do	....	....	3	....	3	1
Do	Mathematics	A. M.	University of California	....	....	2	3	5	13
Do	Mechanic arts, mineralogy, and petrology.	M. S.	University of Arizona	....	....	4	....	4	1
Do	Romance languages	A. M.	do	....	....	4	1	5	10
Do	do	M. A.	Radcliffe College	....	....	8	....	8	7
Do	Social science	Ph. D.	State University of Iowa	....	....	1	8	9	12
Do	do	B. S. C.	Oregon Agricultural College.	....	....	2	6	8	.....
Instructor	Biology	M. S.	University of Arizona	....	....	3	....	3	.....
Do	Chemistry	Ph. D.	University of California	1	....	1	4	5	3
Do	English composition	A. B.	University of Arizona	....	....	2	....	2	2
Do	English composition and rhetoric.	A. B.	Lake Forest College	....	....	3	....	3	3
Do	Home economics	....	....	....	3	3	8	11	8
Do	do	....	....	....	....	6	....	6	.....
Do	Physical education	B. S.	University of Washington.	....	10	....	1	1	1
Do	Romance languages	A. M.	Hamline University	....	....	2	....	2	4
Do	do	A. B.	University of Arizona	....	....	2	2	2	4 5
Do	Social sciences	A. B.	Harvard University	....	....	3	....	3	.....
Do	do	Ph. D.	Columbia University	....	....	....	2	2	4
Do	do	M. A.	Pennsylvania State College.	1	....	1	1	2	1

APPENDIX IV.

Teaching load of faculty, 1921-22.

[NOTE.—In the table the exponents (¹, ², etc.) denote that the time of a faculty member was divided between several departments. For example, the professor who taught art also taught English composition and rhetoric, hence the exponent ¹ is attached to his title under both departments; a professor in the department of chemistry, indicated by the exponent ², also taught optical mineralogy, etc.]

Department.	Title.	Salary.	Months of service per year.	Part of salary, chargeable to teaching subject indicated.	Student clock hours (semesters).	
					First.	Second.
Agricultural chemistry	Professor	$3,800	12	$1,700	293	116
Agriculture	Professor, dean	5,000	12	0	38	9
Agronomy	Professor and head	3,500	12	1,200	60	62
Do	Assistant professor	2,600	12	900	87	90
Animal husbandry	Professor	3,000	12	1,500	53	113
Do	Assistant professor	2,300	12	1,100	165	145
Art	Professor ¹	2,500	10	1,320	158	128
Astronomy and physics	....do	4,000	12	2,000	92	69
Do	Associate professor	2,800	10	2,800	634	750
Biology	Assistant professor	2,900	10	2,900	612	564
Do	....do	2,500	10	2,500	709	772
Do	Instructor	1,620	10	1,620	480	160
Chemistry	Professor ²	3,800	10	3,000	104	86
Do	....do	3,100	10	3,100	15	15
Do	Assistant professor	1,920	10	1,920	540	208
Do	Instructor	2,000	10	2,000	184	351
Civil engineering	Professor	3,400	10	3,400	136	150
Do	....do	2,400	10	2,400	282	298
Do	....do.¹	3,600	10	166		28
Do		4,200	12		48	
Classical languages	Professor ¹	3,000	10	1,941	96	78
Dairy husbandry	....do	3,800	12	2,100	141	75
Do	Assistant professor	2,500	12	1,300		35
Education	Professor, director	4,000	12	4,000	206	192
Do	Professor	2,600	10	1,300	156	389
Do	....do	2,900	10	0		
Do	Professor, registrar	4,400	12	0	30	
Do	Assistant professor	2,600	10	2,600		35
Do	Assistant	2,000	10	2,000	446	401
Electrical engineering	Professor	3,500	10	3,500	229	180
English composition and rhetoric.	....do	3,500	10	3,500	604	422
Do	Assistant professor	2,500	10	2,500	362½	347
Do	Instructor	1,800	10	1,800	341½	286
Do	....do	1,620	10	1,620	295½	302½
Do	Professor ¹	2,500	10	1,180	180	140
English literature	....do	3,500	10	3,500	732	780
Do	Assistant professor	2,500	10	2,500	534	490
Entomology	Professor	3,600	12	1,200		
Geology	....do	3,300	10	3,300	505	545
Germanic languages	....do	3,300	10		28	28
Do	....do.¹	3,600	10	1,050	55	60
History	....do.¹	3,100	10	1,833	144	177
Do	Assistant professor	2,600	10	2,600	445	437
Home economics	Professor	2,800	10	2,800	432	408
Do	....do	2,400	10	2,400	309	306
Do	Instructor	2,200	10	1,880	187	538
Do	....do	2,100	10	2,100	258	234
Horticulture	Professor	3,300	12	900	18	6
Do	Assistant professor	2,600	12	1,300	220	289
Do	....do	2,400	12	600	27	
Law	Professor	3,800	10	3,800	111	111
Do	Professor, dean	4,000	10	3,000	108	120
Do	Professor	3,000	10	3,000	120	156
Do	....do	3,100	10	3,100	123	138

Teaching load of faculty, 1921-22—Continued.

Department.	Title.	Salary.	Months of service per year.	Part of salary chargeable to teaching subject indicated.	Student clock hours (semesters). First.	Student clock hours (semesters). Second.
Mathematics	Professor	$3,200	10	$3,200	144	126
Do	Associate professor	3,100	10	3,100	148	192
Do	do	3,000	10	3,000	324	252
Do	Assistant professor	2,600	10	2,600	353	243
Mechanical engineering	Professor	3,400	10	3,400	334	304
Mechanic arts	Associate professor	3,100	10	3,400	520	324
Do	Assistant professor [6]	2,200	10	1,484	308	490
Metallurgy	Professor	3,600	10	1,800	347	157
Mineralogy and petrology	Professor, dean [7]	5,000	12	246	54	98
Do	Assistant professor [6]	2,200	10	716	232	162
Mining engineering	Professor, dean [7]	5,000	12	254	56	101
Do	Professor [3]	3,600	10	1,634	108	168
Optical mineralogy	do.[5]	3,800	10	800	90	42
Philosophy	do	2,900	10	2,900	135	199½
Physical education for women.	do	2,600	10	2,600	650	630
Do	Instructor	1,800	10	1,800	680	615
Plant breeding	Professor	3,000	12	600	60	10
Plant pathology	do	3,200	12	500	40	
Poultry	Associate professor	2,900	12	1,500	12	95
Psychology	Professor	2,900	10	2,900	547	123
Public speaking	do	2,700	10	2,700	237	238
Romance languages	Professor (French)	3,000	10	3,000	312	251
Do	Associate professor [8] (French).	2,400	10	848	95	106
Do	Instructor (French)	1,920	10	1,920	350	335
Spanish	Professor	3,800	10	3,800	292	259
Do	Associate professor [8]	2,400	10	1,552	220	148
Do	Assistant professor	2,400	10	2,400	281	312
Do	do	2,200	10	2,200	441	343
Do	Instructor	1,800	10	1,800	605	520
Do	Fellow assistant	1,000	10	1,000	250	315
Social science	Professor	3,800	10	3,800		195
Do	do.[5]	3,100	10	1,267	144	78
Do	Assistant professor	2,700	10	2,700	875	830
Do	do	2,400	10	2,400	582	418
Do	Instructor	1,134	10	1,134	570	249
Do	do	900	10	900		465
Do	do	162	10	162		126
Do	Assistant instructor	324	10	324		258

APPENDIX V.

Class enrollments by departments, 1921–22.

Departments.	Semesters.	Number in classes.										
		1	2	3	4	5	6–10	11–20	21–30	31–40	41–50	Over 50
Agricultural chemistry	First	[1]						1		1		
	Second							2				
Agriculture	First									1		
	Second						1					
Agronomy	First								1			
	Second						2		1			
Animal husbandry	First					1	2		2			
	Second					2	2					
Art	First							1		1		
	Second								2			
Astronomy and physics	First							3	1	2		1
	Second							2	4		2	
Biology	First			1			1	2	1	1		2
	Second	[2]			1		2	1	2			
Chemistry	First	[1]		1				2	1	1	1	3
	Second			1		1	3	1	1	2		2
Civil engineering	First			1	1	3	2	2	1		1	
	Second	2		1	1		1	3	3		1	
Classical languages	First			2		1	1	1				
	Second						2	1				
Dairy husbandry	First						1		1			
	Second											
Education	First					1	1	1		1		
	Second	[2]				1	3	3	2		1	2
Electrical engineering	First				2	1	3	1				
	Second					3	4					
English composition and rhetoric	First							3	2	8		
	Second					1	1	2	4	3	2	
English literature	First						2	2		4	2	2
	Second						1	1	3	2	2	3
Geology	First				1			2		1		1
	Second						3			1		1
Germanic languages	First						1	1				
	Second						2					
History	First	1		1			2	2	2			2
	Second	1	1				2	3	2		1	1
Home economics	First					2	3	10				
	Second						7	9				
Horticulture	First						3			1		
	Second		1				1	2			1	
Law	First				2	3	2	6	2	1		
	Second	1		1	2		3	2	5			
Mathematics	First				1	1	2	8	5		1	
	Second		[1]		3	1	1	8	3			
Mechanical engineering	First	[1]	1	1	1			4				
	Second	[1]	2				4	2				
Mechanic arts	First					1	2	1		1		1
	Second					1	1		2			1
Metallurgy	First			[3]			2	4	4			
	Second		[1]			1	2	1				
Mineralogy and petrology	First								2			1
	Second						1	3				1
Mining engineering	First							1	1			
	Second									1	3	
Optical mineralogy	First						1					
	Second		1			1						
Philosophy	First	[1]						4				
	Second		[1]			1		2	2			

[1] Classes of graduate students.
[2] Also one class of graduate students.
[3] Also two classes of graduate students.

Class enrollments by departments, 1921-22—Continued.

Departments.	Semesters.	Number in classes.										
		1	2	3	4	5	6-10	11-20	21-30	31-40	41-50	Over 50
Physical education for women	First							2	4	2		1
	Second						1	3	3	2		1
Plant breeding	First							1				
	Second		1									
Plant pathology	First					1						
	Second											
Poultry	First	1				1						
	Second	1		2					1			
Psychology	First	[1] 1				1	1	1				1
	Second	[1] 1				1	1	1				
Public speaking	First							3	1	1		
	Second						1	2	1	1		
Romance languages: French	First					1	1	2	4	1		
	Second			1			3	2	5			
Spanish[2]	First				1	1	3	4	9	5	1	
	Second		1				3	8	7	3	1	
Social science	First						2	4	4	2	4	6
	Second					1	2	4	7	4	5	6
Total		21	11	16	16	33	98	149	105	54	30	39

[1] Classes of graduate students.
[2] One night class of 7 in Spanish in second semester.

APPENDIX VI.

Enrollments, 1912–13 to 1921–22.

Courses.	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20	1920–21	1921–22
GRADUATE.										
Agriculture								5	4	5
Literature, arts, and sciences								42	46	64
Mining and engineering								7	3	13
Total	9	1	15	21	42	25	32	54	53	82
UNDERGRADUATE.										
Agriculture:										
Classified								42	83	82
Regular unclassified								14	5	9
Special								65	20	44
Total								121	108	135
Literature, arts and sciences:										
Classified								416	600	691
Regular unclassified								139	89	105
Special								116	100	107
Total								671	789	903
Mining and engineering:										
Classified								165	193	208
Regular unclassified								10	.....	6
Special								67	22	13
Total								242	215	227
Total undergraduate:										
Classified	145	152	191	254	353	354	418	623	876	981
Regular unclassified	26	.....	.....	72	62	61	200	163	94	120
Special	.....	47	102	113	62	34	55	248	142	164
Total	171	199	293	439	477	449	673	1,034	1,112	1,265
Total graduate and undergraduate	180	203	308	463	519	474	705	1,088	1,165	1,347
Preparatory	71	46	.....	.....	.....	.....	.....	.....	.....	.....
Two-year course	3	.....	.....	.....	.....	.....	.....	.....	6	.....
Music specials	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
Short courses	77	103	143	163	147	361	277	347	367	293
Summer school	.....	.....	.....	.....	.....	.....	31	78	179	282
Extension courses	.....	23	.....	.....	.....	.....	.....	.....	.....	156
Student Army Training Corps	.....	.....	.....	.....	.....	.....	655	.....	.....	.....
Correspondence	.....	.....	.....	7	14	20	21	143	125	168
Total	331	375	451	633	780	755	1,689	1,656	1,842	2,284
Total, excluding duplicates	331	375	451	633	780	755	1,442	1,616	1,732	.....