

THE PRESIDENT'S REPORT
FOR THE YEAR 1921-22

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THE PRESIDENT'S REPORT

I

To the Board of Regents of the University of Minnesota:

TO THE BOARD OF REGENTS: I submit herewith my report for the year 1921-22.

This has been one of the best years in the history of the University of Minnesota. Progress has been made on every hand. The building program has moved forward as rapidly as conditions warranted. The general morale of the faculty was greatly improved by the salary increases granted a year ago. The students have been more serious minded and more devoted to their studies than during war times.

We are not, however, sufficiently complacent to believe that we have no unsolved problems, for the University of Minnesota is still growing and developing. There is no reason to think that the number of students will not continue to increase. We had nearly seven hundred more students this year than we had a year ago. Nor is there any reason to suspect that the University will not be expected to assume new duties and to assist with the solution of new problems in the days to come. No one possesses a keen enough prophetic vision to tell exactly what these problems and functions will be but in the discussion that follows I have attempted to outline some of the problems, functions, and relationships peculiar to state universities.

State universities are not more than a hundred years old. The University of North Carolina was chartered in 1789, the University of Vermont in 1800, the University of Georgia in 1801, and the University of South Carolina in 1805. Others were established as new states came into the Union. Most of them received donations of public lands. The number of state universities increased rapidly after the passage of the Morrill Act in 1862. The universities of California, Illinois, Ohio, Minnesota, Nebraska, and West Virginia owe their origin to this act which provided for instruction in agriculture and mechanic arts. In a number of states provision was made in the constitution of the state for the establishment of a university, and

in others it was created by legislative act, but in every case the state university was regarded as the capstone of the public school system. The problems peculiar to state universities grew out of their origin; their relations to other units of public education, both state and federal; and to their sensitiveness to public opinion.

The functions of state universities have expanded rapidly. In the beginning state universities were primarily teaching institutions. In the early days, when the state school system was not highly organized and integrated, many of them offered instruction in the elementary and secondary fields. All of the elementary instruction has now been relegated to the elementary schools, and much of the secondary instruction has been transferred to the high schools. At first, state universities were little more than colleges, providing instruction in the liberal arts. The professional schools, law, medicine, pharmacy, and dentistry soon appeared. Almost simultaneously universities began to develop as research centers. More recently they became great public service agencies with contacts and lines of influence reaching into every part of the state, touching almost every phase of human life. As public service agencies, they were not concerned merely with the dissemination of information, but with the promotion of fairly definite systematic programs as well. The extra-mural extension service of the modern state university, altho still in its infancy, in many respects, meets a real need and is of enormous significance and assistance to the people of the state in the solution of their individual and social problems. One of the most significant phases of public service which a state university is expected to render is that of giving expert advice and assistance upon all sorts of questions. Specialists in practically every field of human knowledge are upon the staff of the university. More and more the state is drawing upon these latent resources to assist in the making of surveys, in collecting facts, and collating information upon public questions and problems.

There is one aspect of this demand which is more or less unfortunate, namely, the policy of charging state universities with certain regulatory functions and of granting them certain police powers. A state university, like every other university,

is preëminently an educational institution and no action, not even that of the state, should divert it from this purpose. Regulatory functions and police powers have never been sought by university authorities, and yet the number of such duties and responsibilities has been constantly increasing. For example, many colleges of agriculture are now required by legislative act to inspect dairy cows and to vaccinate cattle. In some cases the university is expected to assist with the eradication of the barberry which is responsible for the spread of black rust so destructive to oats, barley, and rye. In other instances it is required to assist with the elimination of white pine rust. Police powers have been granted to enforce pure food laws, to assist with the grading of grain, with the elimination of insects and other pests, with the destruction of weeds, and with the evaluation of various kinds of properties. A few years ago one legislature passed a law requiring a state university, through its department of chemistry, to make an examination of the contents of stomachs of all persons who die of poisoning. These things need to be done, but it is difficult to make the average citizen understand why the university should be granted authority to threaten him with court procedure in case he fails to respond quickly, willingly, and fully to the demands of the representatives of the university, with reference to the administration of some act with which the university is charged. It seems clear that the members of the university staff should not be taken away from their teaching, research, and the opportunity for personal improvement to assist with enforcement of law, except in a crisis or an emergency. Everyone recognizes the importance of conducting investigations for the improvement of dairy cows, the prevention and cure of bovine tuberculosis, the elimination of black rust, standards for grading of grains, and similar studies in the fields of medicine, chemistry, engineering, pharmacy, education, and law as well as the various fields of arts and sciences. It is easy to understand why publicity should be given to the results found. It does not follow, however, that the state should charge the university with the responsibility of enforcing laws, resulting from such investigations.

On the other hand, the university must not hold itself aloof or decline to render expert service wherever and whenever it

may be of assistance in improving health, administering justice, securing better teaching, rendering assistance in the solution of engineering problems, the testing of ores, the improvement of agriculture, or in any other field that ministers to the life and welfare of the people of the state. In fact, it is inevitable that the points of contact between a state university and its constituency will multiply in the future. The college of engineering must be of assistance to the engineers and to the people of the state in the solution of problems relating to civil, mechanical, electrical, highway, hydraulic, and chemical engineering. The medical school that does not concern itself at all times with the improvement of health in every community of the state is unworthy of the state's support. The law school that does not assist with the improvement of law and the administration of justice is untrue to the legal profession of the state. Demands are certain to be made by municipalities, boards of education, dentists, doctors, pharmacists, teachers, and farmers for expert advice. The demands should not be ignored, for the state is in partnership with the university in the matter of education.

The modern university has undergone a very remarkable transformation, due to the differentiation of its materials and to the establishment of new schools and colleges. The aims of all college and university education have changed very strikingly in the last fifty years. Fifty years ago, the dominant aims were mental discipline, liberal education, civic and social responsibility, morality, character, and religion. Of these only one aim receives more attention to-day than it did in 1870, namely, civic and social responsibility. During these fifty years, leadership, domestic responsibility, health, occupational training, preprofessional training, training for life's needs in the development of scholarly interests and ambition have become more prominent aims. Other aims entirely new have arisen, as for example, guidance and exploration, coördination of the students' work, attention to individual students, and the democratization of education. Liberal training which was supposed to be largely disciplinary in character has more latterly taken on a new social emphasis which demands a civic and social responsibility, including a recognition of the home and the possibility for service and leadership in some field of human activity and experience.

The modern university is very unlike the institution from which it is descended. If one compared the offerings of the state university in 1870 with the offerings in 1922, he would discover that the change has been very remarkable. The older university expanded simultaneously in two directions, downward into the elementary and high schools and upward into the professional and technical schools. The technical and professional schools consist of two, three, four, and even five or six years of technical work, built upon one or more years of college instruction. The many changes in aims, curricula, age of entrance, expansion and materials, and the lengthening of the period of training are not the result of the whims and caprices of educators. On the contrary, they are the result of shifting demands, new pressures, and sanctions in the world outside. One needs only to study the changing current of social progress to find the causes and explanation of educational progress. The type of education that appealed to a few, fitted them to the common mold irrespective of the enormous differences in intellectuality that existed among them and irrespective of the needs of a growing population, could not long endure.

Every university and every college is more or less a public institution. The laws governing the granting of degrees in private institutions are enacted by the state. While a private institution does not receive a public subsidy, it is nevertheless influenced by public opinion, and naturally it develops its curricula more or less in accordance with the trend of the times. Nevertheless, the small college may represent the opinions of a relatively small number of persons. It is frequently denominational in character; its opinions are often influenced and rightly by the denomination that it represents or by the special group or class that supports it. It frequently maintains a certain satisfaction in its unresponsiveness to public pressure and public opinion and it glorifies the aristocracy growing out of its traditions. On the other hand, a state university represents majority opinion; it must do so to receive the support of the people of the commonwealth. It is sensitive and responsive to public need and to public pressures. It must think constantly in terms of public service. It must cooperate with the state in the solution of all kinds of problems. The clientele of a state university is all the people of the state. The university

is the child of the people and is unable to disassociate itself from those elements that give it life and strength and being.

There is a fundamental distinction also between a state university and a private university. The chief difference is, perhaps, a difference in responsibility. A private university gets its support from its students and donors, a state university, largely from the legislature. A private university can do many things that a state university can not do. For example, it can limit or expand the scope of its activity whenever it chooses to do so, keeping, of course, its contractual and moral obligations with its donors and students. In other words, it is almost in complete and absolute control of its curriculum, its policies, its tuition, and its student requirements. It is responsible to itself only, and by being a university it avoids many of the handicaps and limitations that are placed upon the smaller college. A state university, on the other hand, must look to the people for its support. Its policies are determined, to a certain extent, by what the people think; its tuition charges, by what the people think they ought to be. Every question of policy that it raises becomes a question of interest to the public. It is responsible to the public opinion that creates and maintains it. It is obvious that this relationship is a source of strength. It is also obvious that it is a source of weakness.

The difference between private and state universities has been accentuated recently by the action of some of the private institutions in placing a limitation upon their registration. With the exception of one or two state universities, no state has attempted to pursue this policy. Whether or not it will become necessary, in view of the growing size of state institutions, is a matter which must receive serious consideration in the near future, but the people through their policy-determining agents must decide this question for themselves. Certainly those in immediate charge of the university can not and should not make the decision. Recent figures have shown that state universities like California, Michigan, Illinois, Ohio, Minnesota, and Wisconsin are growing rapidly; but not more, in fact, less, proportionately than the privately endowed institutions. Some citizens are asking themselves whether the state can continue to support these state universities indefinitely. It is obvious that higher educational

institutions with 2,000 students to-day are likely to have 4,000 ten years from now; those with 5,000 now will have 10,000 then, and those with 10,000 now, 20,000 then.

Thus far no state has been willing to abandon the principle responsible for the establishment of its university. Every state feels the need of at least two guarantees of civil liberty, one the Anglo-Saxon guarantee that everyone should have equal rights before the law, and the other the American guarantee that free and equal educational privileges and opportunities should be granted to all the children of the state from the kindergarten to and including the university. Some states still feel that the universities are not a charge upon them primarily but paying investments, spiritually and economically. Indeed, the wealth of the state increases somewhat in proportion to the character and amount of higher educational opportunities afforded the citizens of the state. Furthermore, as the political, social, economic, and industrial questions and problems increase in number and complexity, in variety and difficulty, more thoro training as well as a greater number of trained persons is needed for their solution; and, too, as society differentiates into all sorts of vocations, occupations, and professions an increasing number of specialists is needed in each of these lines. We may expect then that no serious limitations will be placed upon the registration of students in state universities, and that the states will continue to provide the opportunity for university education for everyone in the state who is qualified to pursue it.

A state university has an integral relationship to the public schools of the state that a private university does not have. Its requirements for entrance do not differ materially from those of a private university, but it is influenced more by the changes in the curriculum of the high school. A state university is a part of the public school system. It is the next step a student may take after graduation from the high school. Its entrance requirements, therefore, must harmonize with the high school graduation requirements. This harmony is a mutual agreement between the high school and the university. This means that the university is constantly inquiring into library and laboratory equipment, the character of the curriculum, and instruction in the high schools.

Students coming to state universities and to some endowed universities from accredited high schools in which work of a certain grade is done may not be required to carry some work now required in the university. To illustrate, the University of Chicago now permits some students in the university high school at Chicago to enter junior mathematics in the university. Others enter sophomore courses in the modern languages. Minnesota students who have completed the regular course in the University High School may enter advanced courses in mathematics in the University. Experience shows that these students have carried their University work with credit to themselves and to the University. Why should they not? They are taught by teachers fully as competent and sometimes superior to those they have in the college or in the university. Should this plan be extended, and it is conceivable that it will, it should apply only to approved or standard secondary schools. The question naturally arises by whom shall such approval be made. Shall it be done by the university or by the state department of public instruction? Inspection by state universities is steadily decreasing and rightly so, but if the university gives credit toward a degree for work carried in the high school a more intimate relationship between the university and the state department of public instruction in the matter of inspection, as well as in the matter of determining the standards for the certification of teachers, will become imperative.

Another problem every state university has in its relation to the public schools of the state, is that of avoiding a break in the standards of scholarship in the step from high school seniors to university freshmen. Articulation at this point is absolutely essential. Students have enough difficulty in adjusting themselves to their new environment without being further handicapped by unreasonable standards or requirements in the freshman year of the university. Of course, the standards for the freshman year should be progressively more difficult than those of the senior year of the high school. Frequent conferences and perhaps an exchange of visits between university and high school teachers would lead to a more sympathetic interest, better articulation of work, and a more efficient coöperation between the high school teachers and the freshman instructors. It is highly im-

portant that a state university make such an adjustment, for it can not survive for any considerable length of time by building a wall around itself or by assuming a high and mighty attitude with reference to the public schools. It is sometimes difficult to remember that the university is a part of the public school system. Yet that fact must be remembered, otherwise public criticism will with righteous cause become so intense that both the work and the support of the university will be crippled and endangered.

There is a popular impression, an impression popular even in some of the higher educational circles, that the difficulty of securing satisfactory work on the part of students has been greatly increased by the growth in registration in colleges and universities. I have yet to find the slightest evidence, aside from impressions, to support this statement. On the contrary, there is evidence which seems to show that a larger percentage of students in the University do satisfactory work than formerly, and there is no good reason why that should not be so. The curricula have been broadened and made more flexible and a larger percentage of students have selected courses with definite professional and vocational objectives in view.

It is true, of course, that we have more students in the University in the unsatisfactory groups than formerly, but not proportionately so. Some who come to the University are clearly incompetent. The intellectually immature occasionally are graduated by public high schools, and they find their way into our University and college classes. Every reasonable device to discover these cases should be used, and when discovered, for their own as well as for the institution's good, they should be dropped. Great care and caution, however, in singling out these cases should also be used. The University can not afford to be wrong in dealing with those whom it designates for dismissal. Educational literature is filled with the stories of men and women who were adjudged incompetent and incapable by their instructors who in later life displayed great talent and even genius. The talent and the genius were present all the time, but the educational environment in which they were living was not sufficiently stimulating to bring out these qualities.

It is also true that some persons enter the University for social reasons. They come because it is the popular thing to do; it is the fashion; they wish to distinguish themselves in the social

circles of University life. The University will have, must have, a social life, but the student who esteems social distinction more than studentship is entitled to scant consideration, if he fails in his scholastic work.

But not all of the student failures are due to low mentality, or to excessive social life. It is easy to make these two causes excuses for failures. They are convenient explanations for the low grades, but an analysis of student failures clearly shows that a number of other factors quite as important as either of these are at work. One is the quality of work which the student did in the public school.

A young woman entered the University this year. There is no question as to her ability. She is bright, keen, and alert. She graduated from a system of graded schools in which no instruction in grammar was given. Her teachers believed that pupils should be taught to read and write the English language with reasonable facility. That she can do. She also graduated from a high school in which she received no instruction in foreign languages. She was told that most foreign languages were dead languages, and that if they were not she would probably never have any occasion to use them anyway. The teachers with whom she worked were saturated with, and slaves of, the so-called problem of the project method of teaching, a doctrine which has been of great value in breaking down much of the formalism in teaching, but which on the other hand has been pernicious when carried to its logical extreme because it leaves the students without a systematic knowledge of anything. This particular young woman desired a college education. But when she entered the University she found that a foreign language was required. When asked how she was progressing in her studies, she replied, "Very well, except in my foreign language. I do not understand what they mean when they talk about complex and compound sentences, adjectives, adverbs, phrases, or clauses." In other words, she had no knowledge of the structure of language, and as a consequence she was failing in that subject. She was not responsible for her failure and should not be dropped from the institution because of it. This type of case represents a difficult problem for every department that has beginning students. A state university can not ignore such cases,

or explain away its failure to meet the needs of these students by saying that it is not responsible for their condition. It must provide for such students. They should be placed in charge of the most expert teachers.

It should not be assumed from what I have said that there is much false educational theory in the public schools, or that the teachers are generally poor teachers. I believe that the theory of public education is essentially sound, and that instruction in the public schools is about as good and about as bad as it is in the universities.

I am thoroly convinced that the failure of a student in the university is not always a criticism of the student. Some of the so-called failures are intellectually the superior of those who are allowed to go on. The grades we give are at best very deceptive. They are not always an index of achievement or ability. Those who fail in school and succeed in life are a standing proof of our negligence or of the imperfections of our administration. No institution has fully and completely discharged its duty until it deals with those who receive low marks individually and not by wholesale methods, or according to rigid rules. Whenever reasonable doubt exists, particularly in the case of the beginning students, the decision should be in favor of the individual student rather than the institution. One of the inherent faiths of the American people is the potentiality of the individual. This faith is well founded and wholly justified by experience. No one knows enough to measure or prophesy the ultimate achievement of anyone. For this reason democracy is willing to expend large sums experimenting with all grades of intellectuality in order that it may discover those who have ability and can achieve.

There are those who think that the failure of many students is due to a breakdown, or a partial breakdown of the relation between students and instructors. It is difficult to determine the exact amount of truth there is in this statement and it is certain that most of us overestimate or overstate it. We are so conscious of certain faults or evils that we would like to correct, that we grasp at the straws of tradition, as if the good old times were replete with remedies and explanations. In calmer moments, when one takes a careful inventory of the

situation, the inevitable conclusion is reached that there was less of personality in teaching in the good old days than is commonly supposed. What was true then is true now. There were a few persons with forceful and dynamic personalities who were really remarkable teachers. But the great majority were teachers of ordinary ability and skill and a few were poor, indifferent, and incompetent. Human abilities and traits distribute themselves in the same way to-day. There are always a few who stand out in relief when contrasted with the rest. The older alumni can count the really fine teachers on the fingers of their two hands. The younger alumni will be able to do the same thing later on.

Why is it that former students pay homage to a superior teacher? Not merely because he was a scholar, but because he took an interest in them, worked with them and was never too busy to sit down and talk with them, found time to help them, never treated them curtly, or dealt with them as if they were impersonal beings. He was a guide and counsellor. That is the function of a real teacher. Has the opportunity to be the guide and counsellor of one's students been lost by the growth of our universities? I do not think so. I think it is quite as possible to-day as it ever was. It is questionable whether any agency can ever be substituted for the teacher himself as a guide and counsellor of his students. What a privilege it is to start students right, to find time to confer with them and learn what their difficulties and problems are, and to help solve them. I realize that a point of view directly contrary to this is sometimes expressed in college and university circles, but with that view I have no sympathy at all, in so far as it applies to beginning students, and I do not think that it can be accepted without question even with graduate students. It is true that some instructors may have so many students that the personal element is lost. The majority of instructors, however, have no more students than most of the teachers in the small colleges, nor more than many instructors of a generation ago had, and they have more time, for instructors a generation ago taught more hours during the day and frequently more days during the week than instructors teach to-day.

Students frequently fail because they have not been properly introduced to the new subject. Coming from the high schools they are suddenly thrown into a new and strange environment. If those they meet express a real interest in their personal welfare, if they are appreciated by the instructors to whose classes they happen to be assigned, and if they receive a sympathetic introduction to the subject-matter of the new field, their way will be made easier and fewer will fail. When a department finds that fifteen, twenty, or twenty-five per cent of its students receive failure in any one term, it should make a thoro diagnosis of its standards and teaching methods. The necessity of a diagnosis, however, is not any greater for these departments than it is for those in which only one or two per cent are failing. No one but the egotist knows where the line should be drawn, but every department whose grades are extreme should be prepared to justify itself or to change its practice.

Out of every 100 freshmen in the University of Washington only 54 become sophomores; 36, juniors; and 24, seniors. Out of every 100 freshmen at the University of Wisconsin only 33 enter the senior year. I do not know what the figures are for Minnesota, but they are probably as striking as those of Wisconsin. The mortality of college students is altogether too high. It describes a problem that is deserving of much more attention and consideration than it now receives. I do not say these things because I am interested in numbers, but because I am interested in the salvaging of ability.

There are some university men who proceed on the assumption that the sole function of a university is to train leaders. No one would deny that such a function is of primary importance. A state university should train its fair share of leaders for the various professions of the state in which it is located, but it has at least two other functions. One is the dissemination of knowledge and the other is that of providing training in citizenship and in the arts and sciences of the various professions for large numbers of students, the vast majority of whom will not become leaders of their professions. Certainly most students will not hold positions of high distinction on account of their contributions to the fields in which they have been

trained. It is extremely easy to overlook and ignore this function of training large numbers of students so that they may be good doctors, dentists, or lawyers and intelligent citizens. There has been growing in university circles a tendency to more rigid selection. It is unfortunate that selective methods and bases used in educational circles are frequently so unrelated to, and disassociated from, the life the student expects to lead after he graduates that they are highly artificial and mechanical in character. It is also most unfortunate that they are sometimes administered with less consideration to the capacities and abilities of the individual than they should be. Marking systems exist everywhere because we know of nothing better. Students are graduated because of the number of credits they have received, simply because we have been unable to invent a more satisfactory measure of achievement and because of our inability to relate more closely the work which students do in college to the life they expect to lead later.

Most educational institutions now have four grades of passing. Generally they are A, B, C, and D, but in a number of institutions, in recent years, an honor point system which gives three honor points for a grade A; two, for a grade B; one, for a grade C; and none, for a grade D, has been introduced. Under this system it is common practice to refuse graduation to a student who does not have as many honor points as he has credits. In other words, the average grade required for graduation is C. It is therefore possible for a student who has no failures, no conditions, or no incompletes against his record to be refused graduation. To make the conditions still more exacting and more certain of selecting those of unusual capacity and ability for graduation, these same institutions have, in many cases, adopted an additional rule to the effect that no one will be graduated unless he has earned at least one and one-half honor points in his major subject. In other words, his average must approximate a grade of B in the courses in his major field. All these devices are eliminating and selective devices. The danger that inheres in such rules is that the rules will be administered for their own sake. The doors of admission should

be wider than the doors of graduation. The operation of selection is inevitable in the administration of any curriculum. But curricula should be mapped out more in terms of fairly definite objectives and students should be permitted to move forward at rates that correspond to their talents and abilities. They should not be refused graduation because their grades are not in the top group or next to the top group. Whatever constitutes the minimum grade for merit in passing should be the minimum basis for graduation. A premium on the other hand should be placed upon talent and ability, and a student having these should be permitted to carry additional work or to proceed at a more rapid rate and to be graduated with special honors. Furthermore students of talent should be encouraged to pursue more advanced studies with the view of rendering more distinguished service.

As stated above, some maintain that a university is the place for the development of leaders. It is that and more. Very few, however, of those graduated have exceptional ability. It is our business, of course, to find these few and to give them the training they need. But it is also our business to train successful practitioners in the several professions, not with the thought that they will be leaders, but that they will be capable practitioners. It is still further our business to provide general training for the great mass of students with the purpose of making them intelligent citizens. Democracy is not founded upon the doctrine of constant leadership, but upon the doctrine of alternate leadership. Each of us at times must defer to the experience, knowledge, and skill of someone else. To know when to do this and what valuation to place upon the experience, knowledge, and skill of those we elect to follow requires a type of training which the university is obliged to furnish. A state university has other functions, but these will always remain the fundamental ones in the minds of the constituency to whom a state university is expected to minister.

One may, with considerable truth, say that the strength and weakness of a university depend upon the character of the intellectual instruction it provides, but that in turn depends upon the

morale that exists within the institution. Institutional morale is not an elusive, intangible, and unattainable something. But it can not be attained by one group apart from other groups. It can be realized only by the several groups maintaining a systematic relationship with each other. This relationship does not depend upon buildings, classrooms, offices, material equipment, or special administrative devices and agencies that may be created from time to time, but rather upon the motives that control university work. The university should be viewed not as a personal, private enterprise, nor as a convenient place for making a living, but as an institution consecrated to public welfare, a place where wholesome respect for the opinions of others prevails, a place where students and teachers work together in good fellowship, each interested in the other's problems, both individually and collectively. Whether the university is a good place for students to be, whether the citizens of the state should entrust the education of their children to it, depends more upon the ability, skill, and sympathy of the faculty than upon any other group. Some may contribute to the success of the university in one way and some in another, each according to his peculiar talents and personal qualities, but all can contribute to its success in these common ways that make for mutual understanding, social intercourse, and better results. The progress of an institution depends upon the differences that exist among us. The safety, integrity, and ultimate soundness of an institution depend on the amount of like-mindedness that exists among the students and faculty with reference to all those things that minister to the common welfare.

Not only must a state university maintain a very close and definite relationship with the other units of the public school system of the state, including the high schools and the state department of public education, but it must also maintain very definite relationships with the general public. State universities are supported by the taxpayers who feel the need of certain types of education. They demand that these types be taught. They may also demand that certain types of public service be rendered by the university. The thing they desire the university to teach, the methods used in the teaching, and the types of service demanded may occasionally conflict with the traditional ideals and purposes of a university. A privately endowed university can

refuse to comply with these demands, but a state university can not dispose of them so easily. If the taxpayers want public service, they will insist upon it even tho what they ask may shatter some of the traditions and established policies of the university. This disposition on the part of the taxpayers is not without its benefits. It is an antidote for ultra-conservatism, and at the same time, strange to say, a check upon radical changes.

Another problem which distinguishes a state university from a private university is the relationship it bears to the state legislature. Every two years a state university must submit its request for support to the legislature, composed of men elected by popular vote, whose every act is checked finally by their constituents. The representatives of the state university can not ask the legislature for money and simply expect to receive it. They must prove their case and justify their expenditures in terms of results. The results most obvious to the citizens of the state are not those of the classroom and laboratory, but of the progress of their own children within the institution, and of the types of public service which the institution is rendering.

While legislators are sometimes checked by their constituents they are on the other hand responsive to the demands of those same constituents. The result is that every new department or school granted by a state university is created because back of it there is a popular demand. The fact that new projects are not likely to be instituted except in response to public pressure or public demands is both a source of strength and of weakness. It is a source of strength because the people of the state will get what they want and need far more quickly than otherwise. Moreover they are in a position to know whether the results secured are to any extent in keeping with the amount of money spent. It is a source of weakness because it enables every one who feels that he has a new idea or has discovered some fresh need to bring pressure to bear upon the institution to found a new course or to establish a new department or a school in response to his latest idea or need. While a state university is constantly responding to pressure it is at the same time forced to resist a wide variety of demands most of which are temporary in character or are limited in their influence.

The fact that a state university is directly dependent upon the legislature for its appropriations brings it into a very direct relationship with the chief executive of the state, for all of the appropriations are usually subject to his veto. The governor of the state is, therefore, in a position to exercise great discretionary power whenever large appropriations are involved. This means that it lies with him at times, to determine to a very considerable extent the educational policies of the university, for it goes without saying that educational policies can not be disassociated from finances, and in nearly every, if not every, state the university is required to live within its appropriations. In most states it is a penal offense, subject to imprisonment, for the administrative officers of the university to have a deficit at the end of the biennium. Consequently whenever a governor passes upon the appropriations made by the legislature, he has either granted large powers or placed definite limitations upon the university. There can be no considerable expansion without his consent, but here again his consent is influenced by the will of the people. If they feel that a particular thing is necessary or desirable, the governor usually has enough insight, sagacity, and statesmanship to sense that feeling and to approve or disapprove the appropriation accordingly.

In some states the board of regents is appointed by the governor of the state. In some cases the governor himself is a member of the board which he appoints. Groups or classes frequently demand membership upon the board, and the governor finds it difficult to resist the opinion of these groups or classes. There can be no possible objection to a lawyer or a farmer or an engineer being a member of the board of regents. In fact there will be great gain if the board is made up of persons who are representative of all classes, groups, and professions, but, whenever any member of a board becomes the special advocate of a special class or group, he is almost certain to neglect the interests of the university as a whole. Whenever a regent becomes the special pleader of some unit, the administration of the institution is complicated enormously. Of course, it is difficult if not impossible for the

regent, largely because he does not have the time to devote himself to the study of the institution, to have the overview necessary for successful administration of the entire institution. On the other hand it should be admitted that there is something to be gained in a plan whereby the various groups feel that they have a representative at court, and that their interests will not be neglected or overlooked. If every member of the board feels personally that he is first a regent, and second that he is a representative of some special group, the institution is likely to be wisely and democratically administered.

A tax supported institution is, as has already been indicated, far more sensitive to public opinion than a private institution. The result is that demands are frequently made upon members of the board to bring about certain changes in the institution that are not in harmony with established educational policy. The tendency is for faculties to be granted more and more power in the administration of the various colleges. The very fact that a state university is a state institution has in some instances resulted in a conflict between faculty and regents with reference to interests and policies. Certainly the regents are not altogether to blame for this conflict. It comes partly because the faculties are not always as sensitive as they should be to their public responsibilities, and, too, partly because the faculties find it difficult to modify their scholastic inclinations to meet public service demands.

A state university differs from a privately endowed university in the relationship that it bears to the Federal government. Ever since the first Morrill Act of 1862 when special land grants and appropriations for the benefit of agriculture and mechanic arts were provided by Congress, the relationship between state educational institutions and Congress has been growing more important. The first Morrill Act greatly stimulated the establishment of agricultural schools. The Hatch Act in 1887 provided for the establishment of agricultural stations. It really did more than that. Those who were the chief advocates of the first Morrill Act had the idea that agriculture could be taught by emphasizing the practice of agriculture. It took twenty-five years to convince them and their successors that agriculture could only be taught by applying to it the principles that have been

worked out in other sciences, and by studying it in the light of these principles. The Hatch Act, therefore, in creating agricultural experiment stations paved the way for research in this field. Other federal acts have followed since then, for example, the second Morrill Act in 1890, which appropriated money for the sale of public lands; the Nelson Act in 1907 amending the second Morrill Act; the Adams Act in 1906 providing increased appropriations for experiment stations; the Smith-Lever Act in 1914, and the Nelson Act in 1914, providing for coöperative agricultural extension work; and the Smith-Hughes Act in 1917, providing for the promotion of vocational education in the fields of agriculture, home economics, and trade and industrial arts. The Smith-Hughes Act introduced a new principle, that of requesting the states to match federal appropriations before the federal money would be made available. Other similar federal acts are now pending. There has been very great danger that the Federal government would attempt to control state education, and certain aspects of university education. State universities generally have insisted upon maintaining their own autonomy, altho it must be confessed that it has been difficult for them to do so at times. They are not adverse to receiving federal support, but they believe that the Federal government should keep its hands off the control of state education, and that any money that it appropriates for university purposes should be used by the university in the way that it deems appropriate. Much of the research work of the universities is of a continuing character and should not be put aside to carry on special investigations that may be stimulated by federal subsidies. State universities can not in any sense become the hired agents of the Federal government.

It is obvious to any one who reflects about the situation that a state university should hold and maintain the educational leadership of the state in which it is located. It is also clear that it should be on a par in every department with other reputable institutions of learning. For a state to permit its children to go to private institutions either within or without the state because they receive better advantages in those institutions is a reflection upon the educational ideals of the state. Every citizen within the state in which the university is located should have a peculiar pride in it. He may not agree with all of its policies

and with its administration in every respect, but he should feel that there rests upon him an obligation as a citizen to see that the university is in every way the equal of the best institutions of learning in the country. Still larger sums of money will be required in the future if this purpose is to be achieved. Some of this money should come in the form of gifts.

Certain names stand out like beacon lights in the history of the University of Minnesota—Pillsbury, Shevlin, Elliot, Dorr, Gilfillan, Mayo have been written indelibly in the history of the University because of their gifts. Governor Pillsbury not only saved the institution when it was facing a great crisis but he gave liberally for the erection of a building that bears his name. The woman's building on the campus bears the name of Shevlin, erected by a gift given in honor of the daughter of Thomas Shevlin. It was the money of A. F. Elliot that erected the Elliot Hospital, and of Caleb Dorr that provided scholarships in agriculture, of John B. Gilfillan that established a loan fund for students, and of the Mayo brothers that made Minnesota the greatest research center of medicine and surgery in the world. I do not believe that any one of these donors is a graduate of the University of Minnesota, but they made their money here, and they felt that they ought to give a return to the state for the opportunity that they had been granted, and that the noblest and finest type of return was that of providing better educational conditions and facilities at the University. A state university has every reason to feel that its alumni and friends should give as liberally as the alumni and friends of Harvard, Yale, Princeton, and Columbia. Graduates of state schools should underwrite their alma mater just as she has underwritten them. There must be more gifts, and in some instances, larger gifts in the future, if the University of Minnesota is to become and is to continue as distinguished a state institution as it is possible for her to be.

There is a long list of things for which gifts may be made. For example, there is great need for a children's hospital unit in connection with the Medical School. Children's hospitals are being established here and there in the Twin Cities and over the state. The young doctors who receive their training in the Medical School are expected to be able to deal with children's diseases,

and yet the amount of instruction and experience which they have had with children and with children's diseases is very small indeed because facilities for this training are not provided at the University.

A nurses' home is also needed. A gift could be made to no more worthy object than to the erection of a home for the young women who are in training for nursing.

Another need of the Medical School is a building for a diagnostic clinic. This building should be large enough to accommodate both dentistry and medicine, as the time is rapidly approaching when these two sciences will be combined for diagnostic and clinical purposes. What finer memorial could one provide than a building dedicated to curing and healing the sick and to the training of young doctors and dentists in the art and science of diagnosis.

Still another need of the University is that of a students' hospital and infirmary. This last year more than 10,000 students of collegiate grade were registered in the University, and more than 58,000 calls were made at the Students' Health Service. The importance of this work in preserving the health of the University community is yet but dimly appreciated. Those students who become hospital cases and remain at the University are taken care of in a limited number of beds located in Pillsbury Hall. Additional facilities are needed. Better accommodations are imperative. A students' infirmary and hospital must be provided in the near future.

A year ago in discussing the needs of the College of Engineering before the engineering societies of the state, I called attention to the desirability of providing a technological institute of research. Such an institute should be housed in a building erected for that purpose. Thousands of dollars are being spent by the state and by private organizations and individuals for research in the various fields of engineering and chemistry. The work could be done more economically and with greater gain to science if it were done by a group of men located at the University, devoting a large share of their time to research in these fields. About a year ago a number of manufacturers in Michigan agreed to erect such an institute upon the campus of the University

of Michigan and to see that it was properly equipped and endowed. Such a policy is a wise one, not merely because the research may have a commercial value, but because it will keep at the University men who are qualified to engage in and to direct research. It will permit them to perpetuate their own kind by training other young men who will take their places in the years to come. Their presence upon the University campus will be a constant source of inspiration. Universities can not maintain educational leadership, so long as their best men are drafted by commerce and business. Furthermore, such an arrangement would enable the University to pay salaries large enough to retain these men at the University.

There should be established at the University a bureau of business research. A sum of approximately \$50,000 a year should be set aside for its maintenance. This money should be provided just as it has been provided at Harvard by gifts, and the bureau should devote itself to the study and consideration of all those questions which relate to the economics of business of every kind, including agriculture, manufacturing, transportation, and merchandising. Its staff should consist of exceptionally well-trained men and its equipment should be the very best. The returns to the people of the state from such a bureau would not be intangible. The returns in one year's time, in my opinion, would more than equal the entire gift in value, that is a gift large enough to support such a bureau for a ten-year period at \$50,000 a year.

We have long been in need of a plant industry building in connection with the College of Agriculture—not merely a building devoted to the usual studies of plants, but to the study of plants from an industrial point of view. One of the great problems with which the northwest is struggling is that of growing a rust-resistant wheat. Constant demands are being made upon the University to produce such a wheat, and yet the facilities for experimental purposes along this line are limited. There should be a large building partly enclosed with glass where different kinds of wheat can be experimented with under different conditions. The same kind of experimental work should be carried on with other grasses—oats, rye, and barley. Minnesota would take the lead among the educational institutions of this

country at once in this field if she had such a building, properly equipped and staffed.

Another of the great needs of the University is that of more residence halls. Three dormitories accommodating 100 women students each are needed at once, and dormitories or residence halls enough to house approximately 1,500 men are needed. Why should it be possible for men to have better living accommodations at Yale than at Minnesota? Are women students to have better living accommodations at Smith and Wellesley than at Minnesota? It is possible because the friends of higher education have not given as liberally to Minnesota for the erection of residence halls as the various donors have given to Yale, Smith, and Wellesley. Michigan is in a fair way to have one of the leading law schools of the country because she has received a gift large enough to enable her to erect a residence hall for the accommodation of all her law students, and also large enough to permit her to pay salaries to her law professors the equal of those paid in any institution of the country. Along with the erection of dormitories, I should like to emphasize the importance of erecting coöperative cottages. We have a number of these upon the campus now, but in the course of time they must be removed from the campus. The women students who live in these cottages pay a nominal rent and maintain them at a minimum expense to themselves. More cottages of this character should be provided.

We have long recognized the need of a new gymnasium at Minnesota. The present gymnasium was erected in 1896. There were probably not more than 2,500 students in the University at that time. Now we have more than 10,000. This last year we had something over 6,000 men. To accommodate them in a gymnasium which was erected in 1896, when the total registration was less than one half the men now registered, requires an ingenuity beyond the powers of the administration and the Department of Physical Education and Athletics. Chicago had her Bartlett; Northwestern, her Patten; and each of them gave a fine gymnasium. Whom does Minnesota have?

Gifts should be made for the decoration of new buildings to be erected upon the campus. There is a splendid opportunity for wonderful decorations in the new Music Building and in

the new Library now under construction. Similar opportunities will be presented from time to time as other new buildings are erected. A comparatively modest gift would enable the regents to have the interior of the new Library decorated in a manner in keeping with its beauty and significance, and a lesser gift would enable them to decorate the Music Building.

A foundation should be created for a University Press that would publish pamphlets, books, outlines, synopses, and even papers of special significance to the people of the state. The University can not afford to provide for the publication of all these things out of its support. Every dollar that it has is needed for instruction and to provide the conditions for instruction. There should be a Minnesota Press that would compare favorably with the Harvard Press, the Yale Press, and the press of similar institutions. The foundation should be large enough to provide an initial annual income of not less than \$30,000 a year.

The University of Minnesota needs more land. She is unable to buy land except upon the explicit authority of the state legislature, unless she buys it out of funds that have not been appropriated by the legislature and those funds are limited. Land is needed for an expansion of the athletic field, for dormitories, and for residence halls; and as the University grows, it will be needed for other purposes.

In addition to all these items for which gifts should and could with great propriety be made, there should be gifts from those who are interested in establishing foundations for research; those who wish to make gifts for the purchase of books; those who desire to increase the number of fellowships and scholarships within the institution; those who are interested in providing adequately for certain academic chairs; those who want to build up and maintain some department or college on as high a plane of efficiency as possible. The gifts may be large or they may be small, but in the long run every gift will help the University to achieve the purpose which it has set for itself, that of being unsurpassed in efficiency and in accomplishment in its various departments and colleges.

II

In this part of my report I wish to record briefly the significant events of the University year.

ADMINISTRATIVE MEASURES

Establishment of a Department of Preventive Medicine and Public Health.—Fifty-three years ago Dr. Folwell advocated the establishment of a school or department of public health. Since that time the subject has been under discussion many times. Various committees filed reports, advocating the establishment of such a department but no final action based upon their recommendation was ever taken. In the meantime, public opinion relative to public health was gradually undergoing a change. Fifty years ago only a few men of rare vision considered health as a public obligation. Sickness was regarded as a more or less individual and private affair. The cure of disease and its correction, wherever it existed in communities, was emphasized as the important feature of medical education. Questions relating to sewage, sanitation, pure foods, ventilation, the character of the water supply, and the spread of the various contagious and infectious diseases, were too seldom regarded in the light of their public significance. A great change has been coming about during the last half century and a new point of view has been gradually insinuating itself into American thought. It has come about partly because of the increase in population and of the growth of cities. It has come about also partly because each citizen has been forced to take into consideration his duties and responsibilities, his obligations and his privileges, as related to the duties, responsibilities, obligations, and privileges of his neighbors. One lives less to himself to-day than he did fifty years ago. He reads more; books have multiplied and newspapers have increased enormously. Lines of communication have been erected everywhere throughout the country. Private parks have become public parks. Private libraries have become public libraries. Private service has become more nearly regarded as public service. Pure food laws have been enacted, laws governing the sale and distribution of certain drugs have been passed, sewage lines have been provided in cities, and water filtration plants have

been installed at public expense. Correction of evil and of disease is still a matter of primary consideration, but in its place has come a new slogan—the slogan of the twentieth century—and that is the slogan of prevention. We are now trying to remove those conditions that are responsible for the growth and spread of diseases. Longevity has been increased by virtue of this. There is a mighty army of enthusiasts everywhere preaching the doctrine that health is wealth. Superstitious concoctions are no longer resorted to for the cure of every imaginable disease. Men and women are being trained in reputable institutions of learning for the prevention of disease and its spread. Schools of public health have been established at Johns Hopkins, at Harvard, and at other places. In keeping with this general movement, the Board of Regents adopted the resolution on January 13, 1922, requesting the appointment of a committee to consider the advisability of establishing a department of public health. The president of the University, thereupon, appointed the following persons: Dr. H. S. Diehl, Dr. E. T. Bell, Dr. S. Marx White, Dr. L. B. Wilson, Dean G. S. Ford, Dean J. B. Johnston, Professor F. Bass, Professor R. M. Elliott, Dean M. E. Haggerty, and Professor F. J. Bruno. This committee was made up of representatives of the Medical School, of the State Board of Health, the Health Service of the University, the College of Engineering, the Department of Psychology, the College of Education, and the Associated Charities of the Twin Cities. It was assumed that the University was already offering many courses that might be organized into a curriculum for the teaching of preventive medicine and public health. The committee, after carefully considering the resources of the University and what the public situation demands with reference to the training of public health workers, made the following recommendations which were adopted by the Board of Regents, April 26, 1922:

1. That a Department of Preventive Medicine and Public Health be established in the Medical School, this department to offer appropriate required and elective courses in hygiene and public health for students in the various colleges and schools of the University.

2. That this department be provided with a budget for salaries and expenses and that to this budget be assigned all moneys which are now allotted to health and public health education in the University, together with such further sums as may be available.

3. That the director of this department be also the director of the Students' Health Service.

4. That action be taken as soon as possible so that the new department may be organized, courses offered and curricula organized for the college year 1922-23.

The Engineering Experiment Station and Bureau of Technological Research.—On December 13, 1921, the Board of Regents voted to establish an Engineering Experiment Station and Bureau of Technological Research in the College of Engineering, with the dean as its director. The importance of research in engineering and the necessity of fostering it in the University requires no argument. The advancement of knowledge through research is one of the principal functions of a university, and also an element of the greatest value in the instruction and inspiration of students. Moreover, the state university is the center of research as well as of higher education for the entire state.

Investigations by the Agricultural and Mines experiment stations have resulted in improvements of enormous value to the agricultural and mining interests of the state. Likewise great opportunities for benefit to the industries of Minnesota await development through research along engineering lines, such as hydroelectric power, highway construction, automotive transportation, steam and electric railways, building construction, lighting and ventilation, power plants for farmers, radio communication, and all sorts of manufacturing.

The establishment of an Engineering Experiment Station and Bureau of Technological Research, provides a central bureau under which the present research interests of the Engineering College can be grouped and coördinated. It stimulates the contribution of research funds by outside individuals and associations, and above all it indicates that the University recognizes the importance and value of research in the fields of technology. The objects of the station and bureau are:

1. The advancement of knowledge concerning technological subjects.
2. The promotion of the development of the natural and industrial resources of the state.
3. Receiving and administering research funds contributed by individuals or organizations.

4. Coöperating with industrial concerns in the investigation of problems arising in practice.

5. Coöperating with state or federal agencies in the prosecution of technological studies, such as those relating to engineering and the development of natural resources.

6. Assisting the various departments and bureaus of the state government in the solution of such problems as they may submit.

7. Publishing bulletins by which the results of research shall be made available to the people of the state.

Athletics.—A special committee consisting of Henry F. Nachtrieb, Orren E. Safford, John Schuknecht, Arthur E. Larkin, and John F. Hayden, presented to the Board of Directors of the General Alumni Association, early in December, 1921, the following resolutions:

1. That the President and the Board of Regents of the University be urged to take immediate steps to organize and establish at the University an athletic department along the line followed at a number of other western universities, and employ an athletic director who shall give his entire time to that work, further details to be worked out in accordance with the best practices obtaining elsewhere;

2. That the president of the General Alumni Association appoint a committee of five members who will offer their assistance to the President and the Board of Regents in planning and organizing such a department, and in the selection of an athletic director; and

3. That in furtherance of this plan, the Athletic Board of Control be asked to assist the President and the Board of Regents in organizing this new department and therefore to take the necessary steps to terminate the contracts of all athletic coaches at the end of the current year.

These resolutions were presented to the Board of Regents, who thereupon voted that the president of the board appoint a committee of three to consider the resolutions and to report at the next meeting of the board. The following committee was appointed:

President L. D. Coffman

Regents: G. H. Partridge and C. L. Sommers.

The president of the University then presented the following resolutions of the Board of Athletic Control:

Resolution No. 1

Whereas, We, the members of the Board of Athletic Control, recognize that there is a prevailing sentiment that the athletic system at the University of Minnesota should be re-organized along the lines suggested

in the report of the Athletic Committee of the General Alumni Association attached hereto; and

Whereas, We believe that the University authorities should have a free hand in such re-organization; be it

Resolved, That we concur in the report above mentioned, and instruct the Secretary of the Board of Athletic Control to take the necessary steps to terminate the contracts of all coaches and other employees of this board at the end of the current school year, or at such times prior to the end of the current school year as are determined by the provisions of such contracts; and that the Board of Athletic Control, as now constituted, make no new contracts extending for a period beyond the first day of July, 1922.

Be it further resolved, That a committee of five student members of this board, of which the chairman of the board shall be a member and its chairman, be appointed by him to offer their services to the President and the Board of Regents of the University, and to represent the interests of the students, in the re-organization of athletics at the University.

Resolution No. 2

Resolved, by the Board of Athletic Control, that we hereby express our appreciation and sincere thanks to all present coaches for past services and recommend them to the earnest consideration of the new Athletic department when it is organized.

A little later the General Alumni Association appointed a committee of five, consisting of John M. Harrison, John Schuknecht, John McGovern, Otto Davies, and John McGee to confer with the committee of the board in mapping out its plans and in determining its policies.

The Athletic Board of Control also appointed a committee of five, consisting of John Day, Henry Norton, Merle Sweitzer, John Holt, and Harry Brown, to confer with the committee of the Board of Regents on the whole question of reorganization.

These three committees, sitting as a committee of thirteen, after many conferences, came to the conclusion that there should be a regularly organized department of physical education and athletics, with full-time men in charge. It decided that four lines of work should be emphasized:

1. Physical education for all men students
2. Intranural sports
3. Intercollegiate games
4. A course of academic grade for the training of men in supervised physical education.

The committee finally recommended the appointment of Mr. F. W. Luehring, director of physical education and athletics at the University of Nebraska, for the position of director of physical education and athletics at the University of Minnesota; Mr. W. H. Spaulding, of the State Teachers' College of Kalamazoo, as head football coach; and T. Nelson Metcalf, of Oberlin College, as professor of physical education, in charge of the training courses. Dr. H. L. Williams, who served the University for twenty-three years as football coach, was made advisory coach. Dr. L. J. Cooke was made assistant director of the department. This plan was approved by the Board of Regents.

The University Senate then revised its by-laws on athletics to read as follows:

I. Revision of By-Laws on Athletics

It is proposed that By-Laws I, Athletics, be hereby repealed and in lieu thereof the following be substituted:

1. There shall be a standing Committee on Intercollegiate Athletics which shall be composed of eleven members, five faculty members to be appointed by the President of the University, subject to the approval of the University Senate, and the University Comptroller and the Director of Physical Education and Athletics, as ex-officio members, two alumni members to be recommended by the Athletic Committee of the Alumni Association, and two student members to be recommended by the President from the student members of the present Athletic Board of Control, said student members to serve for one year, and thereafter to be recommended by the student body.

2. The Committee shall appoint a sub-committee of three members of which one shall be the Director of Physical Education and Athletics, and of which a faculty member other than the Director of Physical Education and Athletics shall be chairman, to have general supervision of tickets for intercollegiate contests. This sub-committee shall have supervision of all ticket sales for intercollegiate contests and other sources of income. This sub-committee shall receive from the athletic director and the treasurer, designated by the Board of Regents, ticket reports for each game, showing tickets issued, tickets sold, complimentary tickets, and unused tickets, together with a statement of the actual cash received.

This sub-committee shall have supervision of Northrop Field and the grandstands and the seats thereon, insofar and at such times as it may be used for intercollegiate athletics. The sub-committee shall satisfy itself of the safety of all stands before allowing them to be used.

3. The Committee shall also appoint a sub-committee of three members of which a faculty member other than the Director of Physical Education and Athletics shall be chairman, and of which the Director of Physical Education and Athletics shall be a member, to have supervision of auditing.

This sub-committee shall have general supervision of all expenditures and no bills shall be paid or debts incurred unless approved by this sub-committee.

4. The Committee on Intercollegiate Athletics shall constitute the eligibility committee, and shall decide upon all questions of students' eligibility to participate in intercollegiate sports.

5. The Director of Physical Education and Athletics shall act as the executive secretary of the committee and be entitled to vote on all matters excepting questions of eligibility.

6. The Director of Physical Education and Athletics shall be appointed by the Board of Regents upon nomination by the President with the advice of this Committee.

7. All coaches, managers and assistant managers shall be nominated by the Director, and upon the approval of the President and the Committee, shall be appointed by the Board of Regents.

8. The Director of Physical Education and Athletics shall be in general charge of and responsible for the detailed administration of intercollegiate athletics subject to the supervision and approval of the Committee on Intercollegiate Athletics, which Committee is given entire control of intercollegiate athletics subject to the constant revision and ratification of the University Senate.

9. The President, at his discretion, may appoint the University's conference representatives. In the absence of such appointment the chairman of this Committee shall act as such representative.

10. All matters pertaining to physical education and athletics not intercollegiate in character are placed entirely under the supervision of the Department of Physical Education and Athletics. It is understood that this will include all intramural athletics.

II. Recommendation That Baseball Be Re-Introduced as an Intercollegiate Sport

Voted to reinstate baseball as an intercollegiate sport for a period of three years.

Following the adoption of these by-laws, Director Luehring presented a request to the University Senate for the restoration of baseball as an intercollegiate sport and the Senate unanimously approved his recommendation.

CHANGES IN THE FACULTIES

Appointments.—The following appointments to positions of professorial rank were made during the period under review:

Dr. Samuel Amberg, associate professor of pediatrics on the Mayo Foundation.

M.D., 1898, University of Heidelberg; assistant and associate professor of pediatrics, Johns Hopkins University, 1898-1909; associate professor of experimental medicine, Rush Medical School, 1912-21.

Bessie Baker, assistant professor of nursing, Charles Miller Hospital.

Training School, 1902, Johns Hopkins Hospital; assistant superintendent of nurses, Woman's Hospital, Baltimore, Maryland; supervisor, Church House and Infirmary, Baltimore, Maryland; assistant superintendent of nurses, Johns Hopkins Hospital, Baltimore, Maryland; chief nurse, Base Hospital 18, A.E.F.

Paul H. M.-P. Brinton, professor of analytical chemistry.

B.S., 1912, University of Minnesota; M.S., 1913, University of Minnesota; Ph.D., 1916, University of Minnesota; instructor in chemistry, University of Minnesota, 1909-12; assistant professor of chemistry, University of Arizona, 1912-13; associate professor, University of Arizona, 1913-14; professor of analytical chemistry, University of Arizona, 1914-21; captain, chemical war service; chief, research analytical unit, chemical research section, American University Station, Washington, D.C., 1918-19.

Benjamin J. Clawson, assistant professor of pathology.

B.S., 1909, University of Kansas; M.A., 1911, University of Kansas; M.D., 1917, Rush Medical School; Ph.D., 1919, University of Chicago; assistant professor, Oklahoma Agricultural College, 1911-12; instructor, assistant professor, and associate professor, University of Kansas, 1911-17; instructor in pathology and bacteriology, University of Chicago, 1917-19; professor of pathology and bacteriology, University of North Dakota, 1919-21.

Walter Castella Coffey, dean of the Department of Agriculture and director of the experiment stations.

B.S., 1906, University of Illinois; M.S., 1909, University of Illinois; instructor in sheep husbandry, University of Illinois, 1906-7; assistant professor of sheep husbandry, University of Illinois, 1907-11; associate professor of sheep husbandry, University of Illinois, 1911-13; professor of sheep husbandry, University of Illinois, 1912-21; acting head of the Department of Animal Husbandry, University of Illinois, 1920-21.

Captain Myron J. Conway, assistant professor of military science and tactics.

B.S., 1917, College of Agriculture and Mechanic Arts, Texas; the United States Army, 1917 to date.

Ralph C. Crim, extension specialist in agronomy with rank of assistant professor.

B.Sc., 1913, Ohio State University; teacher, Agricultural High School, 1913-18; county agricultural agent, 1918-21.

Harold S. Diehl, director of the Health Service, and associate professor of public health.

B.A., 1912, Pennsylvania College; M.D., 1918, University of Minnesota; M.A., 1921, University of Minnesota; assistant principal, Fulton High School, New York, 1912-14; instructor, Augsburg Seminary, Minneapolis, Minnesota, 1914-16; Base Hospital 26, 1917-19; American Red Cross, in Poland, 1919-20.

Katherine E. Dougherty, assistant professor of nursing, Minneapolis General Hospital.

R.N., 1909, Minneapolis General Hospital; head nurse, University Hospital, 1910-17; State Board of Health, 1917-18; chief nurse, Army Nurse Corps, 1918-20; director School of Nursing, Minneapolis General Hospital, 1920 to date.

Irene R. English, assistant professor of nursing, Northern Pacific Hospital.

Diploma, 1909, N.P.B.A. Hospital School of Nursing; operating room supervisor, Custer County Hospital, Miles City, Montana, 1910; superintendent of nurses, Barnes County Hospital, Valley City, North Dakota, 1911-12; superintendent, N.P.B.A. Hospital, Glendive, Montana, 1913; superintendent of nurses, N.P.B.A. Hospital, St. Paul, Minnesota, 1914-21.

George Fahr, assistant professor of medicine.

B.S., 1904, University of Chicago; M.D., 1907, University of Wuerzburg; assistant in physiology, University of Wuerzburg, 1907-10; assistant in physiology, University of Leyden, 1911-13; graduate work, University of Giessen, 1913-14; graduate work, University of Berne, 1914-15; graduate work, University of Basle, 1915-16; instructor in medicine, University of Michigan, 1917-18; army, 1918-19; instructor in medicine, University of Wisconsin, 1919-21.

Captain Leo J. Farrell, assistant professor of military tactics.

Graduate, Infantry School, 1918; the United States Army, 1917-22.

Samuel B. Harding, acting professor in the Department of History.

B.A., 1890, Indiana University; M.A., 1894, Harvard University; Ph.D., 1898, Harvard University; assistant professor, associate professor, and professor, Indiana University, 1895-1918; research and editorial war work, Committee on Public Information, 1917-19; editorial work, Chicago, 1919-21.

Harry M. Johnson, lecturer in psychology.

B.A., 1909, Missouri Valley College; Ph.D., 1912, Johns Hopkins University; assistant psychologist, associate psychologist, and psychologist, Nela Research Laboratory, Cleveland, Ohio, 1912-17; first lieutenant and captain, sanitary corps, 1918-20; officer in charge, air service, Medical Research Laboratory, Ellington Field, Texas, and the United States S.M.A., University of California, 1918; chief of psychology section, air service, Medical Research Laboratory, Mitchel Field, New York, 1919-20; consulting psychologist, B. F. Goodrich Co., Akron, Ohio, 1920-21.

Morris B. Lambie, secretary of the Municipal Research Bureau and assistant professor of political science.

B.A., 1910, Williams College; M.A., 1920, Harvard University; Training School for Public Service, New York City, 1913-14; New York Bureau of Municipal Research, 1914-16; staff work, New York and Massachusetts, 1916-17; London School of Economics and Political Science, 1920-21.

Frank Waldo Lathrop, assistant professor of agricultural education.

B.A., 1911, Yale University; M.S.A., 1914, Cornell University; vocational agriculture, high school, Canandagua, New York, two years; State School of Agriculture, Cobleskill, New York, three years; leader of Boys' and Girls' Junior Extension Club, Schoharie, New York.

William Lindsay, assistant professor of music.

Conservatory of Music, Leipzig, 1904-9; Helby Scholar, Leipzig, 1908; Mendelssohn Prize, Leipzig, 1909; Paris, 1911; Hochschule für Musik, Berlin, 1912-14; German prison, 1914-16; England, 1918-21.

Captain Porter P. Lowry, assistant professor of military science and tactics.

B.S., 1916, University of South Dakota; assistant city and county engineer, Madison, South Dakota, 1916-17; second lieutenant, first lieutenant, and captain C.A.C., United States Army, coast defenses of the Delaware Forty-fifth Artillery; American Expeditionary Forces in France; coast defenses of Manila and Subic Bays, Philippine Islands, 1918-21; heavy artillery course, Coast Artillery School, Fortress Monroe, Virginia, January and February, 1918.

F. W. Luehring, director of the Department of Physical Education and Athletics with the rank of professor.

Ph.B., 1905, Northwestern College; Ph.M., 1906, University of Chicago; professor and director, physical education and athletics, Ripon College, 1906-10; fellow in economics, University of Chicago, 1910-11; assistant professor, and associate director, Department of Hygiene and Physical Education, supervisor of required work, coach of basket-ball and water polo, Princeton University, 1911-20; professor and director of physical education and athletics, University of Nebraska, 1920-22.

Kemp Malone, professorial lecturer in English.

B.A., 1907, Emory College; Ph.D., 1919, University of Chicago; teacher, Georgia high schools, 1907-11; exchange teacher to Prussia on the Carnegie Foundation, 1911-13; graduate student, University of Chicago, 1913-15; traveling fellow, Ottendorfer Foundation, New York University—University of Copenhagen, 1915-16; instructor in German, Cornell University, 1916-17; first lieutenant and captain, the United States Army, 1917-19; traveling fellow, American Scandinavian Foundation—Iceland, 1919-20; research fellow, Princeton University, 1920-21.

Mrs. Bruce D. Mudgett, director of field service, with rank of assistant professor, Department of Sociology.

B.A., 1909, Mt. Holyoke College; officer, Girls' Reformatory, Philadelphia, October, 1909-January, 1910; Society for Organizing Charity, January, 1910-April, 1913; volunteer visitor for Associated Charities, Los Angeles, April-November, 1913; general secretary, Neighborhood League, Wayne, Pennsylvania, November, 1913-May, 1914; district secretary, Charity Organization Society, New York City, May, 1914-October, 1915; graduate student, Columbia University, July, 1915-September, 1916; graduate student, University of Pennsylvania, October, 1916-June, 1917; special investigator, Mothers' Assistance Fund,

Philadelphia, January-June, 1917; Associated Charities and Red Cross, Seattle, Washington, August, 1917-January, 1918; lecturer, Department of Sociology, University of Washington, May-November, 1918; Foreign Division, American Red Cross, Washington, November, 1918-August, 1919; Northern Division, American Red Cross, Minneapolis, September, 1919-June, 1921.

M. B. Neale, professor of educational administration and supervision.

B.S., 1911, University of Missouri; M.A., 1917, Teachers' College, Columbia University; Ph.D., 1920, Teachers' College, Columbia University; superintendent of schools, Missouri, four years; director of education, Maryville State Teachers' College, Missouri, one year; high school inspector, State Department of Education, Missouri, two years; associate in educational administration, Teachers' College, Columbia University, one year; professor of school administration, University of Missouri, one year.

George E. Osborne, assistant professor of law.

B.A., 1918, University of California; LL.B., 1919, Harvard University; S.J.D., 1921, Harvard University; president of the editorial board, *Harvard Law Review*, 1918-19; assistant professor of law, West Virginia University, 1919-20; editor of *West Virginia Law Quarterly*, 1920-21.

Donald G. Paterson, associate professor in the Department of Psychology.

B.A., 1914, Ohio State University; M.A., 1915, Ohio State University; instructor, University of Kansas, 1916-17; captain, psychological division, the United States Army, 1917-19; Scott Company, personnel research work, 1919-21.

Frank Winfred Peck, director of Agricultural Extension.

B.S.A., 1912, University of Minnesota; M.S., 1917, University of Minnesota; instructor, 1912-15; assistant professor, 1915-18; associate professor, 1918-19; farm management, University of Minnesota; farm economist, Office of Farm Management of the United States Department of Agriculture, 1919-20.

William E. Peterson, assistant professor of dairy husbandry and superintendent of official testing.

B.S., 1916, University of Minnesota; M.S., 1917, University of Minnesota; assistant professor, dairy extension, Kansas, 1917-20; field secretary, Minnesota Holstein Association, 1920-21.

Hugh Bruce Price, assistant professor of agricultural economics.

B.A., 1914, University of Wisconsin; M.A., 1916, University of Minnesota; Ph.D., 1921, Yale University; instructor in mathematics, University of Minnesota; instructor in elementary economics, University of Minnesota, 1914-15; Currier Fellow in Economics, Yale University, 1916-17; instructor in economics, Connecticut Agricultural College, 1917-19; instructor, Yale University, 1919-21.

John J. Reighard, assistant professor of accounting.

B.A., 1913, University of Michigan; M.A., 1917, New York University; instructor, high school, Montebello, California, 1913-14; instructor, high schools, St. Louis, 1914-15; student, St. Louis University, 1914-15; instructor, Iowa State College, 1915-16; accountant, M. W. Thompson, New York, 1916-17; war service, the United States Army, 1917-18; accountant, Thompson and Worley, Detroit, 1919-21.

Captain Russell C. Throckmorton, assistant professor of military science and tactics.

Graduate, 1911, Culver Military Academy; graduate, 1921, Infantry School, Camp Benning; second lieutenant, infantry, Missouri N.G., December 7, 1914; first lieutenant, infantry, Missouri N.G., November 7, 1915; Mexican border, Third Missouri Infantry, 1916; 130th M.G. Bn., France, 35th Division, 1918-19; captain, infantry, major, infantry, Third Missouri Infantry, 1920; captain, regular army, 1920-21.

Frank K. Walter, librarian.

B.A., 1899, Haverford College; M.A., 1900, Haverford College; B.L.S., 1906, New York State Library School; M.L.S., 1913, New York State Library School; instructor, Haverford College, 1899-1900; teaching in secondary schools, 1900-1906; reference assistant, Brooklyn Public Library, 1906-7; director assistant, New York State Library, 1907-8; vice-director, New York State Library School, 1908-19; librarian, General Motors Corporation, 1919-20; instructor, library science, University of Illinois; associate professor, library methods, University of Michigan, 1920-21.

Lieutenant Colonel James E. Ware, assistant professor of military science and tactics.

Graduate, 1893, Poplar Springs Normal College; graduate, 1907, the United States Infantry and Cavalry School, Fort Leavenworth, Kansas; graduate, 1908, Army Signal School, Fort Leavenworth, Kansas; graduate, 1920, General Staff College, Washington, D.C.

Captain James T. Watson, professor of military science and tactics.

B.S., 1916, Carlton College; graduate student and assistant, University of Wisconsin, 1916-17; the United States Army, 1917-20; assistant professor of military science and tactics, Massachusetts Institute of Technology, 1920-21.

Changes in title.—William H. Hunter, from acting chief to professor of organic chemistry and chief of the Division of Organic Chemistry; Charles A. Mann, from acting chief to professor of chemical engineering and chief of the Division of Chemical Engineering; Homer J. Smith, from assistant professor in the College of Education to instructor.

Promotions.—From professor and acting chief to chief: W. H. Peters; from associate professor to assistant director; L. J. Cooke; from associate professor to professor, Mayo Foundation: William L. Benedict, Edward C. Kendall, Harold I. Lillie,

William C. MacCarty, Frank C. Mann, Gordon B. New, Arthur H. Sanford, Walter D. Sheldon, John H. Stokes; from assistant professor to principal: W. D. Reeve; from assistant professor to associate professor, Mayo Foundation: Boyd S. Gardner, Willis S. Lemon, Alexander B. Moore, Robert D. Mussey; from assistant professor to associate professor: R. B. Harvey; from instructor to assistant professor and director: Harold S. Diehl; from instructor to assistant professor, Mayo Foundation: Albert C. Broders, H. Carey Bumpus, Dorr F. Hallenbeck, Verne C. Hunt, John D. Pemberton, William A. Plumber; from instructor to assistant professor: N. O. Pearce, Marion L. Vannier, C. W. Waldron, C. B. Wright; from assistant to instructor: E. H. Armstrong, A. T. Newman.

Leaves of absence granted during the year.—Dean J. B. Johnston, College of Science, Literature, and the Arts, from December 22, 1921 to March 29, 1922, sabbatical furlough, to be spent at La Jolla Biological Laboratory, California, to secure change of work and to continue studies in neurology; Director R. R. Price, General Extension Division, sabbatical furlough, from October 1, 1921 to July 1, 1922; Professor L. L. Bernard, Department of Sociology, for the academic year 1921-22, without pay, in order to spend the year in research in the subject of social institutions, most of the time to be spent in Minneapolis; Professor John D. Black, Department of Agricultural Economics, from September 1 to October 1, 1921, with half salary, and from April 1 to July 1, 1922, without pay, to work with the Bureau of Markets and Crop Estimates of the United States Department of Agriculture; Professor E. H. Comstock, School of Mines, for the academic year 1921-22, without pay; Professor W. S. Davis, Department of History, for the winter quarter of the year 1921-22, without pay, on account of ill health; Professor W. H. Emmons, Department of Geology, from May 15 to May 30, 1922, without salary, to undertake research work for the United States Geological Survey at Ducktown, Tennessee; Professor M. G. Neale, College of Education, for the equivalent of thirty days' time, beginning December 20, 1921, to conduct a survey of the Duluth public schools, salary to be paid by the University and the University to be reimbursed by the Board of Education

of the city of Duluth; Professor John I. Parcel, College of Engineering and Architecture, sabbatical furlough for the year 1921-22; Professor J. P. Sedgwick, Department of Pediatrics, for the fall quarter of 1921-22, with pay, with the understanding that the work of the department be carried on by the staff without further expense to the University, and that the direction of the department during the fall and winter quarters be placed in the hands of a committee consisting of F. C. Rodda, chairman, J. T. Christison and E. J. Huenekens; Professor S. C. Shipley, Department of Mechanical Engineering, leave extended for the academic year 1921-22, without salary, to continue his services at Robert College, Constantinople; Professor E. C. Stakman, Department of Plant Pathology, sabbatical furlough, from May 8 to September 27, 1922, to continue study of rusts of cereals in Europe for the United States Department of Agriculture; Professor E. E. Stoll, Department of English, sabbatical furlough for the academic year 1921-22, with half pay; Professor A. B. White, Department of History, for the academic year 1921-22, without pay, to act as substitute at the University of Michigan in the Department of History; Associate Professor W. A. McKerrow, Division of Agricultural Extension, for six months, beginning July 1, 1921, without pay, in order to organize the new central Coöperative Livestock Commission Company at South St. Paul; Associate Professor Louise M. Powell, School of Nursing, for one year, beginning December 1, 1921, without salary, on account of health; Associate Professor J. P. Schneider, Department of Medicine, for one year, beginning July 1, 1921, without salary, in order to devote time to research work; Associate Professor Quincy Wright, Department of Political Science, for the fall quarter of the year 1921-22, without salary, to assist in the Conference on the Limitation of Armament; Assistant Professor Clara Brown, Division of Home Economics, sabbatical furlough, from February 1 to September 1, 1922, to complete work for Master's degree at Columbia University; Assistant Professor S. Chatwood Burton, Department of Architecture, sabbatical furlough for the year 1921-22, to paint and etch in Spain; Assistant Professor Alice Child, Division of Home Economics, leave of absence without pay, for the spring quarter of the year 1921-22, on account of illness; Assistant Professor James T. Hillhouse,

Department of English, sabbatical leave for the year 1921-22 for travel and study abroad; Assistant Professor George F. Howard, Division of Agricultural Extension, from September 15, 1921 to February 1, 1922, without pay, to work with the State Department of Education on Boys' and Girls' Clubs; Assistant Professor J. S. McCartney, Department of Pathology, for the month of August, 1921, to be spent at Rochester in special study, with salary; Assistant Professor A. J. McGuire, Agricultural Extension Division, leave August 1, 1921 to July 1, 1922, to help organize the New Minnesota Coöperative Creameries Association, Incorporated, without pay; Assistant Professor Amy P. Morse, Division of Home Economics, sabbatical furlough, during the fall and winter quarters of the academic year 1921-22 for the purpose of further study at Boston, Massachusetts; Assistant Professor Anna Phelan, Department of English, leave for year 1921-22 on account of illness, first six months with pay; Assistant Professor Harold S. Quigley, Department of Political Science, for the academic year 1921-22, without pay, in order to accept teaching position at Tsing Hua College, Peking, China; Assistant Professor Charles Reed, Division of Orthopedic Surgery, without salary, from September 1 to November 1, 1921; Assistant Professor Martin B. Ruud, Department of Rhetoric, sabbatical furlough, for the year 1921-22, to be spent at the University of Chicago and in Europe, with half pay; Assistant Professor Herbert Woodrow, Department of Psychology, present leave continued for year 1921-22, without pay, in order to accept an appointment for one year in the Department of Psychology at the University of California.

During Dean Johnston's leave of absence Dean Guy Stanton Ford, of the Graduate School, was appointed acting dean of the College of Science, Literature, and the Arts.

During the leave of absence of Director R. R. Price, Mr. J. J. Pettijohn was appointed acting director of the Extension Division for the academic year, 1921-22.

Resignations.—During the year the following members of professorial rank resigned from the faculty: N. T. Dowling, professor of law; John Sundwall, professor of hygiene, and director of the Students' Health Service; M. J. Dorsey, associate professor

and head of the section of fruit breeding; Conrad Jacobson, associate professor of surgery; J. S. Montgomery, associate professor of animal husbandry; B. G. Anderson, assistant professor of prosthetic dentistry; Ralph M. Barton, assistant professor of mathematics; M. H. Fohrman, assistant professor of dairy husbandry; Charles C. Gault, assistant professor of physiology; Sigurd D. Hustvedt, assistant professor of English; Major H. C. Ingles, assistant professor of military science and tactics; Valeria G. Ladd, assistant professor, Department of Physical Education for Women; Captain Porter P. Lowry, assistant professor of military science and tactics; A. J. McGuire, assistant professor of agricultural extension; Captain Edgar B. Moomau, assistant professor of military science and tactics; Margaret K. Mumford, assistant professor of home economics; B. L. Newkirk, assistant professor of mathematics and mechanics; Howard S. Noble, assistant professor of accounting; A. W. Olmstead, head of the Lecture and Lyceum Department; Hjalmar L. Osterud, assistant professor of anatomy; Frederick H. Poppe, assistant professor of surgery; Mildred Loring Sylvester, assistant professor, Department of Psychology; L. A. Welo, assistant professor of physics; Ruby Baughman, professorial lecturer in anthropology; Antonio Heras, professorial lecturer in Spanish.

Deaths.—W. A. McKerrow, associate professor, Agricultural Extension Division, January, 1922; President Emeritus Cyrus Northrop, April 3, 1922; Honorable A. E. Rice, of Willmar, who was a member of the Board of Regents from 1897 to 1920, September 11, 1921; Coleman Rogers Robinson, instructor in economic history, April 15, 1922.

On the announcement of the death of the Honorable A. E. Rice, the following resolution was adopted by a rising vote of the Board of Regents:

Voted, that there be recorded an expression of the gratitude of the University for his long and valuable service. No one more earnestly than he desired the welfare and right growth of the University. In its behalf his work was freely given and his great influence was willingly put forth. His life, so useful in public service, was a good example for his official associates and for the people of the state.

On the announcement of the death of President Emeritus Northrop the following resolution was adopted by a rising vote of the Board of Regents:

Be It Resolved, That we, the Board of Regents of the University of Minnesota, which Cyrus Northrop builded in troubled years and imbued with his spirit of love and service, acknowledge our gratitude to Almighty God for the gift of his life. His labors enshrined him and the University in the affections of the student body and the state.

The memory of President Northrop abides in all his works and in the lives he lifted to higher planes and nobler purposes. The clasp of his hand, the sound of his voice, his kindly smile, his word of commendation have changed the course of countless human lives and directed them to better things. His work as President of the University of Minnesota is written in the history of its advance between 1884 and 1911 from a small college to a great and complex institution ministering to the varied educational needs of an imperial state. Wise in counsel, kindly in administration, high minded in the conception of aims, he unified all the agencies of the University into the creation of the greatest asset of a commonwealth, men and women of intelligence and character.

We are grateful for his closing years when he dwelt among us cheery and unbroken in spirit. He is gone in body but his spirit and memory rest upon us like a benediction. They bid us whether regent, citizen or student, to go forward in the labors he loved against the day when our wealth shall be counted not in the riches of factory and mine or the cattle on a thousand hills but in the eternities of an untroubled conscience, an unbroken spirit and an unspotted character.

Be It Resolved, That this memorial be spread upon the records of the Board and transmitted to those near him and to the alumni and public.

STATISTICS OF REGISTRATION

Collegiate students.—Table I records the attendance of students of collegiate grade, i. e., those in courses leading to degrees. All students in this group, with the exception of the war specials, must present for admission evidence of at least the completion of a four-year high school course or its equivalent. In addition to the war specials certain of the students listed as unclassified have been admitted on the basis of maturity and experience without having fully met the entrance requirements. It is this group of collegiate students that must be kept most in mind in comparing the University of Minnesota with other colleges and universities.

The net gain of 571 students over the year 1920-21 represents an increase of 58.10 per cent.

A study of the registration figures by classes shows that the larger part of this gain is in the junior year of those colleges which accept students direct from high schools, and in the freshman year of the professional schools requiring two years of collegiate work

for admission. The effect of the large influx of students in the fall of 1919-20 following the war period is still apparent in these classes. In the College of Science, Literature, and the Arts, however, the largest increase appears in the freshman class. All of the other colleges accepting students direct from high schools have experienced either very slight increases or actual falling off in their number of first-year students. A comparison of the total registration by colleges shows an increase for every unit except the School of Chemistry, varying from $1\frac{1}{10}$ per cent in the College of Engineering and Architecture to $56\frac{2}{10}$ per cent in the School of Business. The apparent increase of 280 students or of $46\frac{7}{10}$ per cent in the College of Education requires a word of explanation. Under an agreement entered into by the College of Education and the College of Agriculture, Forestry, and Home Economics students pursuing agricultural education and home economics education were for the first time in 1921-22 registered jointly in the two colleges of Agriculture, Forestry, and Home Economics and Education. In order to make the figures for the years 1920-21 and 1921-22 comparable therefore, 172 joint registrations shown in the footnote (Table I) should be deducted from the total increase of 280 registrations in the College of Education, leaving an increase of 108 students or 18 per cent. The war specials appear as a separate unit for the first time in 1921-22. The other units named in the order of their percentage increase in registration are as follows: School of Business ($56\frac{2}{10}$), Summer Session ($34\frac{9}{10}$), Education (18), Pharmacy ($16\frac{5}{10}$), Graduate School ($16\frac{2}{10}$), Law School (14), College of Agriculture, Forestry, and Home Economics ($12\frac{5}{10}$), College of Science, Literature, and the Arts ($9\frac{5}{10}$), Medical School, including nurses and medical technicians ($7\frac{7}{10}$), College of Dentistry, including dental hygienists ($6\frac{1}{10}$), School of Mines ($3\frac{6}{10}$), Engineering and Architecture ($1\frac{1}{10}$). The registration in the School of Chemistry shows a loss of $21\frac{2}{10}$ per cent.

TABLE I. COLLEGIATE STUDENTS BY SCHOOLS AND COLLEGES
1920-22

COLLEGE OR SCHOOL	YEAR 1920-21			YEAR 1921-22			GAIN	LOSS
	Men	Women	Total	Men	Women	Total		
SCIENCE, LITERATURE, AND THE ARTS:								
Seniors	100	175	275	107	143	250	....	25
Juniors	145	223	368	176	204	380	12	....
Sophomores	923	571	1,494	927	630	1,557	63	....
Freshmen	1,021	611	1,632	1,225	671	1,896	264	....
Unclassed	73	121	194	119	138	257	63	....
Total	2,262	1,701	3,963	2,554	1,786	4,340	402	25
ENGINEERING AND ARCHITECTURE:								
Seniors	128	2	130	154	1	155	25	....
Juniors	160	1	161	185	1	186	25	....
Sophomores	360	2	362	321	.....	321	....	41
Freshmen	412	2	414	400	1	401	....	13
Unclassed	13	4	17	28	5	33	16	....
Total	1,073	11	1,084	1,088	8	1,096	66	54
AGRICULTURE, FORESTRY, AND HOME ECONOMICS:								
Seniors	71	58	129	84	83	167	38	....
Juniors	76	77	153	102	111	213	60	....
Sophomores	130	99	229	102	85	187	....	42
Freshmen	137	74	211	80	111	191	....	20
Unclassed	9	26	35	71	23	94	59	....
Total	423	334	757	439	413	852	157	62
LAW:								
Third-year	65	.....	65	75	2	77	12	....
Second-year	85	2	87	64	2	66	....	21
First-year	106	4	110	146	9	155	45	....
Unclassed	1	1	2	3	.....	3	1	....
Total	257	7	264	288	13	301	58	21
MEDICAL:								
Seventh-year	56	5	61	98	4	*102	41	....
Sixth-year	84	3	87	41	5	46	....	41
Fifth-year	57	8	65	65	1	66	1	....
Fourth-year	72	4	76	82	8	90	14	....
Third-year	84	11	95	84	11	95	....	....
Unclassed	10	2	12	10	2	12	....	....
Special	13	2	15	17	1	18	3	....
Total	376	35	411	397	32	429	59	41
NURSING	.....	117	117	.....	137	137	20	....
MEDICAL TECHNICIANS	.....	.....	.....	.....	3	3	3	....
DENTISTRY:								
Seniors	92	3	95	92	1	93	....	2
Juniors	118	1	119	99	1	100	....	19
Sophomores	106	1	107	108	1	109	2	....
Freshmen	75	3	78	99	1	100	22	....
Unclassed	.....	.....	.....	2	.....	2	2	....
Total	391	8	399	400	4	404	26	21

TABLE I—Continued

COLLEGE OR SCHOOL	YEAR 1920-21			YEAR 1921-22			GAIN	LOSS
	Men	Women	Total	Men	Women	Total		
DENTAL HYGIENISTS		9	9		29	29	20	
MINES:								
Seniors	18		18	23		23	5	
Juniors	25		25	51		51	26	
Sophomores	69		69	45		45		24
Freshmen	53		53	52		52		1
Unclassed								
Total	165		165	171		171	31	25
PHARMACY:								
Fourth-year	1	1	2	3	2	5	3	
Third-year	10	11	21	32	4	36	15	
Second-year	36	4	40	30	10	40		
First-year	39	13	52	46	7	53	1	
Total	86	29	115	111	23	134	19	
CHEMISTRY:								
Seniors	24		24	25		25	1	
Juniors	21	6	27	22	2	24		3
Sophomores	38		38	24	4	28		10
Freshmen	43	6	49	30	4	34		15
Unclassed	2	1	3	1		1		2
Total	128	13	141	102	10	112	1	30
EDUCATION:								
Seniors	21	136	157	43	204	247	90	
Juniors	16	141	157	39	284	323	166	
Sophomores		43	43	4	68	72	29	
Freshmen	2	51	53		64	64	11	
Unclassed	56	133	189	41	132	173		16
Total	95	504	599	127	752	879	296	16
BUSINESS:								
Seniors	40	10	50	53	10	63	13	
Juniors	52	9	61	92	17	109	48	
Unclassed	16	1	17	27	1	28	11	
Total	108	20	128	172	28	200	72	
GRADUATE	550	139	689	618	183	801	112	
WAR SPECIALS	100	5	105	215	4	219	114	
SUMMER SESSION	1,178	847	2,025	1,596	1,135	2,731	706	
Grand total	7,192	3,779	10,971	8,282	4,556	12,838	2,162	295
Less duplicates	817	300	1,117	1,646	767	2,413	1,296	
Net grand total	6,375	3,479	9,854	6,636	3,789	10,425	571	

* Medical internes completing the requirement for the doctor of medicine degree.

† This total comprises 952 transfers between the various schools and colleges, 1,289 students registered for the Summer Session of 1921 who were enrolled during the fall, winter, or spring quarters of 1921-22 and 172 registered in the College of Agriculture, Forestry, and Home Economics and the College of Education.

Collegiate enrolment by quarters.—Table II records the totals of Table I by quarters, showing the peak load of attendance in the fall quarter. Opportunities for beginning students during the second and third quarters were offered only in the College of Science, Literature, and the Arts; the College of Agriculture, Forestry, and Home Economics; and, with certain restrictions, in the College of Engineering and Architecture.

TABLE II. COLLEGIATE ENROLMENT BY QUARTERS, 1921-22

	MEN	WOMEN	TOTAL
Summer Session, 1921.....	1,596	1,135	2,731
Fall quarter	5,556	2,535	8,091
Winter quarter	5,459	2,388	7,847
Spring quarter	5,021	2,258	7,279
Total (individual) registrations.....	6,636	3,789	10,425

Subcollegiate students.—Table III records the enrolment in departments which do not require high school graduation for admission.

Each of the three schools of agriculture shows a loss in total registration. This loss at the Central School is made up for by an increase in registration in the Vestibule School. This Vestibule School is made up entirely of trainees of the Veterans' Bureau who are pursuing elementary school subjects.

Of the short courses offered in 1920-21, the work in extension gymnasium was transferred to the General Extension Division during 1921-22, and the short courses in gas tractors, traction engineering, library training, and home nursing were discontinued. Two new short courses were offered for the first time in 1921-22, i.e., the horticulture short course and the beekeepers' short course.

STATISTICS OF REGISTRATION

TABLE III. SUBCOLLEGIATE STUDENTS, 1920-22

SCHOOL OR COURSE	YEAR 1920-21			YEAR 1921-22			GAIN	LOSS
	Men	Women	Total	Men	Women	Total		
CENTRAL SCHOOL OF AGRICULTURE:								
Three-year course:								
Seniors	122	38	160	93	24	117	....	43
Juniors	190	53	243	111	28	139	....	104
Freshmen	224	56	280	178	31	209	....	71
Unclassed	111	6	117	290	24	314	197	....
Total	647	153	800	672	107	779	197	218
Intermediate course	21	4	25	....	....	....	....	25
Special	1	1	2	....	....	....	....	2
Total school reg... ..	669	158	827	672	107	779	....	48
Vestibule School	162	....	162	274	....	274	112	....
Special Vestibule Schod... ..	....	....	....	12	....	12	12	....
Total school and vestibule	831	158	989	958	107	1,065	124	48
Duplicates	34	....	34	101	....	101	67	....
Net total	797	158	955	857	107	964	9	....
NORTHWEST SCHOOL OF AGRICULTURE, CROOKSTON:								
Three-year course:								
Seniors	39	16	55	30	15	45	....	10
Juniors	36	14	50	33	13	46	....	4
Freshmen	91	29	120	75	39	114	....	6
Total	166	59	225	138	67	205	....	20
Four-year course .....	....	....	....	11	1	12	12	....
Total school reg... ..	166	59	225	149	68	217	....	8
WEST CENTRAL SCHOOL OF AGRICULTURE, MORRIS:								
Three-year course								
Seniors	17	23	40	26	15	41	1	....
Juniors	41	24	65	25	15	40	....	25
Freshmen	92	34	126	64	19	83	....	43
Unclassed (specials) .....	....	....	....	15	16	31	31	....
Total	150	81	231	130	65	195	....	36
Intermediate course....	2	....	2	7	2	9	7	....
Total	152	81	233	137	67	204	....	29
UNIVERSITY HIGH SCHOOL	94	121	215	105	119	224	9
Total schools.....	1,209	419	1,628	1,248	361	1,609	20

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TABLE III—Continued

SCHOOL OR COURSE	YEAR 1920-21			YEAR 1921-22			GAIN	LOSS
	Men	Women	Total	Men	Women	Total		
SHORT COURSES:								
Dairy school	187		187	83		83		104
Gymnasium extension..	103	64	167					167
Gas tractor	15		15					15
Traction engineering...	21		21					21
Library training.....		39	39					39
Home nursing.....		61	61					61
Boy Scout short course, Itasca	26		26	26		26		
Junior short course, Crookston	42	35	77	52	25	77		
Farm women's short course, Morris		122	122		60	60		62
Boys' and girls' short course, Morris	37	58	95	52	78	130	35	
Horticultural short course				25	19	44	44	
Beekeepers' short course				24	7	31	31	
Net total short courses	431	379	810	262	189	451	110	469
Grand total.....	1,640	798	2,438	1,510	550	2,060		378
Less duplicates	1	2	3	9		9	6	
Net grand total.....	1,639	796	2,435	1,501	550	2,051		384

Extension students.—Table IV shows two types of students (a) general, those who pursue courses in classrooms under the personal direction of instructors, and (b) correspondence, those who take study courses through the medium of written directions sent by mail. The first of these shows an increase of 6 per cent, the second shows a decrease of 4 per cent.

TABLE IV. EXTENSION STUDENTS, 1920-22

COURSE	YEAR 1920-21			YEAR 1921-22			GAIN	LOSS
	Men	Women	Total	Men	Women	Total		
General	2,414	2,324	4,738	2,430	2,581	5,011	273	
Correspondence	446	282	728	380	321	701		27
Total	2,860	2,606	5,466	2,810	2,902	5,712	246	
Less duplicates	9	11	20	22	11	33	13	
Net total	2,851	2,595	5,446	2,788	2,891	5,679	233	

Summary.—Table V summarizes Tables I, III, and IV under the headings: collegiate, subcollegiate, and extension students. The figure of 17,576 actually registers the number of men and women who during the past year received instruction at the hands of members of the University teaching staff. This total is slightly larger than in 1920-21, and is the largest enrolment in the history of the institution.

TABLE V. SUMMARY 1920-22

DIVISION	YEAR 1920-21			YEAR 1921-22			GAIN	LOSS
	Men	Women	Total	Men	Women	Total		
Collegiate students.....	6,375	3,479	9,854	6,636	3,789	10,425	571	....
Subcollegiate students....	1,639	796	2,435	1,501	550	2,051	....	384
Total	8,014	4,275	12,289	8,137	4,339	12,476	187	....
Less duplicates	15	1	16	21	....	21	5	....
Net total	7,983	4,271	12,273	8,116	4,339	12,455	182	....
Extension students.....	2,851	2,595	5,446	2,788	2,891	5,679	233	....
Grand total	10,834	6,866	17,719	10,904	7,230	18,134	415	....
Less duplicates	119	62	181	384	174	558	377	....
Net grand total.....	10,715	6,804	17,538	10,520	7,056	17,576	38	....

Table VI is another summary giving the registration by departments. Agriculture in this table includes college, school, and short courses, as well as the Summer Session work offered at the University Farm; Medicine includes courses for nurses and medical technicians; Dentistry includes the course for dental hygienists; and Education includes the secondary work in the University High School. The term "resident student" as used in this table is meant to distinguish those who were in day classes in the University buildings from those who attended evening classes in the Twin Cities, or who took work by correspondence.

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TABLE VI. COMPARATIVE REGISTRATION FIGURES, 1920-22

COLLEGE OR SCHOOL	YEAR 1920-21			YEAR 1921-22			GAIN		Loss	
	Men	Women	Total	Men	Women	Total	Men	Women	Men	Women
Science, Literature and the Arts...	2,262	1,701	3,963	2,554	1,786	4,340	292	85	.....	.....
Engineering and Architecture ...	1,073	11	1,084	1,088	8	1,096	15	.....	.....	3
Agriculture	2,051	1,100	3,151	1,803	918	2,721*	.....	.....	248	182
Law	257	7	264	288	13	301	31	6	.....	.....
Medical (including Nursing)	376	152	528	397	169	566	21	17	.....	.....
Dentistry (including Dental Hygienists) ...	391	17	408	400	33	433	9	16	.....	.....
Mines	165	.....	165	171	.....	171	6	.....	.....	.....
Pharmacy	86	29	115	111	23	134	25	.....	.....	6
Chemistry	128	13	141	102	10	112	.....	.....	26	3
Education (including University High School)...	189	625	814	188	743	931	.....	118	1	.....
Graduate	550	139	689	618	183	801	68	44	.....	.....
Business	108	20	128	172	28	200	64	8	.....	.....
War Specials	100	5	105	215	4	219	115	.....	.....	1
Summer Session, Minneapolis campus (net) ...	403	532	935	536	721	1,257	133	189	.....	.....
Total	8,139	4,351	12,490	8,643	4,639	13,282	779	483	275	195
Less duplicates...	136	81	217	530	295	825	394	214	.....	.....
Net total....	8,003	4,270	12,273	8,113	4,344	12,457	110	74	.....	.....
Extension:										
General	2,414	2,324	4,738	2,430	2,581	5,011	16	257	.....	.....
Correspondence ..	446	282	728	380	321	701	.....	39	66	.....
Total	2,860	2,606	5,466	2,810	2,902	5,712	16	296	.....	.....
Less duplicates...	9	11	20	22	11	33	13	.....	.....	.....
Net total	2,851	2,595	5,446	2,788	2,891	5,679	.....	296	63	.....
SUMMARY:										
Total, resident students	8,003	4,270	12,273	8,113	4,344	12,457	110	74	.....	.....
Total, extension students	2,851	2,595	5,446	2,788	2,891	5,679	.....	296	63	.....
Grand total....	10,854	6,865	17,719	10,901	7,235	18,136	47	370	.....	.....
Less duplicates..	119	62	181	384	174	558	265	112	.....	.....
Net grand total..	10,735	6,803	17,538	10,517	7,061	17,578	.....	40	.....	.....

Degrees conferred.—Table VII compares the number of degrees granted during the year 1921-22 with the number granted in 1920-21. This represents a measure of the University's output or finished product. The total increase in the number of degrees for the year is 276, or 26 per cent. This increase is fairly easily distributed between different types of degrees conferred. The largest increase, 28 per cent, appears in the number of graduate degrees conferred. There is an increase of 27 per cent in the Bachelor degrees representing four years of undergraduate study, and a 20 per cent increase in the number of degrees conferred on graduates in law, medicine, and dentistry representing five or more years of study. The degree of graduate dental nurse, was conferred for the first time in 1921-22.

TABLE VII. DEGREES CONFERRED, 1920-22

COLLEGES AND DEGREES	YEAR 1920-21*			YEAR 1921-22†		
	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
SCIENCE, LITERATURE, AND THE ARTS:						
B.A.	74	125	199	109	117	226
B.A. in Music		13	13		4	4
B.S. (Academic-Medical)	67	3	70	70	4	74
B.S.		2	2		8	8
ENGINEERING AND ARCHITECTURE:						
B.S. in Civil Engineering	19		19	42		42
B.S. in Electrical Engineering	28		28	51		51
B.S. in Mechanical Engineering	14		14	22		22
B.S. in Engineering	16		16	8		8
B.S. in Architecture	9		9	10	3	13
AGRICULTURE:						
B.S. (Agriculture)	55		55	32	1	33
B.S. (Forestry)	9		9	4		4
B.S. (Home Economics)		51	51		26	26
AGRICULTURE AND EDUCATION:						
B.S. (Agriculture)				13		13
B.S. (Home Economics)					30	30
LAW:						
LL.B.	43		43	60	1	61
MEDICINE:						
M.D. with Distinction.....				5		5
M.D.	50	4	54	78	2	80
M.B.	75	3	78	72	6	78
Graduate in Nursing.....		19	19		12	12
DENTISTRY:						
D.D.S.	79	2	81	98	1	99
Graduate Dental Nurse.....					5	5

* Degrees conferred from July 1, 1920 to June 30, 1921.

† Degrees conferred from July 1, 1921 to June 30, 1922.

TABLE VII--Continued

COLLEGES AND DEGREES	YEAR 1920-21*			YEAR 1921-22†		
	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
MINES:						
E.M.	7		7	17		17
E.M. in Geology	4		4	3		3
Met.E.	5		5	1		1
PHARMACY:						
B.S. in Pharmacy	1	1	2	4	3	7
Phm.C.	5	6	11	27	2	29
CHEMISTRY:						
B.S. in Chemistry	8		8	1	3	4
B.S. in Chemical Engineering	9		9	14		14
EDUCATION:						
B.A. in Education	2		2			
B.S. in Education	4	5	9			
B.S.	13	94	107	31	131	162
BUSINESS:						
B.S. in Business	11	8	19	47	12	59
GRADUATE:						
M.A.	15	17	32	24	14	38
M.S.	21	5	26	33	7	40
M.S. in Engineering				1		1
M.S. in Dermatology and Syphilology				1		1
M.S. in Medicine	1		1	2		2
M.S. in Ophthalmology	1		1			
M.S. in Oto-Laryngology	1		1			
M.S. in Oto-Laryngology and Rhinology				1		1
M.S. in Pathology				2		2
M.S. in Surgery	6		6	11		11
M.S. in Physiologic Chemistry	1		1			
M.S. in Urology				2		2
Chem.E.	12		12	7		7
C.E.				1		1
E.E.	1		1	2		2
M.E.	7		7	4		4
Ph.D.	10	2	12	15	6	21
Ph.D. in Obstetrics and Gynecology	1		1			
Ph.D. in Nervous and Mental Diseases	2		2			
Ph.D. in Pediatrics	1		1			
Totals	687	360	1,047	925	398	1,323

* Degrees conferred from July 1, 1920 to June 30, 1921.

† Degrees conferred from July 1, 1921 to June 30, 1922.

Geographical distribution.—Table VIII enumerates the preparatory schools from which *freshman* students from the various colleges and schools were received during the year 1921-22 and shows the number from each school. No changes of importance are noted. Attention is called to the fact that 83 per cent of the entrants are from Minnesota schools as compared with 81 per cent a year ago, and 48 per cent come from schools outside of the Twin Cities. Thirty states, including the District of Columbia,

TABLE VIII—Continued

	Science, Literature, and the Arts	Agriculture	Engineering	Chemistry	Mines	Dentistry	Pharmacy	Nursing	Education	Total
Sauk Center	3		1	1			1			6
Sauk Rapids			2							2
Sebeka	1									1
Shakopee	1			1						2
Sherburne	2									2
Silver Lake	1									1
Slayton										
Sleepy Eye										
South St. Paul	2		1							3
Spooner										
Springfield			1							1
Spring Grove										
Spring Valley	4				1					5
Staples	1		1				1			3
Starbuck										
Stephen	1									1
Stewart	1									1
Stewartville	1									1
Stillwater	4	2	2							8
Swanville	1									1
Taylor's Falls					1					1
Thief River Falls	5	1	1							7
Tower	1									1
Tracy	2	1							1	4
Truman										
Twin Valley										
Two Harbors	1						1			2
Tyler	1									1
Ulen										
Villard										
Virginia	4									4
Wabasha			1							1
Wabasso										
Waconia										
Wadena	4		1							5
Wahkon										
Waldorf										
Walker	2									2
Walnut Grove										
Warren	1									1
Warroad										
Waseca	1									1
Watertown										
Waterville		2								2
Waverly										
Wayzata	1									1
Welcome	1		1				1			3
Wells										
Westbrook										
West Concord										
Wheaton	1									1
White Bear	1									1
Willmar	6									6
Windom			1							1
Winnebago										
Winona	4	1	6		2					13
Winthrop										
Worthington	6									6
Wykoff		1								1
Zumbrota	1									1
Total	981	123	231	20	23		31		30	1,438

TABLE VIII—Continued

	Science, Literature, and the Arts	Agriculture	Engineering	Chemistry	Mines	Dentistry	Pharmacy	Nursing	Education	Total
Rolfe	1									1
Sheldon									1	1
Sibley	1		1							2
Sioux City	1									1
Spencer			1							1
Story City	1									1
Sumner	1									1
Waterloo		1								1
Waukon	1									1
Webster	3									3
Wesley	1									1
Kansas										
Quindaro									1	1
Western Univ.	1									1
Kentucky										
Lyndon										
Kentucky Mil. Inst.	2									2
Louisiana									1	1
Shreveport	1									1
Massachusetts										
Wellesley										
Dana Hall	2									2
Worcester										
North H. S.	1									1
Michigan										
Bessemer	1									1
Champion	1									1
Crystal Falls			1	1						2
Detroit										
Northwestern H.S.									1	1
Escanaba			1							1
Frankfort	1									1
Ironwood		1								1
Montana										
Anaconda	1		1							2
Baker	1									1
Billings	2		1							3
Bozeman										
Gallatin County										
H. S.		1								1
Butte	2									2
Fairview			1							1
Forsyth	1									1
Glendive										
Dawson Co. H. S.	1									1
Harlem			1							1
Helena	1									1
Lewiston										
Fergus Co. H. S.	1									1
Lewiston H. S.	1									1
Miles City	1									1
Sidney	1									1
Terry	1									1
Missouri										
Kansas City										
Manual Training										
H. S.			1							1
St. Louis										
The Principia	1									1
Sumner H. S.	1									1
Springfield			1							1

TABLE VIII—Continued

	Science, Literature, and the Arts	Agriculture	Engineering	Chemistry	Mines	Dentistry	Pharmacy	Nursing	Education	Total
Ashland										
Ashland H. S.	1		1							2
Northland Col. Prep.					1					1
Baldwin	1									1
Barron	1									1
Cadott	1									1
Chippewa Falls	1								1	2
Cumberland Delafield	3		1							4
St. John's Mil. Acad.	3									3
Eau Claire	3		1							3
Fond du Lac	1									1
Fort Atkinson		1								1
Grantsburg	1									1
Greenwood		1								1
Hixton	1									1
Hudson	1									1
Kaukauna		1								1
Kilbourn	1									1
La Crosse	2									2
Marshfield	1									1
Menominee	2									2
Milwaukee Milwaukee Downer Col.	1									1
South Division H. S.		1								1
Mondovi	1		1							2
Muscoda			1							1
New Richmond	3		1				1			5
Peshtigo		1								1
Prairie du Chien Campion Acad.	1									1
Rice Lake	4									4
Shell Lake		1	1							2
Sinsinawa St. Clara Acad.	1									1
Sparta	1	1								2
St. Croix Falls	2									2
Sturgeon Bay	1									1
Superior Central H. S.	2		1							3
Nelson Dewey H.S. Thief River Falls	2									2
Washburn	1									1
Wilton	2									2
Total for U. S. (ex- cept Minnesota)	219	22	52	3	8		1		5	310
FOREIGN COUNTRIES:										
Canada	1									1
Hawaii	1									1
Norway	1		1							2
Philippine Islands	2									2
Poland	1									1
Sweden	1		1							2
Total	7		2							9

SUMMARY

Wisconsin	66	California	5	Colorado	1
North Dakota	54	Missouri	5	Kansas	1
Iowa	52	Massachusetts	3	Louisiana	1
South Dakota	49	Ohio	3	New Hampshire	1
Montana	18	Oklahoma	3	New Jersey	1
Illinois	16	Florida	2	New York	1
Indiana	9	Kentucky	2	Oregon	1
Michigan	8	Pennsylvania	2	Rhode Island	1
Washington	8	Virginia	2	Tennessee	1
Nebraska	7	Washington, D. C.	2		
Total number of entrants for Minnesota					1,558
Total number for the United States outside Minnesota					310
Total number for foreign countries					9
Grand total					1,877

Advanced standing.—Table IX shows the extent of the migration of students from other colleges and universities to the University of Minnesota. During the past year 616 students have come from 148 different institutions. The University has no basis for estimating the number of students who have left Minnesota to attend other institutions.

TABLE IX. STUDENTS ADMITTED WITH ADVANCED STANDING, 1921-22

	S., L., & A.	Engineering	Agriculture	Law	Medical	Nursing	Dental Hygiene	Dentistry	Mines	Pharmacy	Chemistry	Education	Business	Total
MINNESOTA:														
Augsburg Seminary	2												1	3
Carleton College	26	2	2	2								6	2	42
Col. of St. Scholastica	1		1	1						1		1		5
Col. of St. Teresa	1													1
Concordia College	1			1										2
Eveleth Junior College	4	1	1		1			1				1		9
Gustavus Adolphus College	18	2	7		5	1		1				9	2	42
Hamline University	1											1		1
Handicraft Guild	2	2	1					1						8
Hibbing Junior College	15	1	1		1			2			1	2	1	24
Macalester College	3		1											4
Rochester Junior College	1													1
St. Benedict's College	7		1									4		12
St. Catherine's College	1													1
St. Cloud Junior College	3							1				1		5
St. John's University	2		1											1
St. Mary's College	2													2
St. Mary's Hall	19		3	1	6	1		1				5	1	37
St. Olaf's College	11	3	1	1	12							1		1
St. Paul Normal	3		1											4
St. Thomas College	3							6						4
Stanley Hall	2											2		4
State Norm. Sch. (Duluth)												3		6
State Norm. Sch. (Mankato)												6		6
State Norm. Sch. (Moorhead)												3		3
State Norm. Sch. (St. Cloud)	2	2		1								9		12
State Norm. Sch. (Winona)	2	1						1				6		10
Winona Junior College	3													3
Total	126	14	23	7	25	2		17		1	1	56	7	279

TABLE IX--Continued

	S., L., & A.	Engineering	Agriculture	Law	Medical	Nursing	Dental Hygiene	Dentistry	Mines	Pharmacy	Chemistry	Education	Business	Total
Western College for Women...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Western Illinois State Normal School	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Western Reserve University...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Wisconsin, University of...	7	...	3	1	1	...	...	...	...	1	...	1	...	14
Wooster College	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Yale University	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Yankton College (S. D.)	...	...	1	...	...	...	...	...	...	...	...	1	...	4
Totals	159	26	47	12	14	3	...	14	1	3	3	44	5	332
FOREIGN COUNTRIES:														
Alberta, University of...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Hawaii, University of...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Lund's Privata Elementar-skolor (Sweden)	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Manitoba, University of...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Peking, University of...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Totals	3	1	...	...	...	...	...	...	...	...	...	1	...	5
Grand totals	288	41	70	19	39	5	...	31	2	4	4	101	12	616

Table X shows the geographic origin of the entire group of students of collegiate grade, not counting the Summer Session, (a) by counties, (b) by states, (c) by foreign countries. This table includes the figures of Table VIII. Only one county of the state is not represented. Hennepin and Ramsey counties furnished 58 per cent of the students. Forty-five states, including the District of Columbia, sent students to the University of Minnesota this year. As would be expected, the great majority came from adjacent states. The first five are in the following order: North Dakota, Wisconsin, Iowa, South Dakota, and Montana. Last year the order was North Dakota, Iowa, Wisconsin, South Dakota, and Montana. Note that 1,048 students came from states outside of Minnesota. One hundred one students came from 21 foreign countries, counting the Philippine Islands and Porto Rico in this group.

TABLE X. GEOGRAPHICAL DISTRIBUTION OF UNIVERSITY STUDENTS OF COLLEGIATE GRADE (OTHER THAN SUMMER SESSION), 1921-22

	S., L., & A.	Engineering	Agriculture	Law	Medical	Nursing	Dental Hygiene	Dentistry	Mines	Pharmacy	Chemistry	Education	Graduate	Business	War Specials	Total
MINNESOTA																
COUNTIES:																
Aitkin	4	2	2	1	...	...	...	...	...	...	...	...	...	...	1	10
Anoka	11	1	6	1	...	...	...	...	...	...	...	2	1	...	1	23
Becker	5	3	3	...	1	...	...	...	1	...	...	2	2	1	1	19
Benton	1	3	1	...	1	...	...	...	...	...	...	1	2	...	...	9
Beltrami	12	5	1	...	1	...	...	3	...	1	...	1	...	...	1	25
Bigstone	9	1	4	...	...	1	...	...	...	...	...	1	...	1	1	18
Blue Earth	28	12	12	1	3	...	...	2	...	1	1	8	6	1	1	76
Brown	10	7	2	1	6	...	1	1	...	...	...	1	3	2	...	36
Carlton	15	4	4	...	...	...	...	1	...	...	...	1	3	1	...	26
Carver	5	3	1	...	1	...	...	2	...	...	...	3	...	...	...	15
Cass	5	3	3	...	...	2	...	2	...	...	...	3	...	...	...	10
Chippewa	14	6	4	1	2	...	...	1	1	1	...	...	1	...	...	33
Chisago	7	4	3	1	5	1	...	1	1	2	...	5	1	...	2	33
Clay	8	...	4	1	1	...	...	4	1	...	1	2	1	1	1	25
Clearwater	1	...	2	1	...	1	...	...	...	...	...	1	...	...	1	6
Cottonwood	3	5	2	1	...	...	...	...	...	...	...	2	1	1	...	15
Crow Wing	14	12	5	3	1	3	...	...	4	2	1	...	1	1	...	47
Dakota	8	6	2	...	3	3	...	...	...	...	...	1	1	1	...	26
Dodge	6	3	3	1	...	1	...	4	...	...	1	2	...	...	...	21
Douglas	15	3	6	1	...	1	...	1	...	...	...	2	...	1	...	30
Faribault	14	2	1	1	4	...	...	2	1	1	...	7	1	2	...	36
Fillmore	22	4	7	...	3	...	...	1	3	...	1	15	7	2	2	67
Freeborn	17	9	5	1	...	...	...	2	1	1	...	2	1	4	...	43
Goodhue	29	11	7	5	5	2	...	4	...	4	1	4	4	3	1	80
Grant	19	2	3	1	1	...	...	1	1	1	2	...	2	...	...	33
Hennepin	1780	398	226	144	186	24	14	150	64	53	49	324	270	77	112	3871
Houston	8	2	...	...	...	...	...	2	...	2	...	2	2	2	...	18
Hubbard	4	2	2	...	...	...	...	3	...	...	...	1	...	...	1	13
Isanti	8	1	...	...	1	1	...	1	1	...	1	1	1	1	...	17
Itasca	16	7	3	...	1	1	...	3	2	1	...	1	...	...	...	35
Jackson	8	6	7	...	1	1	...	2	...	1	1	1	2	1	2	33
Kanabec	2	1	4	2	...	...	...	...	...	...	...	...	2	...	...	12
Kandiyohi	13	9	3	1	1	...	...	4	...	1	2	...	...	2	1	39
Kittson	1	3	1	...	1	...	...	1	...	...	...	1	...	1	...	9
Koochiching	5	3	3	...	...	...	...	...	...	1	...	2	1	...	1	16
Lac Qui Parle	6	4	3	2	3	...	...	...	...	2	...	1	...	...	...	21
Lake	5	2	...	2	1	...	...	1	1	2	...	...	...	2	...	16
Le Sueur	16	4	3	...	2	1	2	5	...	...	...	1	1	...	1	36
Lincoln	5	3	2	...	2	...	...	1	...	...	...	2	2	1	3	21
Lyon	18	5	5	2	...	...	...	...	2	...	1	6	1	1	1	42
McLeod	14	6	8	2	3	1	...	6	2	...	1	4	2	...	1	50
Mahnomen	1	...	...	...	...	1	...	1	...	...	...	2	...	1	...	6
Marshall	7	1	2	...	2	...	...	1	...	...	...	...	...	...	1	14
Martin	12	4	...	...	1	...	...	2	1	2	1	1	1	...	...	25
Meeker	13	1	4	...	3	1	...	3	1	1	...	5	2	1	4	39
Mille Lacs	8	2	...	...	...	...	...	...	...	...	...	3	...	...	1	16
Morrison	18	5	4	...	1	...	...	1	1	1	...	2	1	1	...	35
Mower	15	10	9	...	2	2	...	2	1	...	...	4	3	...	1	49
Murray	4	1	1	...	1	...	...	...	...	...	...	...	...	...	...	7
Nicollet	3	1	4	...	3	...	...	1	...	...	...	1	2	...	...	15
Nobles	13	2	2	...	2	...	...	1	...	...	...	...	2	2	...	24
Norman	7	1	3	1	1	2	...	1	...	...	...	...	...	...	1	17
Olmsted	16	1	7	1	6	...	...	3	...	1	...	3	22	1	...	61
Otter Tail	24	2	4	5	1	1	...	4	...	2	...	4	1	...	2	50
Pennington	7	1	3	...	...	1	...	1	...	2	...	2	...	1	...	16
Pine	9	4	5	2	...	...	...	1	...	1	1	2	3	...	1	28
Pipestone	2	4	2	1	...	...	1	2	...	...	...	1	...	...	...	13
Polk	10	4	6	2	1	...	...	1	...	...	...	4	5	...	...	33
Pope	6	1	2	1	...	1	...	...	...	...	1	2	1	2	1	18

TABLE X—Continued

	S., L., & A.	Engineering	Agriculture	Law	Medical	Nursing	Dental Hygiene	Dentistry	Mines	Pharmacy	Chemistry	Education	Graduate	Business	War Specials	Total
Ramsey	552	161	132	29	66	20	5	48	23	19	12	85	141	18	25	1,336
Red Lake		1	1						1							3
Redwood	10	3	3	3	1							3		1		24
Renville	10	6	9	3	3					2	1					39
Rice	20	3	4	1	9	3			1		1	2	1		3	50
Rock	6	1	1									3	1	1	1	16
Roseau	3	1										3			1	10
St. Louis	109	56	33	16	6	4	1	21	15		4	23	6	11	8	313
Scott	4	4	2	1	1	1		5	1		1					20
Sherburne	2	3	3									2	1	1		12
Sibley	5	3	2	1		2	1					3	3	1		24
Stearns	34	11	5	4	5	3		11	2	5		7	3			90
Steele	9	7	9		1			1	1	2		3				33
Stevens	5	1	1							1					1	9
Swift	14	1	4	1	1			2				1				25
Todd	15	1	3	2	2	1		1	1	3		1	3			33
Traverse	7	4	3		2			2			1	1	1			21
Wabasha	18	1	6	1	1	1		1	1			3	1			34
Wadena	8	2	1	1	1			1				2	1		1	17
Waseca	5	3	3	2	1			1		1	1	1	2	1		21
Washington	29	9	12		2	1		2				3	2	1	1	62
Watowan	3	1	7	1	1	2		1		1		6				23
Wilkin	2							2				2				6
Winona	21	8	2		3			2	3	1	2	1	3	2	2	50
Wright	22	7	6	1		3		7	1	2	2	7				58
Yellow Medicine	8	4	4		1			1		1			1		2	22
Total	3,287	914	673	259	370	100	26	350	141	123	93	610	532	157	193	7,828
UNITED STATES:																
Alabama													3			3
Arizona	1															1
Arkansas													2			2
California	3	2			2											12
Colorado		1			1				1				2			5
Connecticut			1										3			4
District of Columbia	1			1									5			7
Florida		1														1
Georgia													1			1
Idaho			1													1
Illinois	12	4	4		2	2						4	17		1	46
Indiana	4	1	2									2	11			20
Iowa	76	11	8	5	6	4		1			1	11	14	7		144
Kansas	4	1											2		1	8
Kentucky		1											4			5
Louisiana													4			4
Maine													3			3
Maryland	2				1								2			5
Massachusetts	1											1	6			8
Michigan	7	5	4		1	1						2	5			25
Mississippi	1							1								2
Missouri	3	2	2	1									5		1	14
Montana	25	12	3	2	1	4		3	3	1	3	2	8		5	72
Nebraska	7	2	2		1					1		1	7			21
New Hampshire					1								4			2
New Jersey													1			1
New York	1			1	1							2	6			11
North Carolina													4			4
North Dakota	75	14	15	8	9	10		23	3	2		17	4	7	5	192
Ohio	2		1		2				1				13			19
Oklahoma	6		2					1								9
Oregon	1															1
Pennsylvania	3		1						1				16			21
Rhode Island													7			2
South Carolina								2								9
South Dakota	60	18	8	2	7	3	1	1	2	1	1	15	9	5	3	136

TABLE X—Continued

	S., L., & A.	Engineering	Agriculture	Law	Medical	Nursing	Dental Hygiene	Dentistry	Mines	Pharmacy	Chemistry	Education	Graduate	Business	War Specials	Total
Tennessee													5			5
Texas	3					1							3		1	3
Utah	1		1										1			1
Vermont													1			1
Virginia	1					1							3			5
Washington	10		1		3			1					4			21
West Virginia												1	3			4
Wisconsin	68	19	15	7	6	12	1	8	3	2	1	8	16	5	5	176
Wyoming	2	1											1			4
Totals	380	95	71	27	44	38	2	41	14	7	8	66	209	24	22	1,048
FOREIGN COUNTRIES:																
Africa								1								1
Australia													2			2
Canada	6	2	1		2							1	22	2		36
China	1	2							6				6			15
Denmark													1			1
England								1					1			2
France													2		1	3
Hawaii	1															1
India					2											2
Japan															1	1
New Zealand													1			1
Norway					1			1							1	3
Philippine Islands	12	4	2							1	1		3			23
Poland					1											1
Porto Rico													1			1
Russia	1															1
Serbia			1													1
Spain									1				1			2
Sweden								1								1
Switzerland	1												2			2
Syria	1															1
Totals	22	8	4		6			4	7	1	1	1	42	3	2	101
Grand totals	3,689	1,017	748	286	420	138	28	395	162	131	102	677	783	184	217	8,977

FINANCES

Student loans.—The following is a brief summary of the student loans made during the year:

NEW LOANS	No.	AGGREGATE AMOUNT	AVERAGE AMOUNT	LOANS OF				BALANCES JULY 1, 1922
				\$200	Over \$100	\$100	Less than \$100	
Gilfillan Trust Fund	234	\$14,376.32	\$61.45	0	10	42	182	\$ 123.80
Ludden Trust Fund	63	5,053.31	80.20	0	8	16	39	556.06
Ludden Estate Loan	38	2,486.84	65.40	1	0	8	29	193.17
Ludden Real Estate Fund	138	10,964.67	79.45	5	6	23	104	102.42
Elliot Trust Fund	20	1,748.00	87.40	0	6	5	9	1,101.99
Totals	493	\$34,629.14	\$70.24	6	30	94	363	\$2,077.44
Last year's totals	451	\$39,995.92	\$78.83	20	21	103	307	\$2,151.52

BUILDINGS AND GROUNDS

The buildings and grounds program.—The building program has moved forward during the year. The following buildings have either been completed, started, or plans ordered drawn for them.

1. The addition to the Chemistry Building on the main campus has been completed at a cost of \$397,843.43.

2. A new Music Building, at a cost of \$257,000, was begun in the fall of 1921. It is now nearing completion and will be ready for occupancy at the opening of the college year next fall.

3. Plans for an addition to the University High School, costing \$100,000, have been drawn and a request for bids has been made.

4. A Mines Experiment Station, costing \$271,759, is now under construction. It should be completed early next fall.

5. The contract has been let for the new Library Building. The bid for the main structure amounted to \$1,204,420. Additional bids for the stacks have been requested.

6. Plans for an Electrical Engineering Building, costing \$300,000, are in the process of preparation.

7. An allotment of \$110,000, to be supplemented by two gifts of \$20,000 each has been set aside for the erection of a new hospital for the treatment of the eye, ear, nose, and throat.

8. An allotment of \$220,000 for the remodeling of the present Dairy Building on the agricultural campus, or the erection of a new Dairy Building, has been granted.

9. An addition to the Minnesota Union, costing \$50,000, \$20,000 to be supplied out of the Minnesota Union funds, and \$30,000 from University support, has been granted and plans ordered drawn.

10. Authority has been given for the erection of a new greenhouse and seed house at Morris, costing \$15,000.

11. Plans are in the process of preparation for the erection of a new Home Economics Demonstration House, costing \$10,000.

12. The entire block east of the campus, upon which the Co-operative Bookstore and Perine's store stands, with the exception of the southwest corner, has been purchased. This will be the home of the new storehouse of the University.

13. Additional land between Northrop Field and Oak Street, University Avenue and Church Street, has been purchased. This land will be a part of the new athletic field.

UNIVERSITY LIFE

All-University convocations.—Convocation, usually held each week at the fourth hour on Thursdays, has brought to the University student body some exceptionally good speakers. The list follows:

- September 29—All-University Opening Convocation: President Coffman and Dean W. C. Coffey, "Impressions of Minnesota"
- October 6—All-Freshman Convocation: President Coffman
- October 20—Paul S. Reinsch, former ambassador to China, "The Disarmament Conference—Its Prospects and Limitations"
- October 27—A. J. Elliott, student secretary for the International Committee of the Young Men's Christian Association, "Social Forces in University Life That Must Be Made Constructive"
- November 3—Charles Foster Kent, professor of biblical literature, Yale University Divinity School, "The Place of Religion in the Life of the Educated Man"
- December 8—Honorable Gilbert Monell Hitchcock, member of the Committee on Foreign Relations of the United States Senate, "The Bank of Nations"
- December 22—Commencement Convocation: President Coffman, "The University and Liberal Culture"
- January 5—M. L. Burton, president of the University of Michigan, "Live and Learn, Always Be Alive"
- January 19—Edward Charles Elliott, chancellor of the University of Montana, "The College Conscience"
- January 26—Evans Woollen, president of the Fletcher Trust and Savings Company of Indianapolis, Indiana, "What Business Expects of the College Man"
- February 2—All-University Student Assembly, representatives from various student organizations
- February 9—Ernest H. Wilkins, professor of Italian, University of Chicago, "The Divine Comedy"
- February 23—Hamilton Holt, editor and publisher of the *Independent*
- March 2—Reverend Charles W. Gilkey, Hyde Park Baptist Church, Chicago, Illinois, "Religion in the Modern World"
- March 9—Arthur Eugene Bestor, president of the Chautauqua Institution, "The Remakers of Contemporary Europe"
- March 30—Edwin E. Sparks, ex-president of Pennsylvania State College, "American Scholarship"

April 13—Ernest H. Lindley, chancellor of the University of Kansas

April 20—James C. Baker, director of Wesley Foundation, University of Illinois, "Get a New Mind"

April 27—All-University Student Assembly

May 18—Cap and Gown Day: President Coffman

June 14—Commencement: Robert A. Falconer, president of the University of Toronto, Canada, "Education as a Force for Conciliation"

The University concert course.—The University concert course proved to be a great success to an even greater degree than the two preceding years. The artists who appeared were George Meader, tenor, and Efrem Zimbalist, violinist; Sergei Rachmaninoff, Russian composer-pianist; Joseph Hofmann, pianist; Claire Dux, soprano; and Erna Rubenstein, violinist.

The chamber music course consisted of the Flonzaley String Quartet; Eva Gauthier in a song recital assisted by the Wood-Wind Choir of the Minneapolis Symphony Orchestra, and the London String Quartet.

GENERAL UNIVERSITY PROGRESS AND INTEREST

Removal of the Northern Pacific tracks.—The negotiations begun several years ago for the removal of the Northern Pacific tracks from the campus, finally culminated on February 13, 1922, in the signing of the contract by both parties. The contract provides for the removal of the tracks by December 31, 1923. The University's share of the expense of the removal will be \$686,000. The signing of this contract was the most important single event of the material development of the University in many years. It will enable the University to develop its building program along natural lines. It will increase the material solidarity of the campus. It will insure the location of buildings at those points on the campus where they will be of the greatest possible service. It will reduce the cost of foundations of new buildings to the extent of approximately \$100,000, and it will permit scientific work of a more delicate character and of a higher order to be carried on, on the campus than could possibly be done otherwise. Much credit is due Mr. Snyder for reaching a final agreement with the Northern Pacific Railway officials. As a matter of fact several other railroads were involved—the Chicago, Milwaukee and St. Paul,

the Great Northern, and the Minneapolis and St. Louis. Rights-of-way had to be secured, crossings arranged for, a new bridge across the Mississippi planned, and agreements reached for trains to run over tracks belonging to other companies, and additional land purchased. There were so many difficulties in the way that many were disposed to despair of ever reaching any final solution of the problem, but the officials of all the railways involved appreciated the importance to the University of removing the tracks and Mr. Snyder worked out problem after problem and difficulty after difficulty with them, until finally a contract was subscribed to by both parties.

Affiliation of the Northern Pacific Hospital with the School of Nursing.—This year the University established an affiliated relationship with the Northern Pacific Hospital for the training of nurses similar to the relationship made last year with the Miller Hospital of St. Paul and the General Hospital of Minneapolis. This affiliation eliminates the duplication of instruction for nurses formerly given by these hospitals, and at the same time strengthens the work in the School of Nursing. It also gives the hospitals the direct benefits of the teaching facilities in the Training School for Nurses at the University of Minnesota.

The following agreement between the School of Nursing and the Northern Pacific Hospital was approved by the Board of Regents on October 26, 1921:

1. It is agreed between the Board of Regents of the University of Minnesota, the Board of Directors of the Charles T. Miller Hospital, incorporated, the Board of Public Welfare of the City of Minneapolis, and the Board of Managers of the Northern Pacific Beneficiary Association that the Schools of Nursing of the Charles T. Miller Hospital of St. Paul, of the Minneapolis General Hospital, and of the Northern Pacific Beneficiary Association of St. Paul shall be merged with the School of Nursing of the University of Minnesota under the general direction of the Medical School.

2. That a Director of the School of Nursing shall be employed and at a salary to be determined and provided by the Board of Regents, who shall have charge, with the assistance of a joint committee to be provided hereafter, of the educational conduct and general management of the School.

3. That a Superintendent of Nursing, and if necessary, an assistant superintendent, and such registered nurses as may be required to serve as instructors or assistants in teaching shall be employed in and by each of the above named hospitals and in the University Hospital at uniform

salaries for each grade of position, to be agreed upon and approved by the Board of Regents and each of the above named governing boards; such salaries to be severally paid by each of the hospitals above named and such appointees for each hospital to be nominated by the governing board in charge of each hospital and to be approved by and designated for due faculty rank in the University of Minnesota by the Board of Regents.

4. That the standing committee of the School of Nursing now consisting of the Superintendent of the University Hospital, the Superintendent of the University School of Nursing and of one representative of the Administrative Board of the Medical School be enlarged by the addition thereto of the director of the School of Nursing, the Superintendent or Executive Officer of each of the above named hospitals and the Superintendents of Nurses employed therein.

5. That the enrolment of applicants for admission to the School of Nursing, subject to the approval of scholarship requirements by the Registrar of the University will rest with the said committee which shall serve as an advisory body to and with the director of the School in all questions of educational policy, standing and graduation of students, discipline, etc.

6. The general rules and requirements governing the admission, scholarship, courses of instruction, and graduation now in force in the School of Nursing of the University of Minnesota will be maintained, saving as any modification thereof may be recommended from time to time by the above named committee and approved by the Administrative Board of the Medical School and by the Board of Regents.

7. That a tuition fee of \$25 for the preliminary course will continue to be charged to all accepted applicants for admission to the School of Nursing; and that no salary or bonus or other financial inducement will be offered or paid to any student of the School in the several hospitals entering, through their respective governing boards, into this agreement.

8. That all students of the School of Nursing recommended for graduation by the above named committee will receive the diploma of Graduate in Nursing from the Board of Regents of the University of Minnesota, and that students satisfactorily completing the five years course provided jointly in the College of Science, Literature, and the Arts and the School of Nursing will receive, in addition thereto, the degree of Bachelor of Science.

9. That the preliminary course in the School of Nursing covering an initial period of three months will be offered in each quarter and will be conducted at the University of Minnesota for all students alike. That during this period such students will be housed and boarded on or near the campus; the expenses of such boarding and housing will be charged, in the ratio of the number of students referred, to each of the above named hospitals participating in this merger. That pending the completion or preparation of quarters for such housing at or near the University temporary quarters, under the same pro-rated arrangement of expense, may be provided by the participating hospitals.

10. That to each of the participating hospitals students in nursing will be referred for a continuation of their training at the close of the first quarter of the preliminary course; although the work will be done in part at the University during the second quarter. All students so referred will be boarded and housed by and at the expense of such hospital. Students will be on probation until the end of the entire preliminary period of six months. Thereafter they will be assigned to the participating hospitals which will serve as the laboratories for further graded courses of instruction, in such numbers and as rapidly as the registration in the School may permit; and they will be given a rotating service in successive periods of the course in any of the several hospitals associated for this purpose; the intent being thereby to promote a standardized and complete training of the student in nursing. Until such time as the registration in the School of Nursing permits of the distribution and rotation of student nurses in adequate numbers to each hospital, it will be understood that any deficiency will be made up by the registration, so far as they are available, of affiliating nurses referred from other approved schools; and, if necessary, by the employment in and by each of the participating hospitals of a sufficient number of graduate nurses.

11. It will be understood that any nurses now in training in any one of the participating hospitals will remain in such hospital until the completion of their course and will receive, as heretofore, the diploma of the hospital they attend.

12. It is understood further that each one of the participating hospitals reserves the right, through its governing board, to withdraw from and terminate this merger and agreement at any time after six months written notice of intention so to do; providing, however, for the graduation of students already entered who may satisfactorily complete the course of training.

Survey of the Medical School.—The rapid development of medical science in recent years has involved a corresponding increase in the complexity and cost of medical education in the University of Minnesota and elsewhere. The problems arising in this connection have included:

- a. The provision of the necessary laboratories and staffs for the various fundamental medical sciences
- b. The provision of adequate hospital facilities and clinical staffs, including the University Hospital and the affiliated city hospitals of Minneapolis and St. Paul
- c. The development of graduate work in medicine. To aid in such development the Mayo Foundation for Medical Research was created.

The University of Minnesota has endeavored to promote medical education along all these lines. Its pioneer work in the solution of some of its corresponding problems, however, has in some cases revealed differences of opinion as to which are the best methods and have occasioned specific criticism by some of the medical alumni. Since most of the questions involved are of general interest and of fundamental importance, it seemed that a comprehensive survey of the medical situation at Minnesota by distinguished, disinterested representatives of the medical profession might be of service both here and elsewhere. The appointment of a special survey for this purpose was authorized by the Board of Regents on January 6, 1921.

The personnel of the committee appointed consisted of Dr. Frank Billings, professor of medicine in the Rush Medical College, Chicago, Illinois; Dr. J. M. T. Finney, clinical professor of surgery in the Medical School at Johns Hopkins University, Baltimore, Maryland; and Dr. V. C. Vaughan, dean of the Medical School at the University of Michigan, Ann Arbor, Michigan.

The committee made a comprehensive investigation, and after weeks of study and conference submitted a detailed report which they summarized in the following specific recommendations:

1. The Dean of the Medical School should be nominated by the medical faculty for appointment by the Board of Regents, heads of all departments in the Medical School having votes in this selection.
2. The laboratory facilities, buildings, and equipment should be enlarged as quickly as possible. Your Committee is not prepared to speak concerning the details of this recommendation. They can safely be left to the laboratory men.
3. The salaries of the laboratory men should be increased.
4. There is no reason why the heads of clinical branches should at present be made full-time men. Certain associates and assistants in the clinical branches *might* very properly be made full-time workers.
5. An enlargement of the University Hospital to make approximately from four to five hundred beds should be secured.
6. The administrative officers and members of the faculty of the Medical School of the University of Minnesota should, in the opinion of your Committee, recognize the fact that the chief function of this School is to supply the state with general practitioners of medicine.
7. Every effort should be made by the administrative officers and the faculty to cooperate with and assist the practitioners of the state in

furnishing them with opportunities for refreshing their knowledge in both laboratory and clinical branches and by helping them in the diagnosis and treatment of their cases.

Upon the receipt of this report, the Board of Regents adopted the following resolution:

The report of the special committee, consisting of Dr. Frank Billings of Chicago, Dr. V. C. Vaughan, of the University of Michigan, and Dr. J. M. T. Finney of Baltimore, Maryland, appointed by the Board of Regents upon the Medical School, was received, considered, and ordered filed supplement to the minutes, page 275. Subject to the definitions of its powers and duties by the laws of the State, the principles set forth for the development of the Medical School were adopted by the Board of Regents as the general policy it would follow hereafter in the conduct of the Medical School.

Agreement for the establishment of a Smith-Hughes Department of Agriculture and of Practice Teaching in the public schools of Bloomington, Minnesota.—One of the difficulties that has attended the training of teachers of agriculture has been the lack of adequate observation and training facilities. This lack has been recognized for a number of years by the University of Minnesota and the State Department of Education. In order to obviate it, an agreement was entered into in May, 1922, between the Minnesota State Department of Education and the University of Minnesota and the School Board of Bloomington, Hennepin County, for the establishment in the public schools of Bloomington, by the coöperation of various parties, of a Department of Agriculture, maintained as follows:

The School Board of Bloomington agreed to provide the necessary space and equipment with all other conditions proper and necessary for the conduct of such a Department of Agriculture, according to the standards of the Minnesota State Board of Education for the Smith-Hughes schools, and in accordance with the need for observation and practice work to be conducted therein by the University of Minnesota; to employ and pay the salary of an instructor in agriculture, qualified under the standards of the State Department of Education of Minnesota for teachers of agriculture in Smith-Hughes schools and approved for such employment by the State Department of Education and the University of Minnesota; and to pay the teacher the salary to be agreed upon, in twelve equal monthly installments. The

Minnesota State Department of Education agreed to reimburse the Board of Education at Bloomington, Minnesota, from state federal funds to the extent of three-fourths the salary of the teacher of agriculture, with the understanding that the Department of Agriculture in the Bloomington schools would be maintained in accordance with the standards established for Smith-Hughes work in Minnesota; and that the teacher, in accordance with this agreement, should act as the critic teacher for observation and practice teaching for students in agricultural education in the University of Minnesota as the dean of the College of Education may direct.

The University of Minnesota agreed, in consideration of the foregoing stipulations, to appoint the instructor in agriculture in the Bloomington public schools as a critic teacher for such observation and practice as may be designated by the dean of the College of Education, to make the necessary arrangements for University students in agricultural education to do such observation and practice teaching, and to reimburse the Board of Education at Bloomington to the extent of one-fourth the salary of the teacher.

Radio broadcasting at the University of Minnesota.—For a number of years, the problem of providing facilities for radio broadcasting at the University of Minnesota has been receiving serious consideration. The University of Minnesota was the first agency to establish a radio broadcasting service in the state of Minnesota. In October, 1920, the University Radio Station, then operating under a government license, began and has continued the transmission of weather forecasts by radio telegraph. This date also marks the beginning of the development of the University Radio Station operating staff which at present consists of a chief operator, five first operators, and three apprentice operators, all of whom have had extensive experience in the handling of radio equipment. In the spring of 1921 a market service covering closing prices of Minneapolis wheat and supply and demand of the Minneapolis and St. Paul potato market was inaugurated with transmission by radio telephone as well as by radio telegraph. The United States Bureau of Markets and Crop Estimates has been quite ready to realize the importance of crop and market service by radio, and in the spring of 1921, established radio

broadcasting service from the post-office stations located at Omaha, Cincinnati, Washington, D.C., and elsewhere. This bureau also took steps to organize the radio broadcasting service which has been started by educational and other institutions. In the fall of 1921, the Bureau of Markets designated the University of Minnesota Radio Station as their official broadcasting station for this state. Since that time its daily reports have been broadcasted.

The rapid growth of interest in radio broadcasting and the sudden realization by commercial organizations of the great value of broadcasts for advertising purposes, publicity, the sending out of concerts, lectures, and the like, resulted in a tremendous increase in the number of stations engaged in this work. This has necessitated a change in the government regulations relating to the sending out of radio broadcasts. Two types of commercial licenses are now issued to broadcasting stations. One permits the broadcasting of concerts and similar matter, only at stated times on a wave length of 360 meters, while the 485 meter length is reserved for those stations designated by the United States Bureau of Markets as its official stations for broadcasting weather forecasts and market information. The University of Minnesota has a license for both types.

The conservative range of the University of Minnesota radio telegraph set is from 200 to 300 miles, while the radio phone now in use is only about 50 miles. However, under favorable conditions the range of these sets is much greater.

At the time the University Radio Station was definitely designated by the Bureau of Markets as the official broadcasting station for Minnesota and vicinity, this station was conceded to be the best equipped in the Northwest. This was not due to the fact that the Electrical Engineering Department has had an adequate amount of money available for this work, but because of the use made of valuable apparatus and parts sent here by the United States Signal Corps for instructional development purposes. However, because of the greatly increased development of radio telephony within the last year, several other radio stations have been assembled in the Twin Cities. One of these stations is now even better fitted for broadcasting information than the University.

It is obvious to a student of radio work that the establishment of a larger number of stations with ability to send messages of corresponding wave lengths will result in interference and inefficiency. In recognition of this fact, Governor Preus suggested that it would be a far wiser policy if the newspapers of the community, and other agencies as well, cooperate with the University of Minnesota in establishing one high powered station in the University of Minnesota. A conference with the representatives of a number of newspapers was held at the University of Minnesota for the consideration of this plan, but up to the time of the preparation of this report no concrete suggestion for the establishment of such a station has been made.

Acceptance of the Marine Memorial.—The representatives of the Marine Corps of the State of Minnesota presented to the University a monument in commemoration of the men in that corps who fell during the late war. The monument consists of a piece of granite nearly five feet in height, upon the glazed surface of which is a bronze tablet containing the names of the men in this corps who made the supreme sacrifice. The monument is located to the right of the main gate as one enters the campus. Suitable exercises were held at the monument on Monday afternoon, June 12. The memorial was presented by Captain Harold E. Wood, of the United States Marine Corps, and accepted by President L. D. Coffman on behalf of the University and the Hon. J. A. O. Preus, governor of the state of Minnesota, on behalf of the state.

The high dam.—Since the Board of United States Army Engineers in 1910 reported in favor of a high power dam in the Mississippi River near the Soldiers' Home, and suggested that the cities of Minneapolis and St. Paul cooperate and acquire the power for public use, the question of the acquisition and disposition of this power has been under controversy. The history of this controversy, together with the recommendations of Regent Snyder, who was a representative of the Board of Regents of the University of Minnesota in the Municipal Electric Company, is contained in his statement which was submitted to the Board of Regents at its March meeting, 1922, and laid over for consideration at the April meeting. At the time of the preparation of this report no action has been taken with reference to Regent

Snyder's recommendations, and the cities have not agreed upon any plan with reference to the disposition of power developed at the dam. Regent Snyder's recommendations are as follows:

To the Honorable Board of Regents,—

Gentlemen:—

In 1910 a Board of the United States Army Engineers reported in favor of the construction of a high dam in the Mississippi River near the Soldiers' Home and suggested that the cities of Minneapolis and St. Paul should cooperate and acquire the power for public use.

The Board of Engineers for Rivers and Harbors concurred in the recommendations and the Chief of Engineers recommended that negotiations be entered into whereby the cities of Minneapolis and St. Paul should become lessees of the surplus power that might be created.

In the River and Harbor Act of 1910 Congress adopted the project as recommended by the Chief of Engineers with the proviso "that in the making of leases for water power a reasonable compensation shall be secured to the United States and the rates as fixed shall be subject to revision by Congress."

At the next session of the Legislature of Minnesota a Bill was passed permitting the formation of public corporations for the purpose of developing water power. Under this Act the Municipal Electric Company, composed of the University of Minnesota and the cities of Minneapolis and St. Paul, was formed.

This corporation subsequently made application to the Federal Government for a license on the water power. The application was denied on the ground that until new legislation was passed by Congress the secretary of war was without power to act.

Subsequently Congress passed an Act by which Municipalities in the vicinity of a water power developed by the Government should have the preference in obtaining a lease of the rights.

The State law which authorized the creation of the Municipal Electric Company was defective in that it made no provisions for financing the project. At the last session of the Legislature a Bill was introduced to supply this defect. The Bill was defeated.

The Federal Government called for bids for the power in the spring of 1921. St. Paul assumed that the Municipal Electric Company was without power to function, and without consulting either the University or the City of Minneapolis, put in an application for the power for its own use. It declined to join with the University and the City of Minneapolis in making an application in the name of the Municipal Electric Company which could be done only with the assent of the three parties. Minneapolis then presented a separate application in its own behalf. The University having no power to act without legislative authority, made no application. An application was also presented by the Northern States Power Company. The Federal Power Commission, to whom these applications were presented, granted hearings to the parties and, after the parties

had been heard and the subject considered, entered its order postponing a decision on the merits until the State of Minnesota and the cities of Minneapolis and St. Paul could have time to reach an agreement, if possible, and until the Legislature convening in January 1923 could consider the subject.

It seems proper, for the member of this Board, who sits as its representative in the Municipal Electric Company, to report his views upon the situation and make such recommendations as are in his judgment best for the interests of the public.

He feels free to do this without first conferring with the representatives of either of the cities since St. Paul has already declined to act with the other members of the Municipal Electric Company, and has announced its determination to obtain the power for itself, if possible.

There are objections to the University of Minnesota acting with the two cities in seeking the use and control of this power. The first is that the University should never entangle itself in any problems which in the end will tend to enmesh it in political discord. The cities themselves are in controversy. A private corporation, with large political influence, is seeking the power. The State should avoid the entanglement. Next to the Federal Government the State has the first right to the power. The State should act independently of all others. The second is that the State of Minnesota has problems of its own so vast and far reaching for the good of the people that, if it can be shown the power has real value to all the people, then the State should alone, and not in conjunction with anyone else, acquire and control it.

There are many problems related to the development of the State and the advancement of its commercial, industrial, agricultural and civic life which can be well served by the State taking over this power, developing it and using it in the manner and for the purposes hereinafter specified. These problems may be summarized as follows:—

- (1) Improvements looking to the higher efficiency of methods of fixing atmospheric nitrogen and the manufacture therefrom of artificial fertilizers and various other products;
- (2) Smelting of iron and steel from the ore;
- (3) Refining of steel and development of new steels;
- (4) Purification of city water supplies;
- (5) Inoculation of sewage;
- (6) Reconstruction of native stones into more valuable materials;
- (7) Development of new artificial material for highways or pavements;
- (8) Extraction of aluminum from common clay;
- (9) Application of electricity to plant growth and to agriculture;
- (10) Utilization of forest and other vegetable products now but partly utilized;
- (11) Purification of atmosphere from smoke, dust or fog;
- (12) Electrical reduction of peat;
- (13) Development of off-peak and seasonal loads of water-power;

- (14) Determining the conditions under which known electrical phenomena may become the basis of commercial processes;
- (15) Making new discoveries of properties of matter and of its behavior.

A large part of the electricity generated at the high dam should be used by the State in laboratories under the direction of the research and teaching staff of the University, for the purpose of working out these problems. Already considerable progress has been made in Sweden in the reduction of ores by electricity and this subject is of special interest to this State. All the other subjects mentioned need only to be read and considered to commend themselves to the thinking public. The scientific handling of them is in its infancy. Painstaking and laborious research work will produce lasting benefits to the citizens of our commonwealth.

A very considerable part of the electricity would be used in lighting the University buildings. Power not used for research and lighting purposes could be carried to Stillwater and used for extracting nitrogen from the air and the manufacture of fertilizer for the farmers of this State, as binding twine is now produced there. Such a plant would be a suitable adjunct to the State Prison and could be constructed in units using 2,000 kw. or more. There are beds of limestone within easy reach of Stillwater suitable for use in making nitrates.

Supplementary steam power could be supplied by installation of steam turbine units at the main heating plant on the University Campus, and connected by transmission line with the power plant at the dam.

Besides these benefits to the people of the State there would be the indirect advantage of holding as a check over the Northern States Power Company the operation of such a plant thus enabling the State to know the cost of generating the power.

The amount of money paid since 1916 annually by the University to the Minneapolis General Electric Company for electricity used on its main campus follows:

1916-17	.....	\$ 9,292.12
1917-18	.....	8,706.49
1918-19	.....	10,506.41
1919-20	.....	12,413.99
1920-21	.....	14,918.53

\$55,837.54

In addition to this the University furnished some electricity from a small plant operated by itself for educational purposes.

The Agricultural campus is not connected by any transmission line with the main campus. Heretofore all electricity used on that campus has been generated on the campus by the University, but at the present time the State is purchasing electricity for part of the consumption at the Agricultural campus.

It is therefore recommended that the Board of Regents express its sentiment in favor of the State of Minnesota taking over the power at

the high dam for the use of the people through its University and its State Prison and report its action to the Governor of this state with the recommendation that the Governor take such action as will result in a careful consideration of the subject in order that the interests of the State in this power may not be overlooked, but rather be fully protected by suitable legislation at the next session of the Legislature.

Respectfully submitted,

(Signed) FRED B. SNYDER.

Gifts.—During the past year the University has been the recipient of a number of gifts in the way of prizes, scholarships, fellowships, books, etc. These include:

Dr. Horace Newhart fellowship in ophthalmology and oto-laryngology of \$600 for the first year, \$750 for the second year, and \$1,000 for the third year.

A. D. Wilson prize fund of \$322.30.

Miller Clinic Hospital fellowships of \$420, \$570, \$820, including residence.

Northern Fire Apparatus Company fellowship of \$750, in the College of Engineering.

Trophy cup by the *Minnesota Daily Star* to stimulate the writing and production of plays by students of the University.

Dramatic cup by Mr. I. H. Ruben to stimulate work in dramatics.

St. Paul Institute Medal (to an undergraduate) to stimulate creative work in science.

P. E. O. scholarship of \$100.

Sixty-seven volumes from the Academia de Buenos Letras of Barcelona to the Library.

Engineering News from 1886 to 1904 from Mr. George L. Wilson to the Library.

Twenty-two miscellaneous volumes from the office of President Emeritus Cyrus Northrop.

Fleischmann Company fellowship of \$800 for research in the bio-chemistry of baking.

College Women's Club of Minneapolis scholarship of \$600.

College Women's Club of St. Paul scholarship of \$750.

Faculty Women's Club, student section, scholarship of \$150.

Woman's Club of Minneapolis, arts and letters section, scholarship of \$100.

George H. Partridge scholarship of \$500.

Mrs. Elbert L. Carpenter scholarship of \$100.

Mrs. George C. Christian scholarship of \$100.

Nina Morais Cohen scholarship of \$100.

Surplus stock of publications of the Minnesota Academy of Social Sciences to the Library.

Board of Home Missions and Church Extension of the Methodist Episcopal Church of Philadelphia scholarship for the Americanization Training Course of \$200.

Collection of shells from Mrs. A. W. Abbott to the Zoological Museum.

Collection of mathematical and technical books from B. L. Newkirk to the library of the College of Engineering and Architecture.

Framed picture of Honorable A. E. Rice.

Continuation of the gift of the prize in anatomy of \$220 by Dr. E. S. Geist.

The library collection of various books from O. C. Merriman to the Library.

Roxburghe Club's Royal Commission on Royalists Claims from Mrs. Whitelaw Reid to the Library.

Reproduction of Il Codice Trivulziano della Divina Commedia from Mr. Luigi Carnovale to the Library.

Acceptance of the sum of \$250 raised from the Girls' Christmas Bazaar at Morris to be used in purchasing furniture for the dormitory parlor at the West Central School and Station.

The completion of the Heron Lake bird group in the Zoological Museum made possible by the following donors:

Mr. James Ford Bell.....	\$1,500
Mr. W. O. Winston.....	500
Mr. Russell M. Bennett.....	500
Mrs. Louise Koon Velie.....	250
Mr. Charles D. Velie.....	250
Mr. Francis A. Chamberlain.....	100

Mrs. George P. Douglas scholarship of \$100 for a needy girl student.
Emile Berliner research fund of \$200 for research work.

Cosmopolitan Club loan fund of \$200 plus half of the net proceeds of the annual International Revue for students whose homes are outside the boundaries of territorial United States.

Twentieth Century Club of Duluth gift of \$50 for a general student loan fund.

Elizabeth Carse scholarship of \$50 for the College of Education.

Deinard scholarship of \$100 from the Minneapolis section of the Council of Jewish Women.

Alpha Zeta scholarship of \$50 per year and also such funds as the Alpha Zeta Fraternity may give to the University for the Alpha Zeta loan fund.

Prize of \$50 from the Epsilon Chapter of the Phi Delta Kappa Fraternity for a student in the College of Education.

Prize of \$25 from the Lambda Alpha Psi Society for an undergraduate to stimulate interest in the study of literature.

Gift of a Jennings Vacuum Pump and complete testing equipment from the Nash Engineering Company to the Experimental Engineering laboratory.

Two direct current motors from the Northern States Power Company to the Department of Electrical Engineering.

Gift of various books to the Library from Mr. W. J. Reno.

The Summer Session.—The Summer Session for the last five years has shown a steady increase in attendance. In 1917 there was an enrolment of 1,111; in 1918, 1,259; in 1919, 1,467; in 1920, 2,025; in 1921, 2,687; and in 1922, 3,203. This increase has been partly due to the special advantages that the University of Minnesota offers to the teachers, and also to the fact that the program of work has been constantly expanded and improved to meet the needs of students registered in the several colleges of the University during the regular session, who desire to complete their period of study in residence in less than four years.

For a number of years there has been a growing demand for a full quarter Summer Session. Up to the present time, with the exception of the work in the School of Medicine, which has a full summer quarter, only a six weeks' term has been offered. In recent years, however, a growing number of continuation classes has been organized to accommodate students who desire to stay longer than the first term. This year a second term of five weeks was announced in the annual Summer Session bulletin. Eleven hundred forty-seven students registered for that term. Of these 296 were new students, that is, students who were not registered in the first term. This large attendance indicates that in a relatively short time the University should have a full four-quarter year.

For five years the director of the Summer Session has recommended that the salaries paid to instructors be increased. The University of Minnesota was paying less than any other university comparable with it. This year the salary for instructors was increased to one eighth of the annual salary of the instructor during the regular academic year. This places Minnesota about on a par with such institutions as Illinois, Ohio State, Wisconsin, and Iowa. The effect has been to enable us to secure a stronger staff and also to improve the general program for the Summer Session.

Agreement between the L. S. Donaldson Company and the Board of Regents of the University to permit seniors in the School of Business to familiarize themselves with the actual operations

in the field of practical merchandising.—The importance of offering students in the School of Business an opportunity to supplement their studies with intensive training in the fields they expect to enter has long been recognized. The University of Minnesota recognized this in a practical way during the year when it entered into an agreement with the L. S. Donaldson Company to offer a limited number of students the opportunity of supplementing their studies by spending a certain amount of time at the L. S. Donaldson store. During this time the students will be given opportunities to become informed as to the general fundamental workings of a large mercantile enterprise, to familiarize themselves with the operation of each important department of the business, through a logically worked out system of rotation, to earn a part of their living expenses, and to demonstrate their fitness or unfitness for particular positions in the merchandising field. At the opening of each fall quarter the dean of the School of Business will submit to the L. S. Donaldson Company a list of senior students specializing in merchandising, who, in his judgment, possess the qualities necessary for the successful pursuit of the training course. From this list the company will select the members of the college training class for that academic year. The members of the class thus selected will report for work immediately after they are notified of their selection. The training will be under the joint supervision of the School of Business and the company, but the students shall be considered as employees of the company in so far as submission to its rules and regulations governing the conduct of employees is concerned. Students shall spend the equivalent of two working days per week with the company, and they shall be compensated for at the rate of \$15 per week. Each member of the class upon leaving a department of the store shall prepare and submit to the representatives of the company and to the dean of the School of Business a detailed report upon the work of the department, and every head of the department shall send in a confidential estimate of the student as he leaves the department in question.

Agreement between the Board of Directors of the State Agricultural Society of Minnesota and the Board of Regents of the University of Minnesota.—When it was decided to erect two home management houses in which young women could live, the houses

to be used as a basis for instruction in home-making, home-keeping, and budget-keeping, one house adapted primarily to city life and the other to rural life, the question arose as to where they should be located. It was the unanimous opinion of a special committee, representing the Department of Agriculture, that it would be best, if possible, to avoid placing either of the home management houses on any part of the campus of the Department of Agriculture. The committee recommended as the best possible solution that additional space be secured west of Cleveland Street, between Commonwealth Ave. and Knapp St., placing the two home management houses on this lot. As this space belonged to the State Agricultural Society, the Board of Regents entered into negotiations with this society for the purchase or exchange of some of the University property for enough space for the location of the two buildings. On May 5, 1922, the Board of Governors of the State Agricultural Society adopted the following resolution:

That the Executive Committee be authorized to negotiate with the Board of Regents of the University of Minnesota for a lease for an indeterminate period, subject to termination on six months' notice at one dollar (\$1.00) per year for a piece of ground 150 feet square in the northwest corner of the west half of the southwest quarter of the southeast quarter of Section 21, Township 29, north range, 23 west, upon which the Agricultural College desires to build two houses.

These negotiations have been completed and plans are now being drawn for the houses.

CONCLUSION

In concluding this report, I wish to express my appreciation of the coöperation that has been given me by the Board of Regents, the faculty, and the student body. There have been many interesting and perplexing problems to deal with. Their solution has depended entirely upon the collective judgment and good will of those connected with and interested in the administration and development of the University.

So long as a mutual regard for the fundamental interests of the University dominates the motives of regents, faculty, and student body, we shall have strength to face the future and shall be hopeful concerning the solution of new problems that the University may face.

Respectfully submitted,

L. D. COFFMAN, *President*

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

To the President of the University:

SIR: I submit herewith my report on the work of the College of Science, Literature, and the Arts for the year 1921-22.

The total enrolment exceeds that of 1920-21 by 9.5 per cent. This is a higher rate of increase than that recorded a year ago (5.8 per cent) and probably represents approximately the normal rate of growth. There has been a further increase in the proportion of men students, who now number 59 per cent of the enrolment.

A. FACULTY

The total teaching staff this year included 243 persons, equivalent to the full time of 193½, distributed among the various ranks as shown in the following table:

	1919-20	1920-21	1921-22
Professors	41½	40½	43½
Associate professors.....	16¾	17½	22
Assistant professors.....	39½	33	28¾
Professorial lecturers.....	3	5	3
Instructors	54	66½	72½
Lecturers	½	2½	3½
Assistants and teaching fellows equal to full time	39½	35½	29½
Total	194½	200	202½
Absent on leave.....	11	3	8¾
Teaching staff actually in residence.....	183½	197	193½

The following changes occurred in the professional ranks of the faculty during the year.

Resignations.—Sigurd B. Hustvedt, assistant professor of English, to accept position at the University of Southern California; Ralph M. Barton, assistant professor of mathematics; Lars A. Welø, assistant professor of physics; Mildred W. Loring, assistant professor of psychology; Ruby Baughman, professorial lecturer in anthropology; Antonio Heras, professorial lecturer in Romance languages, to accept a position at the University of Iowa.

Leaves of absence.—The following were absent on sabbatical furlough: John B. Johnston, dean of the College of Science, Literature, and the Arts, for the winter quarter; Elmer E. Stoll, professor of English; Charles W. Nichols, assistant professor of English; James T. Hillhouse, assistant professor of English.

The following were on leave without pay: Luther L. Bernard, professor of sociology, to accept an Amherst College research fellowship; Quincy Wright, associate professor of political science, for the fall quarter to serve in the Naval Intelligence Department of the Disarmament Conference; Albert B. White, professor of history, to fill a substitute position at the University of Michigan; Harold Quigley, assistant professor of political science, to lecture in Tsing Hua College, Peking, China; Herbert Woodrow, associate professor of psychology, to fill a substitute position at the University of California; William S. Davis, professor of history for the winter quarter; Anna H. Phelan, assistant professor of English, on account of illness.

New appointments.—To begin service during the year 1921-22: William Lindsay, assistant professor of music; Mildred Mudgett, assistant professor of sociology; Kemp Malone, professorial lecturer in English.

B. STUDENT BODY

Enrolment.—The following table shows the attendance during the last two years:

	1920-21			1921-22		
	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
Seniors	100	175	275	107	143	250
Juniors	145	223	368	176	204	380
Sophomores	923	571	1,494	927	630	1,557
Freshmen	1,021	611	1,632	1,225	671	1,896
Unclassed	73	121	194	119	138	257
Total	2,262	1,701	3,963	2,554	1,786	4,340

The total number of men and women registered in the college for the past five years:

	1917-18	1918-19	1919-20	1920-21	1921-22
Men	934	813	2,111	2,262	2,554
Women	1,381	1,383	1,635	1,701	1,786
Total	2,315	2,196	3,746	3,963	4,340

The number of students from other states for the past five years:

	1917-18	1918-19	1919-20	1920-21	1921-22
Percentage of total.....	11	10.4	11.9	12.3	12.7

The following table shows the amount of teaching done by each department during the fall quarter in comparison with the fall quarter of last year. The figures represent student credit hours.

DEPARTMENT	1919-20 FALL QUARTER	1920-21 FALL QUARTER	1921-22 FALL QUARTER
Animal Biology.....	4,097	3,606	3,447
Anthropology and Americanization Training.....	973	978	1,507
Astronomy	237	298	372
Botany	2,274	1,549	1,795
Comparative Literature.....	.....	.....	42
Comparative Philology.....	20	43	45
English	2,359	2,150	2,484
Geology and Mineralogy.....	1,630	1,329	1,461
German	2,912	2,324	2,095
Greek	150	264	262
History	7,427	7,493	6,238
Journalism	102	138	204
Latin	359	399	727
Mathematics	3,839	2,582	2,471
Music	761	833	703
Philosophy	417	713	844
Psychology	2,355	2,381	2,760
Physics	3,091	2,679	2,417
Political Science.....	1,738	3,532	3,190
Rhetoric and Public Speaking.....	8,764	9,845	10,359
Romance Languages.....	8,271	8,316	8,617
Scandinavian	379	451	524
Sociology	1,712	2,867	2,977
Total	52,417	54,760	55,541

It has been noticed during the last few years that a large number of students leave college without completing any course of study. Many of these cancel their registration during the term, and a larger number fail to return after the close of a quarter or a year. During the present year about one fourth of all students enrolled in the college left before the first of June; 17 per cent of all men and 21 per cent of all women because of illness, financial difficulties, or various personal reasons; while 8 per cent of all men and 2.4 per cent of all women were suspended for poor scholarship.

By far the greater number of these students leave college during the earlier years. Of those who leave 57 per cent are freshmen; 26 per cent, sophomores; 4 per cent, juniors; 3 per cent, seniors; and 10 per cent, unclassified.

A comparison of the last three years shows that the voluntary withdrawals have been much more numerous during the present year than the last two preceding. This may be accounted for in large measure by the economic conditions. The following table shows the withdrawals of freshmen in the last three years:

	QUARTERS					
	First	Second	Third	Fourth	Fifth	Sixth
Cancelled during the quarter						
Entrants 1919-20.....	109	77	54	24	27	17
Entrants 1920-21.....	71	54	27	...	...	...
Entrants 1921-22.....	174	167	73+	...	...	...
Did not return after the quarter						
Entrants 1919-20.....	68	40	170	30	16	105
Entrants 1920-21.....	80	56	248	...	...	...
Entrants 1921-22.....	351	243	...	...	...	...

A study of the scholarship records of voluntary withdrawals shows that 45 per cent of them had failed to maintain the average grade of C required for graduation and that 10 per cent had made a clear failure of their work. On the other hand, 28 per cent were above the C average and 10 per cent were really superior students while here. Students who state that they left college because of financial difficulties have a distinctly better scholarship record than those who withdraw for other reasons.

C. PROBLEMS OF INSTRUCTION AND ADMINISTRATION

It seems desirable at this time to make some comment on the responsibilities of the college in regard to various matters affecting the success and value of the work of students. Aside from the regular instruction the duties of the college toward its students have to do chiefly with *selection* and *direction*, and it is in these two fields that the most difficult problems of college management arise to-day. Selection is a necessary function constantly being exercised at all stages of the public school system. In this state the selection of students thought to be fitted for entrance to the University is performed by the high schools. Students who are graduated from accredited schools are admitted to the University without further question. The process of selection, however, does not end with admission, since each year a considerable number of those admitted fail to carry their

college work. Obviously the University has some standards of performance and some prerequisites for success which are not adequately tested by the high school course. It follows from this that each college in the University ought to have some knowledge as to what abilities and what efforts are necessary for success which would be of advantage to prospective students and their parents.

Beyond selecting students with respect to fitness for admission it is the duty of the college to select with respect to *relative* ability and fitness for *specific work*. If the college is to serve democracy efficiently it must inquire what students have superior ability, what ones are unusually gifted, in order that the college may give these students special training for the unusual duties and the heavy tasks that will fall to them in life. The college must also seek out among all its students which ones have special talents, peculiar forms of ability, qualifications for special, restricted, or peculiar types of work which society wants to have done. It is of the very essence of democracy that it provide ways and means of securing for its highest, most difficult, most exacting, and most specialized duties and functions those men and women who are best fitted for such places of honor and responsibility. Within certain large and important fields the university is the chief agent of society for selecting and training men and women for those positions of trust and power.

For the selection of students during their college work we have our classroom and laboratory instruction and examinations, the student's success being measured and recorded by a marking system. These must continue to be the methods for measuring success in college work. Two things are desirable, however, first, that these measures be made as uniform and as self-consistent as possible in their working and second, that they be applied in such a way that the result shall be so far as possible a measure also of the student's prospects of success in his work after college. This latter raises the whole question of the fitness of college studies to prepare for life-work or vocation, but what is here referred to is the question whether the methods used in testing the student's college work are such as to test his ability to perform that for which his college work is supposed to train him.

In the interest of uniformity and consistency this office has undertaken last year and this to distribute to all members of the faculty information as to the grades given by each person in charge of classes. It is expected that this will enable those who are too rigid and those who are too generous in their marking to discover their faults and learn to approximate the average. At the present time a study is in progress which will enable us to compare the marking by departments and by individuals of students of equal classification (freshmen, sophomores, etc.) in courses of study of equal grade (e.g. elementary courses intended for freshmen, etc.). Such an inquiry will also enable us to make a comparison of the work of students in college with that of students in high school and of both with the results of intelligence tests.

Probably one of the most fruitful fields for inquiry and experimentation in academic work is found in the form and method of examinations. As now conducted, examinations test little else than the student's retention of the subject-matter presented during the class work. The purpose of instruction, however, even on the most extreme theory of education for culture, is to enable the student to appreciate or to react fittingly to things and actions and relations and influences which will present themselves to him after the particular course of study is over. The purpose of instruction is to prepare the student for his relations in his world, to enable him to respond intelligently and adequately to the demands made upon him after he leaves the classroom. If this be true, then the institution which tests only memory or retention of the content of courses of instruction is cloistered, non-social, and is neglecting to measure its own public service; while the institution which tests the student's ability to apply the subject content of his instruction to situations such as will confront him in life gives evidence of appreciation of its social functions and responsibilities.

It can not be said at this time that the universities do have specific knowledge as to what is necessary for success either in general or in specialized college work. The two things which all educators agree are essential are "brains" and the interest and will to work. In recent years educational institutions have given a great deal of attention to various forms of intelligence tests. These have been regarded as measures of students' ability, but in fact the tests thus far developed are measures chiefly of intellectual ability and only incidentally and in small degree measures of interest, will, industry, and other elements of character which are of the greatest importance in student success. Good progress is being made in studying the reliability of various tests of intelligence and some effort is being made to devise tests that will be useful in estimating the character factors above mentioned. While the study of these tests is going on they are not being used in any way to determine the administrative treatment of students. No student is sent away from college because he had a low score in any intelligence test nor is it intended that any student's opportunities shall be limited on any other ground than that of his performance in college work.

There are other means of estimating a student's ability and prospect of success, such as his record in high school work, his choice of studies in high school, his own statement as to his purpose, his ideals, and his objectives, and the use which he makes of his time, his interests and employments outside of the classroom, and his preparation for the work of the classroom. It is the duty of the college to make use of any reliable information obtained from any and all sources to determine how the college work shall be conducted and to what sections students shall be assigned in order to adapt the work to the needs of various groups or types of students.

The direction of students has always been regarded as a function of the college faculty, altho students have not often shown a disposition to

avail themselves of the advice which the faculty might offer. In recent decades, since the number of students has increased so greatly and the faculty has perforce come to be made up so largely of young instructors, it has become impossible for the older members of the faculty to reach any large number of students in their earlier years when they need advice. The direction of students has therefore taken on a new aspect; it has become largely an administrative problem.

Students require advice or help as to the choice of their vocation or field of work, as to laying out their curriculum, as to methods of study, as to living conditions, as to the use of their spare time, their associations, recreations, and efforts directed toward their own general cultivation.

There are two general ways in which this help can be given. The first is through personal contact in extra-scholastic connections, through the control of student boarding and rooming places or university dormitories, through the supervision of student activities and through social and religious influences and the personal influence of men and women working in these latter channels. The second is through advice and control by officers or faculty members in charge of the registration and classification of students. The second has been and should continue to be the chief means of dealing with all the immediate scholastic interests of the student. In an institution situated in a large center of population the efficiency of the first, or personal, influences is greatly reduced in the case of all those students who live at home and who respond chiefly to the personal, social, and religious influences of their home environment. The destiny of every man and woman is so far determined by heredity and by the habits, prejudices, and attitudes of mind created by early experiences, by home environment, and by social influences that the instruction by the university finds a very narrow field in which to influence the student. For large bodies of students the college only furnishes scientifically ascertained facts and theories which the students come to get as commodities or materials to be used for ends which are shaped for them by the extra-collegiate influences and the pre-formed ideals already mentioned.

The question is whether the college fulfills its social functions by merely training the intellectual mechanism of its students and if not, then how can the way be opened for the college in greater measure to build moral character, to stimulate worth-while personal interests, and to inspire noble ideals. That this is a very real problem is shown almost by the simple mention of two practical problems which every college of liberal arts has to face; the large number of intellectually capable students who fail to do well in their studies, and the large number of students who withdraw before attaining any objective toward which college training should lead them.

The intellectually capable student who fails to do well is almost entirely a problem of moral character, will, determination, persistence, purpose, ideals. Poor instruction or unfortunate choice of studies may be the immediate occasion for failure but these occur equally in the case of his

fellows who overcome the obstacles and succeed because of the stuff they are made of. The capable failure can be helped to become a success commensurate with his capacity only by touching the springs of his moral stamina through personal interests and influences and through the stimulation of his imagination and ambition.

The problem of the floating student population is a most serious one. The number of voluntary withdrawals and certain facts regarding the scholarship of these students are given elsewhere in this report. While we do not know enough about the causes or conditions of these withdrawals, there is reason to believe that many of these students are essentially in the class of intellectually capable young men and women who fail to attain worth while ends through their attendance at college. For all such students it is necessary that the college should in some way supplement the moral and social influences which have been their main guides by new influences, ideals, aims, and ambitions under the stimulus of which the student may adapt himself to the conditions of higher intellectual life and may make successful efforts.

In quite a different way the college falls far short of making the most of the student material that comes to it. Here it is not so much direction that is needed as merely furnishing adequate opportunity. I refer to the unusually gifted student who does not find opportunity for the full exercise of his powers. Intellectual growth, like muscular growth, depends upon exercise, and great growth can be secured only by effort approaching the limit of the individual's powers. I do not think there can be any question that the colleges of liberal arts are responsible for the actual deterioration of the intellectual powers of some of their most brilliant students because of lack of opportunity and of stimulus to do work that will develop them. Ordinarily all students are treated alike—put into the same classes and given the same work to do. It is our intention to be guided by the American ideal of equal opportunity for all, but in our application of this principle we have seriously missed the true meaning of it. In college life equal opportunity for all can mean nothing less than *free opportunity for each to work in proportion to his powers*. In the field of amateur sport the principle is applied with greater intelligence. In athletic contests the handicap is introduced to equalize the prospects of opposing players. The effect of this is to match the player against his own previous performance and that player is declared successful who shows the greater improvement over his former attainment. This principle of self-competition and self-improvement we do not follow in college. We give all students tasks adapted to the average or the weaker students and in our measures of success (marking system) we match all students against a minimum acceptable grade representing the performance of the poorest student whom we are willing to recognize as the product of our plant. The result is that the courses of study are lacking in interest for the stronger students, the college offers little stimulus to effort on the part of its most capable students and the consequence is that they turn their attention to "college activities" or amusements and allow

their brains to atrophy instead of developing them. The worst of this is that the college in following a wrongly conceived notion of equal treatment for all members of society who claim its privileges is playing false to society as a whole. By setting up as its standard the work that the average or poorer students can do the college is neglecting the development of its best students upon whom society should be able to depend for the solution of its most difficult problems and for leadership in its most intricate social and economic affairs. A college is thus essentially disloyal to the larger interests of society unless it furnishes to each student opportunities for growth and self-improvement; and this is possible only through work in proportion to the individual's powers.

This college has done something to provide better opportunities for the superior student. The graduation requirement stated in terms of a system of honor points in addition to credits gives the student an opportunity to profit by good work in the subjects which he likes best and encourages him to greater effort in those subjects. This enables the college to set a higher standard of achievement without doing injustice to students who have difficulty in particular subjects.

Special standards are set for (a) promotion from the Junior to the Senior College, (b) for taking courses announced as Senior College courses, (c) for satisfactory work in the major sequence. All these have operated to eliminate poor and mediocre students from the advanced classes and so to improve the opportunities for those who belong in this advanced work.

Such arrangements are now in force in liberal arts colleges in many institutions.

In December, 1921, the faculty of this college voted to encourage departments to section classes on the basis of ability, and to facilitate this, instructed the Executive Committee to arrange the program so that large classes shall have several sections scheduled at the same hour. This plan has been tried in a few departments in recent years with good results. During the winter and spring quarters of the current year the classes in freshman English have been sectioned on this plan and the staff are unanimous in saying that this has resulted in a great stimulus to both the students of A and B grade and those of D grade. In no year during the past ten years has there been such marked improvement in the work of students from the beginning to the end of the year. In a department with a large staff of instructors differences are found among the instructors, in their types of mind, and in their training. The new plan of sectioning makes it possible to assign instructors to the type of work for which they are best fitted. It is expected that the information to be obtained from intelligence tests and from the high school records will help us to assign students to the sections in which they will find the work best suited to their abilities and preparation.

The faculty at the same time voted to encourage departments to arrange courses or classes for the special benefit of the more capable students and to make special studies of the needs of such students. Furthermore, the faculty voted to recognize a higher order of work by

giving credit in proportion to the student's standing. This is known as the quality-credit rule which provides that for every five honor points gained by the student in excess of one per credit hour, the student is given one additional credit toward graduation. The justification of this is found in the fact that marks always depend upon, and indicate, quantity of work as well as quality, and that the A student not only has shown a finer quality of mind than the C or the D student but also has secured a broader, fuller, and larger understanding of the subject-matter of the courses of study. Graduation should be based on achievement and the degree which is given to all graduates alike should stand for a certain achievement and not for a certain length of time spent in routine class work, whether that work is done excellently or only passably.

This plan encourages the capable student to use his powers to gain time which can then be devoted to graduate work, to self-support, to general reading, to music, to other self-culture, or to entering on his vocation. Under the operation of this rule in its first year, the largest number of students profiting by it have gone on into graduate work. The next largest number have taken their time for additional employment for self-support and for relief from part of their work on account of ill health.

The superior student may gain one, two, or three quarters of time under this rule and he is therefore encouraged to do his best work. Two advantages are expected: the better and higher development of the powers of the superior student through effort in the exercise of those powers, and a fairer competition between studies and "activities" to command the student's interest and effort.

Finally the faculty voted the following plan for graduation honors:

Graduation cum laude.—Students who secure not less than 2 honor points per credit hour in all work carried, will be awarded the degree B.A. *cum laude*.

Graduation magna cum laude.—On the recommendation of his major department and with the approval of the Committee on Honors, candidates for honors may pursue in the Senior College, in addition to the prescribed major and minor studies and in lieu of any or all elective courses, a course of reading under the direction of the committee. Such students will pass a comprehensive examination on the whole field of their Senior College work. Successful candidates will be awarded the degree B.A. *magna cum laude*.

Graduation summa cum laude.—A candidate who meets the requirements for honors and in addition presents an acceptable critical paper, a piece of creative work or thesis embodying the results of original research, will, upon recommendation of the committee be awarded the degree B.A. *summa cum laude*.

Some time will be required to bring all these plans into full operation and to see their results. The sectioning of classes and the arrangement of special courses of study should be carried out gradually and with care. The plan to allow honor students more freedom in their studies and the introduction of the comprehensive examinations are especially important but will require time to enlist the interest of students.

These attempts to solve some of the problems outlined serve to emphasize difficulties which are as yet scarcely touched. Where these

difficulties lie is indicated by the large floating attendance, by the large number of intellectually capable students who do not make good, and by the crowded classes of Junior College grade. The great divergence in size between the Junior College and the Senior College classes is due primarily to the transfer of students to one of the professional schools after one or two years of work in the Junior College. The large number of students who leave college altogether at the end of the freshman or sophomore year fall into one of three classes: first, students who desire, and will profit by, only one or two years of college work; second, students who could, under more favorable conditions, profit by longer college training leading to a college or professional degree; and third, students who were not fitted for college training at all but who had no means of finding this out except by trying and failing.

For the last group it is hoped that studies now in progress will furnish means of information which can be utilized by students, parents, and secondary school teachers in making much more clear and accurate judgments regarding the fitness of high school pupils for college work. From this will result better choices of vocation and of the channels or means of securing the best training for the chosen vocations.

For the second group there is required some form of improved advice or direction and of moral and character-building influences which have already been discussed. A very definite and insistent problem before the college is the amount of added effort that should be put into this field by the members of the faculty and the best channels or vehicle for this effort. The personal and individual influence of teachers through their moral and intellectual enthusiasm is of the greatest importance and should be the object of increased effort by every teacher. Better organization and more efficient advice by officials appointed for the purpose of directing registration and aiding students in their curriculum and study problems also deserves fuller study and development.

With regard to the first group we must squarely face the question whether their training is a proper university function. It is not clear that the majority of these students secure any definite, tangible advantage from following courses of study designed to lead to a college degree for which they do not wish to be candidates. There is nothing more productive of inefficiency and waste in education than to have classes swollen by students who are not interested in the work being done or to have the membership of the college community largely made up of persons who have no specific object, aimlessly doing or neglecting the work for which students are here. In so far as this condition exists it can be remedied only by providing lines of work so conducted as to be specifically useful to persons who can spend only one or two years at the University, or by providing for such persons in other institutions. If they are to be provided for here, it will be necessary to make a careful study of their needs (whether vocational, technical, artisan-training, and so forth); to determine what unit of the University shall provide the desired opportunities; and to make every effort to induce students to

enter that school or field in which they can work with interest toward some definite goal.

Whatever more may be done, all these considerations lead to a further emphasis on the distinction between the Junior and the Senior College with a more complete development of the characteristic functions of each. The Junior College is essentially a preparatory school for professional training and the Senior College should be regarded as essentially a professional school offering training for scholarly pursuits or cultivation of the intelligence for the duties of citizenship. This conception of the function of the Junior College together with the great numbers of students whom it must introduce to intellectual pursuits constitute the ground for considering such proposals as the all-University Junior College or the all-University freshmen year. For the same reasons it might be desirable to create a more or less fully segregated Junior College faculty selected for the ability of its members to teach and discipline students of this grade. It may be suggested also that the Junior College curriculum be further limited in the departments and courses open to students who intend to go on to the college degree, and expanded for those who are here for vocational or technical training of one or two years only. For all students it is possible that some form of certificate of completion of the Junior College course would be a desirable stimulus. For the satisfactory working out of all these problems there is necessary an extension of testing and personnel work, an improvement of faculty advising, and an investigation of students' needs and attainments.

D. SPECIAL ACTIVITIES

The Bureau for Research in Government makes an annual report to the dean. The following extracts are made from the report of the director, Professor William Anderson, for the year 1921-22:

THE CITY CHARTER PROBLEM

The year 1921-22 has been unique in the amount of interest shown by the cities of this state in charter revision. Since 1896 the cities of this state have been empowered to frame, adopt, and amend the charters under which they are governed. To-day sixty-five out of the ninety-one cities in the state have so-called home rule charters. Due to the great increase in the cost of government everywhere and to the general feeling that the cost could be much reduced by a more efficient government organization, there is a widespread and spontaneous demand for the overhauling of the machinery of local governments. During the year which is just closing, official and unofficial organizations in most of the larger cities of the state, including Minneapolis, St. Paul, Duluth, Winona, Hibbing, Albert Lea, Austin, and Faribault, and in many smaller places, have been taking up the work of charter revision. The director has given a considerable portion of his time to the Minneapolis and St. Paul problems, and has been in correspondence with interested persons in all of the other places here mentioned. It has been evident for some time that the chief difficulty confronting charter commissions in this state has been the lack of information as to the problems of charter-making. The director undertook, therefore, the preparation of a handbook upon this subject and also of several articles dealing with special phases of this problem. These undertakings were completed and published during the year and have been put into the hands of a con-

siderable number of interested persons. The publications are listed separately below. The book on *City Charter Making in Minnesota* has already been made the textbook of the charter commissions in two cities and also of a large citizens' organization in St. Paul. This book is the only publication of its kind in the United States at the present time and it seems to be filling a need which has been long felt.

PUBLICATIONS

City Charter Making in Minnesota, by William Anderson. 1922. ix, 198 pages. Published by the Bureau for Research in Government as the first of its regular series of publications.

Is the City Manager Plan Constitutional in Minnesota? *Minnesota Municipalities* 6:163-69. December, 1921.

Proportional Representation in Minnesota. *Minnesota Municipalities* 6:81-85. June, 1922.

Respectfully submitted,

J. B. JOHNSTON, *Dean*

THE COLLEGE OF ENGINEERING AND ARCHITECTURE

To the President of the University:

SIR: I have the honor to submit my report for the College of Engineering and Architecture for the year 1921-22.

FACULTY

New appointments.—Arthur C. Hanson, part-time instructor in architecture; E. B. Feldman, instructor in civil engineering; Maurice W. Hewitt, instructor in civil engineering; William L. Stanton, instructor in civil engineering; Victor Gauvreau, instructor in mechanical engineering; George L. Tuve, instructor in mechanical engineering; John H. Moffett, instructor in mechanical engineering; Joseph W. Nilson, instructor in mechanical engineering; Emanuel C. Manderfeld, fellow in electrical engineering; Ludwig C. Larson, fellow in electrical engineering; Henry C. Forbes, assistant in electrical engineering; Sidney A. Frellson, instructor in drawing and descriptive geometry; Elmer W. Johnson, instructor in mathematics and mechanics; Lewis M. Becker, instructor in mathematics and mechanics.

Leaves of absence.—John I. Parcel, professor of structural engineering, sabbatic furlough for study in Europe; S. Chatwood Burton, assistant professor of architecture, sabbatic furlough to paint and etch in Europe; S. Carl Shipley, professor of machine construction and superintendent of shops, leave without pay, as professor of mechanical engineering at Robert College, Constantinople, Turkey; Carroll E. Lewis, instructor in drawing, leave without pay, spring quarter.

Resignations.—Ralph W. Hammett, instructor in architecture; William L. Stanton, instructor in civil engineering; Joseph C. Worrell, instructor in civil engineering; Edwin E. Clark, instructor in mathematics and mechanics; Frank E. Peacock, instructor in mathematics and mechanics; Harley G. Overholt, instructor in mathematics and mechanics.

Death.—Dr. Henry T. Eddy, professor emeritus of mathematics and mechanics and dean emeritus of the Graduate School. Died December 11, 1921.

The following biographical note by Professor John J. Flather is taken from *Science* of January 6, 1922:

DR. HENRY TURNER EDDY

The death of Henry Turner Eddy occurred at his home in Minneapolis on December 11, 1921, due to an acute attack of pneumonia, after only a few days' illness.

Dr. Eddy was born at Stoughton, Mass., on June 9, 1844. He was the son of Henry Eddy, Yale '32, Congregational minister, and Sarah Hayward (Torrey) Eddy, a graduate and teacher of mathematics at Mt. Holyoke Seminary.

Dr. Eddy graduated from Yale A.B. '67, Ph.B. '68, A.M. '70, Hon. Sc.D. 1912; Cornell, C.E. '70, Ph.D. '72; and Center College (Ky.) LL.D. He also studied at the University of Berlin and at the Sorbonne, Paris. He was instructor in Latin and mathematics at the University of Tennessee, 1868-9; assistant professor of mathematics and civil engineering, Cornell, 1869-73; adjunct professor of mathematics, Princeton, 1873-74; professor of mathematics and astronomy and civil engineering, 1874-90, and dean of the academic faculty, 1874-7, at the University of Cincinnati, and was its president-elect in 1890. The following year he went to Rose Polytechnic Institute, Terre Haute, Indiana, as its president and remained there until 1894, when he resigned and went to the University of Minnesota as professor of engineering and mechanics, in the College of Engineering. In 1906 he was elected dean of the Graduate School, which position he held until his retirement from university work in 1912 as professor and dean emeritus.

After his retirement from teaching at 68 years of age, Dr. Eddy formed an association with Mr. C. A. P. Turner, consulting engineer, of Minneapolis, and spent several happy years in mathematical researches concerning the properties and stresses in reinforced concrete floor slabs, the results of which he published in collaboration with Mr. Turner. Dr. Eddy was one of the first to take up the subject of graphical statics and in 1878 he published his well-known "Researches in Graphical Statics"; this was followed in 1879 by a treatise on "Thermodynamics"; previously to this he had published a mathematical text on "Analytical Geometry."

Dr. Eddy was a member of numerous scientific societies of varied interest, including the American Association for the Advancement of Science, of which he was one of the vice-presidents in 1884; the American Philosophical Society, the American Mathematical Society, the American Physical Society, and the Society for the Promotion of Engineering Education, of which he was an honored past president. He was a man of versatile attainments, as shown by his many valuable contributions to the various societies to which he belonged.

Dr. Eddy was a man of quiet, scholarly tastes, genial in his intercourse and always an inspiration to his associates. He was married in 1870 to Sebella Elizabeth Taylor, of New Haven, Conn., who died on September 5, 1921, only three months prior to the death of her husband. The surviving children are: Horace T. Eddy, Omaha; Mrs. Charles F. Keyes, Minneapolis; Mrs. Clive Hastings, Atchison, Kan.; Mrs. Charles H. Patek, Minneapolis, and Mrs. J. B. Frear, Buffalo, N.Y.

The faculty of the Graduate School of the University of Minnesota has placed on its records the following tribute:

"Henry Turner Eddy, Ph.D., LL.D., died on December 11, 1921, at the age of 77 years. In his death the faculty of the University has lost one of its most eminent and honored members.

As professor of mathematics and mechanics from 1894 to 1905, as the first dean of the Graduate School from 1906 to 1912, and as professor emeritus since 1912, Dr. Eddy was a distinguished associate whom the faculty was proud to own as a colleague. His ability as a mathematician won him an international reputation and his high general scholarship and Christian character endeared him to all with whom he came in contact. He was an educator of the highest type, an inspiration to his students and intimate associates, and a wise, sympathetic counsellor in the faculty conferences.

The faculty would express its heartfelt sympathy with the family, in the faith that God has given the departed a rich reward; and the assurance that it cherishes the memory of a noble life that has left a precious and imperishable heritage."

J. J. F.

STUDENTS
REGISTRATION

FALL QUARTER, 1921-22

	Arch.	Civil	Elec.	Mech.	Gen.	Undec.	Total	1920-21
Freshmen	45	9*	3*	3*		202	356	372
Sophomores	35	78	109	59	..	2	283	314
Juniors	19	51	73	38	2	..	183	171
Seniors	12	51	48	25	5	..	141	123
Unclassed .....	..	..	..	..	..	23	23	12
Total	111	189	233	125	7	317	986	992

WINTER QUARTER, 1921-22

	Arch.	Civil	Elec.	Mech.	Gen.	Undec.	Total	1920-21
Freshmen	36	..	..	..	..	325	361	319
Sophomores	35	78	108	63	..	..	284	317
Juniors	19	54	65	37	..	..	175	155
Seniors	13	47	44	22	6	..	132	115
Unclassed	10	..	..	2	..	3	15	9
Total	113	179	217	124	6	328	967	915

SPRING QUARTER, 1921-22

	Arch.	Civil	Elec.	Mech.	Gen.	Undec.	Total	1920-21
Freshmen	38	3*	8*	..	..	258	307	275
Sophomores	30	73	104	59	..	..	266	273
Juniors	19	49	66	33	..	..	167	140
Seniors	13	22	42	19	4	..	109	94
Unclassed	3	2	..	2	..	3	10	13
Total	103	149	220	113	4	261	850	795

* Engineering freshmen do not have to select their course until beginning of second year.

DEGREES CONFERRED, 1921-22

	DECEMBER 1921	MARCH 1922	JUNE 1922	TOTAL
Bachelor of science in				
Architecture .....	..	..	12	12
Civil engineering .....	..	22	17	39
Electrical engineering	4	3	37	44
Mechanical engineering .....	..	4	18	22
Engineering	2	..	2	4
Total	6	29	86	121
Total 1920-21				80

BUILDINGS

The completion of the building for the School of Chemistry afforded relief to the College of Engineering and Architecture by providing for the transfer to the Chemistry Building of all of the freshman drawing classes in engineering. In this way, rooms were made available in the Main Engineering Building for instruction in rhetoric, which had been omitted last year through a change in the curriculum. Additional reading room space was also provided for the Engineering Library.

Plans for the Electrical Engineering Building are in progress. The Board of Regents has appropriated \$300,000 from the Comprehensive Building Fund for this building, and has located it on the west side of Church Street, opposite the Main Engineering Building. In preparation for the plans an inspection of a number of the leading electrical laboratories of the country was made last summer by the consulting architect, Professor Forsythe, Professor Springer of the Department of Electrical Engineering, and the dean, resulting in a great deal of valuable information. It is hoped that the final plans may be completed so that construction may begin in the fall of 1922.

EQUIPMENT

During the past year, the laboratory equipment of the college has been materially increased and improved through the allotment of special funds for this purpose. Altho these funds represented but a part of the needs, a substantial beginning has been made toward the replacement of obsolete machinery and the addition of very important items. It is hoped that this gradual improvement may be continued until the equipment of the college is once more established on a modern and satisfactory basis, for the instruction of young engineers.

Through a very timely visit by Professor L. E. Arnal to Paris, last summer, the Department of Architecture has acquired a very valuable series of original architectural drawings, some of which received prizes in European competitions. Such works form a very essential part of the equipment of this department.

ENGINEERING EXPERIMENT STATION

In December, 1921, the Board of Regents established the Engineering Experiment Station and Bureau of Technological Research with the dean of the college as its director. This step must be regarded as of far-reaching importance in the growth of the college and the development of research.

The Experiment Station will be a medium through which the research activities in the various departments will be correlated and stimulated; coöperation between the University and the industries of the state will be facilitated; and the service of the University to the state will be extended.

The University can now take its position among those leading institutions of the country at which technological research is recognized and supported. It is generally conceded that the College of Engineering of

the University of Illinois owes a great part of its development and prestige to its experiment station. It will be of interest to note that the Illinois Engineering Experiment Station funds amount to about \$90,000 a year and that Iowa State College receives about \$45,000 for this purpose.

COÖPERATION WITH STATE DEPARTMENTS

Minnesota Tax Commission.—At the beginning of the year 1922, an arrangement was made, and approved by the Board of Regents, whereby this college would act in the capacity of an engineering department for the Minnesota Tax Commission for the appraisal of public utilities and other public property. This work has been carried on under the direction of Professor W. T. Ryan, of the Department of Electrical Engineering. The direct expenses are borne by the Tax Commission.

The School of Mines performs a similar service to the Tax Commission, as regards mining property.

Board for Licensing Engineers, Architects, and Land Surveyors.—At the request of the State Board for Licensing Engineers, Architects, and Land Surveyors, this college has rendered assistance in the preparation of professional examinations.

Highway Department.—During this year, the college has continued to coöperate with the Minnesota Highway Department in the conduct of its experimental investigations which are carried on in the laboratories. Also our Assistant Professor F. C. Lang, who is in charge of the highway instruction in the Department of Civil Engineering, serves as engineer of tests for the Highway Department, being employed on a part-time basis by the University. In this way the students in highway engineering are brought into a close relationship with the development of the great highway system of the state.

CURRICULA

Engineering administration.—The demand for engineers who have been trained, through education or experience, to fill executive positions, has resulted in the provision for special courses of instruction leading to this field of service. Several of the universities of the country have established entire curricula of this character. While the need of a separate curriculum in engineering administration does not appear urgent here at Minnesota, a special group of courses amounting to twenty-eight credits has been arranged for advanced engineering students who desire to avail themselves of it. It includes courses in economics, accounting, business law, cost accounting, organization and management, public utilities, corporation finance, and industrial relations. These courses are given in the School of Business, which has made important concessions for the benefit of this group of students. The large number of engineering students who elect courses in the Department of Economics would indicate a fair appreciation of the new plan.

Five-year courses in engineering.—For many years, there has been a strong feeling among engineering educators that more than four years

should be devoted to the regular engineering course. In some cases, so-called five- and six-year courses have been established, but without pronounced success. Generally, the Bachelor's degree was given at the end of the fourth year, and probably as a result of this, a large number of the students failed to return for the fifth year.

Similarly, there has developed a tendency to broaden the engineering curriculum by the inclusion of electives of a liberal or cultural value, even at the expense of the more highly specialized technical courses. Naturally, this calls for more time. However, the extension of engineering fields of activity necessitates the introduction of additional courses, so that it seems almost impossible to eliminate any of the engineering subjects. Thus, there is a continuous conflict between these two tendencies.

On May 19, 1922, a conference of the deans of various Middle West engineering colleges was held in Chicago and the following resolutions were adopted:

RESOLUTIONS

The undersigned engineering deans, directors, and representatives, in conference assembled, hereby resolve that

In order to meet the constantly enlarging responsibilities of the engineering profession, we favor an advance in engineering education at this time that shall provide five years of collegiate training for those engineering students whose aim is to become qualified to take positions among the creative leaders in the profession, and that such advance shall be made in substantial accordance with the following plan:

1. Include in the four-year engineering curricula a substantial proportion of fundamental and humanistic subjects, omitting, if necessary, a sufficient amount of the more advanced technical work. It is desirable that, so far as possible, the curricula in the different branches of engineering shall be sufficiently uniform to permit students to defer their final choice of a specialty at least to the end of the second year.

2. Add a fifth year of advanced work, mostly or wholly technical, and specialized to such an extent as desired.

3. The first four years of work shall lead to a Bachelor's degree and the fifth year to an advanced degree in engineering.

Resolved that each member of this conference will present the above resolutions to the authorities of his institution and will report back at the second session of this conference which is to meet at Urbana, Illinois, during the week of June 18, 1922, on call of the chairman.

W. G. RAYMOND, University of Iowa, Chairman
 O. M. LELAND, University of Minnesota, Secretary
 E. A. HITCHCOCK, Ohio State University
 A. A. POTTER, Purdue University
 M. E. COOLEY, University of Michigan
 G. W. BISSELL, Michigan Agricultural College
 C. R. RICHARDS, University of Illinois
 J. F. HAYFORD, Northwestern University
 EDWARD BENNETT, University of Wisconsin
 E. J. BABCOCK, University of North Dakota
 O. J. FERGUSON, University of Nebraska
 ANSON MARSTON, Iowa State College
 W. E. McCOURT, Washington University
 H. S. EVANS, University of Colorado

The above recommendations are entirely in accord with the present practice in this college. Generally, we have made provision for a considerable election by the student and we also provide a fifth year of technical work, which, since last year, has been administered by the Graduate School.

At the recent meeting of the Society for the Promotion of Engineering Education in June, 1922, the reports from the various institutions upon the above resolutions showed that the consensus of opinion was decidedly in favor of the policy recommended by the conference.

RADIO ENGINEERING

The Radio Engineering Division of the Department of Electrical Engineering, under the direction of Assistant Professor C. M. Jansky, Jr., has taken a prominent and leading part in the development of radio telephony in this region of the country. This has been facilitated by coöperation with the Signal Corps of the United States Army, through the R.O.T.C. unit at this University.

Within a few months, at the request of Secretary of Commerce Herbert Hoover, this University sent Professor Jansky to Washington as a member of the National Conference on Radio Telephony. As a result of this conference, legislation by Congress has been recommended and will, undoubtedly, be carried into effect.

By this participation, the University, through Professor Jansky, has rendered a national service of recognized value and significance, and our radio instruction and research have won a merited recognition throughout the country.

ENGINEERING EXTENSION SERVICE

One of the great functions of a state university lies in its service to the people of the state. Much of such service is of an engineering nature, and with the rapid growth of the industries and wider applications of the technical sciences, some organization for the efficient and systematic discharge of this duty becomes necessary.

An engineering extension service should therefore be considered as one of the important activities of this college, and plans looking to its establishment and operation should be developed.

One of the principal objects of such a bureau would be to advise the smaller municipalities about their engineering problems such as water supply and purification, sanitation, sewerage and sewage disposal, streets and pavements, city-planning, street-lighting, etc. This would not be free consulting service in competition with professional engineers, but the extension engineer would study the conditions and needs of a community, advise as to the possibility of making improvements, and then would recommend the employment of the proper professional engineers to prepare the plan and carry it into effect.

Similarly, the smaller industries could be assisted, and the benefit to the entire state would be important. Members of the teaching staff could be utilized for a part of their time, especially in the summer, to the distinct advantage of their teaching.

The far-reaching benefits of agricultural extension have become recognized. Engineering extension service should accomplish equally important results.

Respectfully submitted,

O. M. LELAND, *Dean*

THE DEPARTMENT OF AGRICULTURE

To the President of the University:

SIR: I beg leave to submit the following report of the work of the Department of Agriculture for the fiscal year ending June 30, 1922.

ORGANIZATION

No significant changes have been made in the administrative organization of the department during the year.

Changes in personnel.—The following changes in the membership of the teaching and research staff of professorial rank occurred during the year:

Resignations.—J. S. Montgomery, extension livestock specialist; M. J. Dorsey, associate professor of horticulture; Margaret K. Mumford, assistant professor of home economics; A. J. McGuire, coöperative creamery specialist.

Leaves of absence.—A. J. McGuire, coöperative creamery specialist, was granted leave of absence from July 1, 1921 to January 1, 1922 to help organize the Minnesota Co-operative Creameries Association; his leave was extended to July 1 at which time he resigned his position in order to continue his work with the Minnesota Co-operative Creameries Association; J. D. Black, professor of agricultural economics, was granted leave of absence for the month of September, 1921 to work with the United States Department of Agriculture and was later granted leave from April 1 to July 1, 1922 to work with the Bureau of Markets and Crop Estimates, United States Department of Agriculture; Clara Brown, assistant professor of home economics, was granted sabbatical furlough from March 1 to September 1, 1922 to complete work for a Master's degree at Columbia; Amy P. Morse, assistant professor of home economics, was granted sabbatical furlough during the fall and winter quarters for the purpose of study at Boston; George F. Howard, assistant professor of agricultural extension, was granted leave of absence from September 15, 1921 to February 1, 1922 to work with the State Department of Education on Boys' and Girls' Clubs; Alice Child, assistant professor of home economics, was granted leave of absence during the spring quarter because of illness; E. C. Stakman, professor of plant pathology, was granted sabbatical furlough from May 8, 1922 to September 27, 1922 to study rusts of cereals in Europe under the United States Department of Agriculture.

Promotions.—R. B. Harvey, from assistant professor to associate professor of plant pathology and botany; W. H. Peters, from professor and acting chief of the Division of Animal Husbandry to professor and chief of the division; Leroy S. Palmer, from associate professor to professor of agricultural biochemistry; J. G. Leach, from instructor to assistant professor of plant pathology.

Appointments.—

- Ray S. Dunham, agronomist, rank of assistant professor, at Northwest School and Station, Crookston
B.S., 1914, University of Illinois
- O. M. Kiser, assistant professor of animal husbandry, at Northwest School and Station, Crookston
B.S., 1908, Kansas Agricultural College
- William E. Peterson, assistant professor of dairy husbandry and superintendent of official testing
B.Agr., 1916, University of Minnesota; M.S., 1917, University of Minnesota
- H. G. Zavoral, livestock specialist, agricultural extension
B.S.A., 1915, University of Minnesota
- Ralph F. Crim, extension specialist in agronomy, rank of assistant professor
B.S., 1913, Ohio State University

Adjustments.—A. G. Ruggles, professor of economic entomology and state entomologist, giving half time to the University as professor of economic entomology and half time to the State Department of Agriculture as state entomologist; C. H. Bailey, professor of agricultural biochemistry and director of State Experimental Flour Mill in the State Department of Agriculture, giving half time to the University and half time to the State Department of Agriculture; A. H. Larson, assistant professor of agricultural botany and director of the State Seed Laboratory, giving two-thirds time as assistant professor of agricultural botany to the University and one-third time as director of the State Seed Laboratory under the State Department of Agriculture.

PUBLICATIONS

During the year members of the Experiment Station staff submitted for approval for publication in the Journal Series a total of sixty-nine articles which serve as reports of progress upon projects of investigation in the station. Eleven articles were approved for publication in the series of miscellaneous contributions.

Five bulletins have been issued in the regular series, Nos. 195 to 199, inclusive. They contained a total of 320 pages and were issued in editions amounting to 43,000. One, No. 130, was reprinted in an edition of 10,000.

In the Technical Series, three bulletins were issued, Nos. 3, 4, and 5. These contained 214 pages, and the total number of bulletins was 9,000.

More Agricultural Extension bulletins were printed than for several years, a total of 13 new ones and 3 reprints. There were 176 pages in the new bulletins and 48 in the reprints. The editions totaled 122,000 and 20,000 respectively.

Four annual reports with a total of about 300 pages and 9,000 copies were issued. These were the *Twenty-ninth Annual Report of the Agricultural Experiment Station* and reports of the substations at Morris, Duluth, and Crookston.

Three bulletins were printed especially for the boys' and girls' club work. They included 80 pages and 30,000 copies.

Miscellaneous items include the seed corn letter and poster; farmers' and home-makers' week announcements, posters and programs; a farm crops folder; and posters for the use of picric acid land-clearing demonstrations, potato disease campaign, better poultry, and cleaning-up, 161,000 pieces.

The *University Farm Press News* was mailed out twice a month to 3,200 addresses; the *Weekly News Letter* to 1,000; and the *Extension Service News*, an eight-page monthly started in October, to about 2,500; total 151,300.

A total of 35,915 Experiment Station and 71,555 Extension bulletins were mailed in response to special requests.

REGISTRATION OF STUDENTS

The following table shows the registration of students in the Department of Agriculture for the year 1921-22, as compared with that for 1920-21:

	MEN		WOMEN		TOTAL	
	1921-22	1920-21	1921-22	1920-21	1921-22	1920-21
I. COLLEGE OF AGRICULTURE						
Agriculture						
Seniors	77	64	1	1	78	65
Juniors	79	68	....	....	79	68
Sophomores	78	99	1	....	79	99
Freshmen	60	119	....	1	60	120
Unclassed	9	6	....	....	9	6
Total	303	356	2	2	305	358
Forestry						
Seniors	7	7	....	....	7	7
Juniors	23	8	....	....	23	8
Sophomores	24	31	....	....	24	31
Freshmen	20	18	....	....	20	18
Unclassed	2	2	....	....	2	2
Total	76	66	....	....	76	66
Home Economics						
Seniors .....	....	....	82	57	82	57
Juniors .....	....	....	111	77	111	77
Sophomores .....	....	....	84	99	84	99
Freshmen .....	....	....	111	73	111	73
Unclassed	1	1	22	26	23	27
Total	1	1	410	332	411	333
War Specials	59	21	1	....	60	21
Total college year	439	444	413	334	852	778
Summer Session	70	120	115	126	185	246
Total collegiate registration ..	509	564	528	460	1,037	1,024
Duplicates	43	43	40	34	83	77
Net total	466	521	488	426	954	947

	MEN		WOMEN		TOTAL	
	1921-22	1920-21	1921-22	1920-21	1921-22	1920-21
II. SCHOOL OF AGRICULTURE						
Three-year course						
Seniors	93	122	24	38	117	160
Juniors	111	190	28	53	139	243
Freshmen	178	224	31	56	209	280
Unclassed	290	111	24	6	314	117
Total	672	647	107	153	779	800
Intermediate .....	.....	21	.....	4	.....	25
Special .....	.....	1	.....	1	.....	2
Total school registration....	672	669	107	158	779	827
Vestibule school.....	274	162	.....	.....	274	162
Special vestibule school.....	12	.....	.....	.....	12	.....
Total school and vestibule....	958	831	107	158	1,065	989
Duplicates	101	34	.....	.....	101	34
Net total.....	857	797	107	158	964	955
III. SHORT COURSES						
Dairy School						
Advanced factory cheese-makers .....	.....	2	.....	.....	.....	2
Advanced creamery butter-makers .....	.....	18	.....	.....	.....	18
Advanced creamery operators	20	.....	.....	.....	20	.....
Creamery butter-makers....	.....	57	.....	.....	.....	57
Creamery operators.....	43	.....	.....	.....	43	.....
Ice cream makers.....	.....	17	.....	.....	.....	17
Ice cream plant operators..	20	.....	.....	.....	20	.....
Milk plant operators.....	.....	7	.....	.....	.....	7
Milk plant operators—evening .....	.....	93	.....	.....	.....	93
Total dairy school.....	83	194	.....	.....	83	194
Extension gymnasium Luther Seminary .....	.....	60	.....	.....	.....	60
Extension swimming.....	.....	.....	.....	33	.....	33
Extension swimming.....	.....	19	.....	.....	.....	19
Gymnasium for St. Anthony Park boys.....	.....	24	.....	.....	.....	24
Gymnasium for station clerks and women of St. Anthony Park .....	.....	.....	.....	31	.....	31
Total extension gymnasium .....	.....	103	.....	64	.....	167

THE PRESIDENT'S REPORT

	MEN		WOMEN		TOTAL	
	1921-22	1920-21	1921-22	1920-21	1921-22	1920-21
Beekeepers' short course.....	24	.....	7	.....	31	.....
Home nursing short course..	.....	.....	.....	61	.....	61
Horticultural short course....	25	.....	19	.....	44	.....
Traction engineering.....	.....	21	.....	.....	.....	21
Gas tractor short course.....	.....	15	.....	.....	.....	15
Library training school.....	.....	.....	.....	39	.....	39
Scout masters' short course at Itasca Park.....	26	26	.....	.....	26	26
*Total short courses.....	158	359	26	164	184	523
Duplicates	7	8	.....	2	7	10
Net total.....	151	351	26	162	177	513
Total at University Farm....	1,625	1,754	661	782	2,286	2,536
Duplicates	172	100	40	37	212	137
Net total.....	1,453	1,654	621	745	2,074	2,399
IV. NORTHWEST SCHOOL OF AGRICULTURE AT CROOKSTON						
Three-year course						
Seniors	30	39	15	16	45	55
Juniors	33	36	13	14	46	50
Freshmen	75	91	39	29	114	120
Total	138	166	67	59	205	225
Fourth year.....	11	.....	1	.....	12	.....
Total School of Agriculture..	149	166	68	59	217	225
Short courses						
Junior short course.....	52	42	25	35	77	77
Total short courses.....	52	42	25	35	77	77
Total Northwest School of Agriculture						
Duplicates	201	208	93	94	294	302
Duplicates	2	.....	.....	.....	2	.....
Net total.....	199	208	93	94	292	302
V. WEST CENTRAL SCHOOL OF AGRICULTURE AT MORRIS						
Three-year course						
Seniors	26	17	15	23	41	40
Juniors	25	41	15	24	40	65
Freshmen	64	92	19	34	83	126
Unclassed	15	.....	16	.....	31	.....
Total	130	150	65	81	195	231
Fourth year.....	7	2	2	.....	9	2
Total School of Agriculture..	137	152	67	81	204	233

* It should be noted that only those short courses are included for which the registrants pay fees to the University. This excludes a number of courses such as boys' and girls' week, editors' short course, and farmers' and home-makers' week.

	MEN		WOMEN		TOTAL	
	1921-22	1920-21	1921-22	1920-21	1921-22	1920-21
Short courses						
Boys' and girls' week.....	52	37	78	58	130	95
Farm women's week.....	.....	.....	60	122	60	122
Total short courses.....	52	37	138	180	190	217
Total West Central School of Agriculture	189	189	205	261	394	450
Duplicates .....	.....	.....	.....	.....	.....	.....
Net total.....	189	189	205	261	394	450
Total registration						
Department of Agriculture.	2,015	2,151	959	1,137	2,974	3,288
Duplicates	174	100	40	37	214	137
Net total registration....	1,841	2,051	919	1,100	2,760	3,151

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Administration.—The final arrangements between the College of Education and the College of Agriculture, Forestry, and Home Economics in regard to those students who are preparing for the University teacher's certificate in agriculture and home economics have been tested out this year and have so far proved feasible and satisfactory. The first classes under this arrangement graduated during this year. Totals for the year: agriculture—13 and home economics—30. The curriculum and students' work arrangements for these students have been made as simple as possible in order to avoid any annoying complexity of registration or control and at the same time to give to the student the advantages of the offerings in both colleges. It is only fair to add that the burden of the successful management of this coöperative scheme falls largely on the teaching staff in home economics and agricultural education, who as members of two colleges have now additional duties and responsibilities. The success of this year has been largely due to the excellent spirit and persistent industry of the staffs of these divisions in a whole-hearted effort to provide for our prospective teachers of agriculture and home economics the best opportunities for teacher-training. The future success will always depend largely on the tact and sincere interest of the members of the staff.

The faculty of the College of Agriculture, Forestry, and Home Economics has laid plans for a thoro study of teaching methods in the classes of this college with the object of developing methods for the further study and the improvement of such teaching.

Curriculum.—No radical changes have been made in the organization of the curriculum, which now offers to students in all lines a very wide choice of studies. A minimum of specified fundamental work in sciences, English, technical work, etc., is required of all students—for the remainder of the course students who know exactly what they desire to prepare for may elect their own courses of study. Carefully worked-out curricula as prepared by the faculty are also provided for various lines of specialization and for preparation in general farming. Opportunities for work in landscape gardening have been increased and a suggested curriculum prepared for students majoring in farm engineering.

A demand has arisen for more technical work in farm engineering leading to the degree of bachelor of science in agricultural engineering. Preliminary plans have been made and negotiations begun with the College of Engineering with a view of arranging for such students a course of study in both colleges under a coöperative agreement. There is some need for men who understand modern agriculture and agricultural conditions and who also are sufficiently trained in engineering to solve the numerous engineering problems which the farmer is now facing—as in drainage, land clearing, and tractor and power machinery.

Coöperation with other colleges.—The plant science coöperation between divisions of this college and departments in other colleges has been very successful. A special bulletin is being published and much has been done to make more available the opportunities in the different colleges. Such coöperation not only has increased the effectiveness of the existing departments but has contributed greatly to a spirit of usefulness and has assisted in the avoidance of unnecessary duplication of staff and equipment.

Student registration.—The registration figures shown elsewhere indicate a normal total increase in registration. This increase has been in home economics and in forestry while the registration in agriculture has slightly decreased, due without doubt to the general agricultural depression with the consequent financial stringency. For the first time in the state's history the supply of agricultural teachers for high schools exceeds the demand. While about 75 per cent of the students graduating in agriculture plan to go back to farming, the problem of raising sufficient capital to begin operations is particularly acute at this time. The growth in the forestry enrolment has been healthy and steady and is due to the opportunities opening up in the industries dealing with wood and forest products. Increased interest is being exhibited by the students in home economics in the opportunities for institutional management, and special facilities for study and for giving assistance have been established in connection with other colleges, such as the School of Medicine and the College of Dentistry. There is a marked tendency in the agricultural courses for students to increase their knowledge of agricultural economics as in marketing and farm finance.

Student activities.—With the increase in enrolment the total number of college and graduate students for the year has now reached 1,000.

The need for additional space for general activities is becoming increasingly urgent. The Men's Union room is entirely inadequate and additional space should be provided as soon as possible. There is no place where the men can meet for recreation or rest between classes. Dormitories would also add greatly to the efficiency of the college. Our students should be given opportunities to associate with one another and with members of the faculty so that they may gain information and inspiration as to the solution of the general agricultural problems of the day—not gained in the classroom.

Alumni contacts.—An attempt is being made to keep in closer touch with the alumni in the hope that we may be able to place these alumni in positions where they can be of greatest service to their communities and to the state, and where they can best utilize and profit by their training and preparation in college. The college will profit greatly by a closer contact in the information available from alumni as to opportunities for others and in the experience of those alumni as a guide for the future training of students.

THE SCHOOLS OF AGRICULTURE

THE CENTRAL SCHOOL AT UNIVERSITY FARM

The School of Agriculture at University Farm has had during the past year 392 men in training under contracts with the United States Veterans Bureau. All of these men who were in attendance at the close of the school year registered for projects the same as other students for the succeeding six months.

In the past this project work could be taken on any acceptable farm chosen by the student. It was found, however, that in a large number of instances the student took his project work on the farm of some relative or stranger, and the results from such work were not satisfactory and did not lead toward the rehabilitation of the trainee in any sense. At the close of the training period, the student had nothing to show for his work that would lead to an independent career.

The school, with the coöperation of the local and district officers of the Veterans Bureau, established the general policy that all project work of trainees must be performed on land owned by the trainee, or on some livestock to be moved to land owned by him.

The results have been far better than anticipated. More than three hundred students have acquired land of their own through the direction and encouragement of the school and are now establishing homes for themselves and their families. Thus there has been brought to bear on the project work the strongest motive in human life, the establishment of a home. Some of the trainees have formed coöperative groups for the purpose of purchasing land and have been very successful, not only in the selection and purchase of land, but in coöperating in clearing and building operations.

By the policy established for the trainees a large contribution has been made this year in the establishment of successful farm homes in the state. That the same policy should be continued for the trainees in the future is evident, and that there should be a plan devised to aid other students, who are without land, to obtain farm homes, is a matter that should receive careful consideration.

THE NORTHWEST SCHOOL AT CROOKSTON

The year 1921-22 at the Northwest School was marked by a record of a larger number of total days attended during the entire year than the year before due to the large fall term enrolment and the fact that practically no time was lost through illness of students. The total enrolment was 292 with 215 in the general session. There were 147 men and 68 women enrolled in the regular three years' course. The graduating class numbered 43. Twelve were registered in the advanced class. The junior course enrolled 52 boys and 25 girls, a total of 77. The regular school students came from 17 counties. The annual Northwestern Minnesota Farmers' Week was held from February 6 to 10 with a large number, estimated at 3,000, in attendance. Visitors' Day was held in July. Frequent visits by groups of people from various communities featured the summer season.

The home project work was continued with 83 students registered. The projects chosen were potato, corn, sweet clover, and seed grain production, farm accounting, dairy herd management, pork production, poultry, gardening, beekeeping, canning, bread-making, and garment-making.

One hundred eighty-eight meetings were held by the school and station staff during the year. With different organizations that are coöperating with the school in various kinds of service, the year just passed has witnessed a resumption of normal activities. Boys' and girls' club work, under the leadership of an assistant state club leader who is a member of the school staff, greatly increased during the year. Approximately 3,000 boys and girls in northwestern Minnesota were enrolled.

No extensive building work was done. A new seed house, for storing pedigreed seed raised at the Northwest Station and remodeling the third floor of the Home Economics Building for home management practice quarters were the principal items. Considerable improvement work was done on the school grounds, including grading, graveling the roadways, and fencing. This work has been gradually developed to a point where soon only maintenance work will be required. The physical plant is in good condition.

The school needs a new smokestack, paving for the campus roadway, and improved quarters for classes now held and work done in the Owen Building. With the increase in enrolment that will come with the return to normal economic conditions on farms, this building will have to be remodeled and enlarged.

The experiment station work continues to progress. The work is well organized and is being carried on by capable workers. A full report of

this work is contained in the *Thirtieth Annual Report of the Agricultural Experiment Station.*

THE WEST CENTRAL SCHOOL AT MORRIS

The economic depression during 1921-22, following a poor crop year of the previous season, was particularly severe among farmers in western Minnesota, and had a marked influence upon the general school enrolment. There was a large demand for work on the part of students to help defray their school expenses and many former students could not return because of limited financial resources. More loans were made from student loan funds than ever before. The total school registration was 204. The previous year the registration was 234. There were 139 boys and 65 girls in attendance in 1921-22. The average age of boys was 19.4 years and of the girls 18.3 years. The registration was distributed over 23 western Minnesota counties and 3 outside states. The graduating class numbered 49 which is the largest class yet to complete the regular and advanced courses. There were few changes in the curriculum. New courses in farm marketing and meats were added. The home project work with boys and girls is now an established part of the curriculum. requirements and very gratifying results have been accomplished. The boys' and girls' club week in April and the women's week in June were largely attended. The latter short course is one of the most worth while and appreciated efforts of the school. It provides a week of rest, recreation, and inspiration for a large number of farm women in June when the campus is at its best.

The school extension work has included numerous speaking engagements and much office correspondence. The limited number of outside calls that can be supplied from the station has largely been confined to rural organizations in which students or alumni of the school are actively associated in their management. Members of the staff have used these opportunities to make a personal presentation of the results of experimental work being conducted at the station. During the year many organizations held meetings on the school campus and accepted the opportunity to learn more about the work of the school. The experiment station work is gaining in influence and importance throughout the district. The annual station report fully covers the progress and results of this work.

The new classroom building was available for the school year 1921-22. This building provides complete accommodations for all of the work in animal husbandry, agronomy, and horticulture including special laboratories for dairy practice, chemistry, farm crops, and horticulture, also meat killing and cutting rooms and a stock-judging pavilion with a seating capacity of 250. During the year the old Agronomy Building was completely remodeled and now cares for the Music Department and provides classrooms for much of the academic work. All of the old buildings which made up the original group when the school was established have either been removed or rebuilt with the exception of the Hospital, Home

Economics, and Administration buildings. These three buildings are in a state of repair which will necessitate complete rebuilding within the forthcoming biennium. The Hospital should be removed from the main campus square and rebuilt in a location consistent with the present campus layout. The Home Economics Building should be enlarged to accommodate the home management work. The Administration Building should be rebuilt to include an auditorium large enough for the present and future needs of the school.

SHORT COURSES

Most of the short courses that have been given for several years past were offered again this year, tho some changes were made by the omission of certain courses and the addition of certain others.

The threshermen's short course and the tractor operators' short course, which were given in connection with farmers' and home-makers' week the preceding year, were abandoned for the current year and in their place certain instruction of short course nature was given by our Division of Agricultural Engineering in connection with the tractor show held on the State Fair grounds during February.

The demand for short courses in different subjects has increased. During the current year this has led to the addition of several new short courses, the short course of one week in beekeeping during May, the short course of three weeks in horticulture during February and March, and the short course in land-clearing for nine days in June. In addition to these a short course for veterinarians has been established but the dates determined upon, July 12 to 14, bring it in the official year of 1922-23.

The largest short course of the year, farmers' and home-makers' week, was unusually successful despite the depressing economic and financial conditions. The Minnesota Farm Bureau Federation held its meetings for one day at University Farm during farmers' and home-makers' week. Twenty-four other organizations held meetings at University Farm during this same period. The Western Passenger Association granted a special rate of a fare and a half. The attendance was 1,542, which is the largest ever recorded save the year 1917. The attendance at this event has been increasing steadily since the low enrolment incident to the war. Interest on the part of those attending was equal if not superior to that of preceding years.

The attendance at the new short courses in horticulture and beekeeping fully warranted their establishment and presage satisfactory developments in the future.

The following short courses were held at University Farm during the year: milk plant operators' short course, one week in December; creamery operators' short course, six weeks in January and February; advanced creamery operators' short course, one week in November; ice cream plant operators' short course, one week in December; farmers' and home-makers' week short course, one week in January; horticulture short

course, three weeks in February and March; boys' and girls' week short course, one week in April; editors' short course, three days in May; bee-keepers' short course, one week in May.

The attendance at these short courses will be found on another page in this report.

Besides the above short courses held at University Farm there were others held at Crookston and Morris, as shown in reports from those schools, and a short course for Boy Scout leaders at Itasca Park.

AGRICULTURAL EXTENSION WORK

During the year 1921-22 the Agricultural Extension Division had on its state staff 20 men and 9 women for full time and 4 men for part time; 80 county agents, located in the various counties of Minnesota; 7 home demonstration agents, and 4 county club leaders; also 6 institute workers employed by the week for six weeks in the winter season, and the regular office force, making a total number of 145 extension employees.

Sources of revenue.—The following sources of revenue were available for the year 1921-22:

State appropriations for extension work in agriculture and home economics, to be expended only for agricultural extension work under the supervision of the Board of Regents of the University of Minnesota	\$ 40,000.00
State appropriation for farmers' institutes.....	10,000.00
State appropriation for county extension work in agriculture and home economics, to be expended under the supervision of the dean of the Department of Agriculture in sums not to exceed \$1,000 per county in any one year, and only in counties that have raised a like amount	84,000.00
Appropriations by county commissioners for county extension work in agriculture and home economics.....	160,000.00
Farm bureau funds for agriculture and home economics.....	108,600.00
Federal Smith-Lever funds to be expended under projects submitted by the director of the Agricultural Extension Division approved by the States Relations Service of the United States Department of Agriculture	116,538.75
Supplementary federal Smith-Lever funds to be expended under same conditions as regular Smith-Lever funds.....	33,780.58
Federal funds appropriated to the United States Department of Agriculture and used for coöperative extension work in Minnesota under the following projects:	
County agents and county agent leader.....	\$7,800
Boys' and girls' club work.....	3,000
Farm management demonstrations.....	1,200
Cow-testing associations.....	1,800
Home economics extension work.....	1,200
	15,000.00
Total	\$567,919.33

Offices and equipment.—The Agricultural Extension Service is furnished offices in the Administration Building of the College of Agriculture, University of Minnesota, with light and heat free. One full-time specialist and two part-time specialists have offices in their respective

subject-matter divisions because of lack of room in the extension office. The office equipment has been purchased with funds appropriated by the state for extension work and from federal Smith-Lever funds, and consists of needed desks, chairs, filing cases, bookcases, typewriters, calculating machines, multigraphing outfit, stationery, etc.

Publications.—Partly because of the let-up in the printing of extension bulletins during the previous year it was necessary to publish a larger number during the year 1921-22. The following bulletins have been issued:

Special Series:

- No. 51. *Farm Lease Contracts*, by W. L. Cavert, Division of Agricultural Extension. 8 pages. 10,000 edition.
- No. 52. *Hog Cholera*, by H. C. H. Kernkamp, Division of Veterinary Medicine. 20 pages. 10,000 edition.
- No. 53. *Approved Varieties of Grains and Corn for Minnesota*, by A. C. Arny and H. K. Hayes, Division of Agronomy and Farm Management. 20 pages. 6,000 edition.
- No. 54. *What Type of Water System Shall I Install?* by E. A. Stewart, Division of Farm Engineering. 16 pages. 10,000 edition.
- No. 55. *Low Cost Water Systems for Farm Homes*, by Miss Juniata L. Shepperd, Division of Agricultural Extension, and E. A. Stewart, Division of Farm Engineering. 16 pages. 10,000 edition.
- No. 56. *Methods and Uses of Budding and Grafting*, by W. H. Alderman and Wilson McGrath, Division of Horticulture. 8 pages. 10,000 edition.
- No. 57. *Pruning the Apple*, by Burgess Nightingale, Division of Horticulture, and R. S. Mackintosh, Division of Agricultural Extension. 8 pages. 6,000 edition.
- No. 58. *Corn Raising for Minnesota*, by A. C. Arny, Division of Agronomy and Farm Management. 20 pages. 10,000 edition.
- No. 59. *Planning the Farm Business*, by W. L. Cavert, Division of Agricultural Extension. 12 pages. 6,000 edition.
- No. 60. *Simple Steps in Land Clearing*, by M. J. Thompson, Superintendent, Northeast Substation, Duluth, and A. J. Schwantes, Division of Farm Engineering. 16 pages. 8,000 edition.
- No. 61. *Farm Bureau Units, the Rural Community, and the Extension Service*, by W. J. Corwin, Division of Agricultural Extension. 8 pages. 6,000 edition.
- No. 62. *Lessons in Economical Hog Production*, by W. L. Cavert, Division of Agricultural Extension. 8 pages. 10,000 edition.
- No. 63. *Tuberculosis of Poultry*, by W. A. Billings, Division of Veterinary Medicine. 20 pages. 10,000 edition.

Reprints:

- No. 7. *Quack Grass Eradication*, by A. C. Arny, Division of Agronomy and Farm Management. 16 pages. 10,000 edition.
- No. 28. *Infectious Abortion of Cattle*, by C. P. Fitch and W. L. Boyd, Division of Veterinary Medicine. 28 pages. 4,000 edition.
- No. 38. *Spring Management of Bees* (revised), by Francis Jager, Division of Bee Culture. 4 pages. 6,000 edition.

Miscellaneous:

- The Garment-Making Project*, by Clara Brown and Edna R. Gray, Division of Home Economics. 48 pages. 5,000 edition.
- The Bread-Making Project*, by Mrs. Margaret B. Baker, Division of Agricultural Extension, and Mildred Weigley, Division of Home Economics. 16 pages. 15,000 edition.

Song Book for Boys' and Girls' Clubs. 16 pages. 10,000 edition.

Seed corn letter, 50,000

Farm crops folder, 10,000

Seed corn poster, 10,000

Land-clearing poster, 1,500

Poultry poster, 1,000

Potato disease poster, 2,000

"Clean-up" poster, 3,000

During the year there were 71,550 extension bulletins of various kinds mailed in response to specific requests from outside sources, aside from the boys' and girls' club material.

Farmers' Institute Annual.—*Farmers' Institute Annual* No. 34, dealing with the subject of "Home and Farm Conveniences" was published in an edition of 25,000, and was distributed at farmers' institutes and other meetings. This book contains 160 pages, exclusive of cover, and has proved a valuable source of information for those interested in improving the living conditions of our farm homes.

News service.—The news service includes the publication of a weekly *News Letter*, and the semimonthly *University Farm Press News*, as well as the distribution of large numbers of special press items, sent either to all of the papers of the state or to the papers of a special section.

The *News Letter*, designed to keep the public informed through the press of the activities of the University Department of Agriculture, is sent to all of the periodicals of the state. It is usually printed on a multi-graph machine, and goes out as second-class mail matter. Items from it are printed far and wide by the newspapers and other publications of Minnesota.

The *University Farm Press News* is a printed "clip sheet," printed on one side, containing five columns of usual newspaper width, fifteen inches long. The material which goes into this is instructional, the aim being to convey through the items published information which may be of aid to farmers and others in solving production problems. The articles published in this sheet are copied very largely by country weekly newspapers which maintain a farm news department, and of such papers there is a constantly increasing number in the state. One of the efforts of the work in publications has been to interest the press of the state in publishing more farm and rural news, and these efforts have been highly successful.

Minnesota Extension Service News.—In October, 1921, was started a monthly publication entitled the *Minnesota Extension Service News* which is essentially a house organ for the field employees of the Extension Division together with the cooperating officers of the township and county farm bureaus. A mailing list of approximately 1,500 is maintained to carry the message of extension service, particularly as to work accomplished and methods pursued, to those directly concerned in extension work.

County agent and county farm bureau work.—The county agent and the county farm bureau movement in Minnesota was ten years old on September 1, 1922. The first five years of the movement was a period of experiment. There was no chart or precedent for guidance at the outset.

In the early days the movement was finding itself; laying the foundation; crystallizing ideas, policies, plans, methods, and the possible future scope and development of the movement.

The application and expansion of the local township or community unit in extension work has been the outstanding development of the year.

Membership in county farm bureaus in Minnesota has grown from 26,136 in 1918 to 30,516 in 1919, to 46,299 in 1920, and to 48,909 in 1921. This includes paid up membership only. A total of 78 of the 86 counties in the state have adopted the continuous \$5 a year family membership plan. Every county farm bureau in the state prepares a county program of work for each year. The programs in nearly every county contain plans with reference to county farm bureau development, coöperation with other agricultural organizations; soil, crop, and livestock projects; farm economics; marketing; the home; and boys' and girls' club work, thus insuring a balanced program or scope of service commensurate with the needs of every agricultural community. The local townships or community units also formulate community programs, basing their activities primarily on chief sources of farm income in the locality.

Pursuant to legislation passed at the last session of the legislature, more than fifty per cent of the county bureaus have amended articles of incorporation, effecting improved management of the county organization, particularly in having delegate representation from local units at county-wide meetings of the organization. Practically every county farm bureau in the state is now employing a new secretary-treasurer record system developed by the supervisory staff of county agent work, the use of which has facilitated better business administration of farm bureau finances, membership records, and collections.

Boards of county commissioners for the year beginning July 1, 1921, appropriated on the average \$2,100 for the support of the county extension service, an increase of \$400 per county over the preceding year. The county agents' reports for the year ending December 1, 1921, indicate the following additional achievements resulting from their work:

A total of 1,100,050 persons were served during the year, including 771,690 persons attending 17,764 meetings; 33,163 farm visits; 116,442 office calls; 15,560 field interviews; and 64,295 telephone calls. (Many of these instances of service are likely duplicated to the same person, but assuming that some of the items, for example meetings, were duplicated ten times, it would still represent a high degree of contact on the part of county agents with the people served.)

Drainage demonstrations, numbering 135, involving 12,406 acres in 20 counties, were planned and adopted.

Commercial fertilizer demonstrations were conducted by 336 coöperating farmers using 774 tons in 51 counties.

Soil acidity tests were made in 458 farms in 52 counties, and 1,404 tons of limestone were applied to acid soil.

Seed grain was treated for smut control by 16,054 coöperators, in 23 counties, involving 31,023 bushels of grain, used in planting 19,299 acres.

Rye-growing was introduced or its culture modified by 900 farmers in 52 counties, 19,509 acres being planted.

Seed potatoes were treated for disease control by 5,416 farmers in 15 counties, which seed was used in planting 35,575 acres.

Increased acreage of alfalfa was planted by 1,023 farmers in 77 counties, who grew 6,140 acres.

Increased acreage of sweet clover was planted by 940 farmers in 59 counties, involving 13,862 acres.

Soy beans were grown by 1,425 farmers in 71 counties, who planted 14,298 acres.

Improved seed corn was secured by 729 coöperating farmers in 44 counties amounting to 12,700 bushels; improved seed wheat by 697 farmers involving 20,934 acres in 43 counties; improved seed oats by 219 farmers involving 5,498 bushels in 25 counties; improved seed potatoes by 1,315 farmers, involving 33,875 bushels in 40 counties. Corresponding service was extended in securing certified seed tho on a smaller scale.

Extended service was given in finding markets for certified and improved seed produced and for sale by coöperating farmers. The increased value of certified seed produced by coöperators is estimated at \$72,077.

Registered dairy bulls were secured by 873 farmers in 70 counties; registered beef bulls by 375 farmers in 50 counties; registered dairy cows were secured by 1,203 farmers in 58 counties; registered beef cows by 441 farmers in 25 counties.

High-grade dairy cows were secured by 2,069 farmers in 64 counties and high-grade beef cows by 180 farmers in 9 counties.

Registered rams were secured by 113 farmers in 41 counties and registered ewes by 155 farmers in 13 counties.

Registered boars were secured by 1,172 farmers in 69 counties, and registered sows by 2,062 farmers in 60 counties.

Unprofitable producing cows numbering 492 were discarded as a result of cow-testing work, 45 cow-testing associations being in operation in 29 counties with 1,065 members, 19,703 cows being under test.

Balanced rations were prepared for 2,413 farmers in 67 counties.

Unprofitable and non-laying hens were discarded, numbering 127,932 as a result of 986 poultry-culling demonstrations being held in 66 counties, after which 3,338 flocks were culled involving a total of 313,557 birds.

Animals were tested for tuberculosis in 64 counties, numbering 49,685 head.

Hogs were vaccinated for cholera, numbering 73,409 in 29 counties.

Self-feeders for hogs were introduced by 2,284 farmers in 30 counties, and 179 swine pasture demonstrations were conducted in 19 counties.

Farm account books were distributed to 2,062 farms in 70 counties. 769 account books were kept and 599 farmers were assisted in summarizing and in interpreting their accounts, following which 278 made changes in their business as a result of accounting.

Cropping systems were adopted by 1,652 farmers in 36 counties, in which efforts were made to meet soil fertility and livestock needs.

Farm laborers were supplied, totalling 9,655 in 76 counties. Estimated savings or profits made by coöperative associations organized or assisted in 43 counties amounted to \$2,045,785.

Water supply systems were planned and installed, numbering 30 in 16 counties; sewage disposal systems numbering 53 in 22 counties; and lighting systems numbering 28 in 10 counties.

Farm homes were constructed or remodeled according to plans furnished, numbering 80 in 22 counties; home grounds improved, numbering 169 in 23 counties; labor saving devices for the home introduced, numbering 61 in 12 counties; household laborers supplied, numbering 125 in 30 counties; and garden projects modified in 681 cases in 25 counties.

The cost of the county agricultural service was jointly maintained by the United States Department of Agriculture, the State Extension Service, county commissioners, and county farm bureaus for the year ending June 30, 1921, and amounted to \$361,619.47.

When one reviews such achievements as have been wrought in one year, it furnishes some proof that the foundation has been well laid. The achievements recited are but characteristic of the results that have been attained during each of the past four years and which are being wrought at the present time. Even more telling, however, are the ultimate effects of the movement—how it has influenced agricultural thought and tendency; how it has become a movement of potency and force; and how it has contributed to human welfare. It is certain that the county agent and the county farm bureau movement is developing public interest among rural people. It is stimulating the development of rural leadership; it is fostering efficiency in coöperation; it is promoting community coöperation; the movement maps a job to be accomplished; it furnishes a local agricultural headquarters; it is helping to give the farmer a business education. Through the development of a program of work it may be said that democracy in agriculture is being attained.

Boys' and girls' club work.—This year boys' and girls' club work has been a part of the agricultural extension program in every county in Minnesota. Six counties have had full-time paid club agents for the whole or part of the year while 21 other counties have had half-time paid club agents. Practically every county agent has been active in promoting this phase of extension work. Boys' and girls' club work in Minnesota has been carried on through 14 different home and farm projects or demonstrations. The following list gives the demonstrations carried on during the year with enrolments for each:

GENERAL SUMMARY OF YEAR FOR 1921

Clubs organized.....	1,487
Total enrolment.....	18,556
Value of all products by members reporting.....	\$299,788.70
Demonstrations carried by club members.....	2,791
Attendance	34,780
Demonstrations given by leaders.....	3,741
Attendance	67,132
Number of demonstration teams trained.....	926

Important features of the work.—Three special short courses were held for club members and for club leaders at University Farm, Morris, and Crookston, with a total enrolment of 625. Seventeen counties have held county club short courses with a total attendance of 2,647. The program at these short courses includes regular class work in the different club projects; games, music, and other club exercises; special organization work, and conferences for the leaders attending. These club short courses have been one of the most successful features of the year's work. A club camp was held at Ortonville for the club members and leaders in counties of west central Minnesota with an attendance of 160.

Eight hundred sixty county champions in different projects were given educational trips to the State Fair, 26 to the Horticultural Meeting and Crop Show in December at Minneapolis, 324 to the Junior Livestock Show at South St. Paul, and 18 state champions received trips to the International Livestock Show at Chicago.

Twenty-one county club tours were held, the majority dealing with the livestock club work.

A special boys' and girls' club department was conducted in connection with the State Fair. The budget for this department totals \$11,450.

Club demonstration work.—The individual and team demonstrations have been emphasized very much the same as last year. The training of at least one demonstration team from every club has been urged by club leaders. As a result of this effort, canning demonstration teams were organized and trained in 35 counties. Two hundred forty-eight bread teams gave 612 demonstrations in making of yeast breads and quick breads. Seventeen counties trained poultry teams and 9 of these were sent to the State Fair for public demonstrations in the culling of flocks and other interesting features of the work. The state champion bread team represented by the Mankato team of Blue Earth County, took part in the interstate contest at Sioux City, Iowa, winning the championship in this district, composed of 12 states.

The champion cake team took part in the national baking contest at Chicago winning first prize in the competition where all the states of the Union were entitled to compete. This team came from Rose Creek, in Mower County.

Club work at county fairs.—Every county fair in the state has emphasized some phase of boys' and girls' club work during the past year. Club work at the county fair makes a splendid opportunity of giving the people of the county some of the definite results of club work through exhibits and demonstrations by the club members. The county fair officials recognized the value of club work as a very important feature at the fairs, by passing a resolution at the last annual state meeting that every fair should provide \$500 or more for putting on this feature at the next year's fairs. This means that the county fair organizations are supporting junior extension work to the amount of about \$45,000.

Club film prepared.—With the coöperation of the Union Stock Yards Company at South St. Paul, a club film consisting of three reels has been

prepared. A large part of the film was taken in Blue Earth County. The film shows the purpose, methods of organization, and some of the results of boys' and girls' club work. There are five copies of the film which have been used very largely in connection with short courses, farm bureau meetings, and other extension activities.

Coöperating agencies.—The success of boys' and girls' club work in Minnesota is largely due to the strong support which has been given this work by community organizations, public institutions, and individuals interested in young people. The leading agencies coöperating with the Agricultural Extension Service in this work are the public schools, county farm bureaus, farmers' clubs, state and county fair associations, livestock breeders' associations, the State Horticultural Society, and commercial organizations.

Home demonstration work.—The state office has been comprised of the following members: state home demonstration leader, assistant state leader, and state agents in clothing, nutrition, poultry, household management, and household engineering. On account of the demand for assistance from the counties—an additional worker in clothing and nutrition was added for a five months' period beginning February 1.

The state and assistant state leaders have given their time to the following phases mainly: supervision of home demonstration agents; organization of counties without home demonstration agents for home project work; publicity; forming contacts with state organizations having common interests; monthly and annual reports; and development of plans for further work.

The state agents have apportioned their time between counties employing home demonstration agents and those not having a home demonstration agent but desiring home projects. The work has been carried on according to the following plan:

I. Necessary organization

- A. Three communities in a county desirous of having a home project. Each community must have at least ten women who agree to attend all meetings of the series. There should be an outstanding community leader in each group. Instead of a community group there may be substituted a group consisting of two women from each of several communities who will agree to serve as local leaders in their respective communities.
- B. Executive committee of farm bureau through home demonstration agent or county agricultural agent should make application for the services of a state agent for three days a month for five months. The women members of the executive committee will be the county chairmen of the project. If there are no women on executive committee, one or more should be appointed. Application for a project should be made at least six months in advance.
- C. The home demonstration agent should always accompany the state agent. Where there is no home demonstration agent the county agricultural agent is expected to be in attendance at least part of the time at as many meetings as possible in order to connect the work with the county extension organization.

- D. Notices should be sent from county extension office to community leaders about ten days before each meeting. Newspaper publicity, telephone calls, home visits, letters, and other means should be used to arouse interest of community concerned and to spread the influence to other parts of the county.
- E. The home demonstration agent or county agricultural agent is responsible for securing from community or local leaders the reports of home demonstrations and for transmitting these to state agent.

II. Projects

A. Nutrition series

- 1. Nutritional needs
- 2. Foods and dietaries
- 3. Physiological basis of child-feeding
- 4. Care and need during following periods
 - a. Prenatal and postnatal
 - b. Adolescence
 - c. Old age
- 5. Overweight and underweight

B. Poultry series

- 1. Culling
- 2. Feeding and housing
- 3. Diseases
- 4. Incubation and brooding
- 5. Marketing

C. Clothing series

- 1. Foundation of dress
 - a. Adapting commercial patterns
 - b. Planning the garment
- 2. Garment construction
 - Machine attachments
- 3. Short cuts in sewing
- 4. Making the dress form
- 5. Color and design
 - Simple decorative stitches

D. Home management series

- 1. Planning day's work
- 2. Planning week's work
- 3. The efficient kitchen
- 4. The efficient kitchen (continued)
- 5. Floors and floor coverings

E. Household engineering

- 1. Discussion of development of water systems
- 2. Limited number of demonstrations and installations of water systems and septic tanks conducted through coöperation with Agricultural Engineering Division

In addition to home demonstration agent counties and cities the state agents have carried on projects in the following counties: Aitkin, Becker, Chisago, Crow Wing, Dodge, Faribault, Fillmore, Goodhue, Hubbard, Kanabec, Koochiching, Lac qui Parle, Mahnomon, Marshall, Mille Lacs, Nicollet, Nobles, Pipestone, Red Lake, Scott, Sibley, Steele, Todd, Wabasha, Washington, Watonwan, Wilkin, Winona. At least three fourths of the above counties have requested a second project. On account of the lack of enough workers, these requests can seldom be granted as it is felt that if there are any new counties waiting their chance, it is not fair to give additional help to the old groups.

This type of organized assistance has accomplished a great deal in showing the need of county extension organizations developing better balanced programs. County agricultural agents, farm bureau officials, both state and county, and men and women in general have more and more frequently expressed themselves as seeing the positive need of helping with home problems as well as with farm problems.

On July 1, 1921, there were agents in Clay, Dakota, Martin, Morrison, St. Louis, and Waseca counties and in the cities of Duluth, Minneapolis, and St. Paul. On account of the failure of the Clay County commissioners to appropriate any money to the farm bureau, home demonstration agent work was not continued in Clay County after the resignation of the agent, December 1, 1921.

The home demonstration agents have in the main divided their time between organization work and a few of the main subject-matter projects; namely, clothing, nutrition, poultry, household management.

Statistical report of projects carried on by state staff and home demonstration agents:

Home demonstrations established.....	4,409
Community demonstrations established.....	2,088
Families adopting suggestions.....	15,409
Families changing food habits.....	572
Hot school lunches installed.....	161
Dress forms made.....	5,554
Poultry houses built or remodeled.....	42
Homemade fireless cookers.....	221
Kitchens rearranged.....	20
Septic tanks installed.....	20
Water systems installed.....	23

Farm management demonstrations.—There has been a noticeable increase in the demand for discussions of economic subjects in many farm communities. The farm management demonstration work has therefore filled an important need and rendered signal service during the past winter. There were 135 farm business schools held in 51 counties with a total attendance of 4,830. Among the subjects most commonly discussed were cost of pork production, cost of producing dairy products, cost and utilization of corn, price trends, and the purchasing power of the farmer's dollar.

Aside from this service there was held a number of meetings dealing with farm leases, farm accounts, poultry costs and income, and other subjects of similar nature.

Livestock and dairying.—The work of this section has been closely affiliated with the breeders' associations, the state marketing associations, and the state and county farm bureaus. The junior work carried on by the boys' and girls' club leader in coöperation with the Minnesota Livestock Breeders' Association was one of the most valuable projects maintained for the development of the livestock industry.

The dairy feeding school which was inaugurated this year featured in one-day courses the feeding and management of dairy cattle. Eighty-two of these schools were held with an average attendance of 10 farm-

ers at each school. These meetings have proved especially popular and it is felt that a real service was rendered for the improvement of dairy production in the state.

The judging of cattle at county and local fairs is a prominent feature of the dairy extension work and this has led to the judging at state and national dairy shows by members of the extension staff.

Cow-testing association work.—The work of cow-testing associations during the year has been very gratifying. At present there are 38 associations in the state, 18 of which have been newly organized during the past ten months. The results of the testing associations form a valuable source of data for extension meetings and for publicity purposes. Along with this work the extension specialist attended creamery meetings, breed associations, and farmers' clubs, using the results of the testing work to carry the message of better dairy practice.

Bull associations.—During the year a dairy specialist from the United States Department of Agriculture has worked in three communities in Minnesota in forming coöperative bull associations as a part of the better sire campaign. Such associations are now in the process of formation in Beltrami, Cass, and Freeborn counties.

Swine husbandry.—The work done in swine improvement in the various counties the past year has emphasized swine breeding, feeding, and management. The swine specialist also coöperated in holding junior short courses, wool-marketing meetings, coöperative livestock shipping association meetings, and a limited amount of work in beef cattle and sheep production. In all there were 118 meetings with a total attendance of 6,610, and an average attendance of 55 farmers per meeting. The county fair judging is also an important feature of the swine husbandry extension service.

Poultry extension work.—The poultry extension service during the year has been conducted under two sections of the Extension Division. The general poultry projects have been handled by Mr. Chapman with some assistance from specially qualified county agents and by an additional worker for two months; and the second section by Miss Cora Cooke, poultry specialist in the extension work with women.

Emphasis has been placed during the past year on poultry-culling demonstrations, a standard bred poultry campaign, better poultry housing, and the marketing of eggs and poultry.

During the year there were 55 poultry-culling schools held in various counties with an average attendance of 67 interested people. A number of these schools were held especially for the training of county agents who in turn have held many local demonstrations in poultry-culling. The reports of the county agents indicate that there were approximately 4,000 flocks culled through their efforts which entailed the handling of over 300,000 birds of which approximately one third were discarded as unprofitable producers.

In the fall of 1921 there were inaugurated 10 poultry demonstrations in as many communities in which coöperators kept detailed accounts of the poultry enterprise. Visiting tours have been held at a number of

these poultry centers and the data are being used for extension purposes. The coöperative marketing of eggs and poultry in connection with the coöperative creameries in the state promises to be an important forward step in helping to solve the farm poultry marketing problem.

Horticulture.—Horticultural extension activities during the year were concentrated on pruning and spraying and the planting of home orchards. In many parts of the state in 1921 the apples were seriously injured by the apple maggot. The growers are taking very much more interest in spraying this year (1922). Fifteen county agents have been assisted in holding pruning and spraying demonstrations. Early in 1922 plans were perfected for assisting county agents in six of the northern counties in starting the hardiest varieties in demonstration home orchards. It is planned to visit these demonstrators next year to prune and top-graft the trees with scions of better varieties.

Field crops.—Late in the year a part-time extension specialist in field crops was obtained and a small amount of extension work started aiming toward the improvement of varieties of grains and roughages in different parts of the state. There is an important field in the introduction of tested varieties and in the standardization of varieties which are adapted to climatic and soil conditions, and plans are being laid for important extension service along these lines.

Plant pathology.—During the year the specialist in plant diseases held 152 meetings in 41 counties with a total attendance of 4,193 persons. The following were the principal subprojects emphasized during the year:

Potato seed plots: No figures are at hand as to how many seed plots were maintained during the summer of 1921, but indications are that it was much greater than in 1920. A new ruling of the Potato Certification Department requires that all potato growers who apply for certification are required to grow seed plots for their own seed. During the months of July and August, 45 field meetings were held. At these meetings identification of disease in the field and seed plot methods was given special attention. A total of 278 growers attended the field meetings.

Vegetable diseases: In response to a hurried call from a celery grower in Ramsey County regarding something troubling his crop, a celery disease new to this state was found. The stunting disease of celery, when once introduced, lives over in the soil. Certain resistant varieties can be grown on infected soils. Celery growers of the state were warned through circulars.

Potato seed-treating: Thirty-two seed-treating demonstrations were held during April and May, with a total attendance of 521. The hot formaldehyde treatment, which is quicker than corrosive sublimate, was used more extensively than ever this year. It is impossible to say how many more potatoes were treated this year than previously, but it is estimated that 40 per cent more seed was treated this year than last.

Potato-spraying: Three spraying and dusting projects were started in three different counties in 1921. There was very little difference shown

at any of the places between bordeaux dust and liquid bordeaux. However, the results are not conclusive as the sprayers and dusters were not of the approved types. This year (1922) a number of high pressure machines are to be used in various parts of the state.

Potato spray rings: The specialist assisted the county agent in organizing a spray ring at Elk River, which will handle about 75 acres for about six or seven growers. Records of cost and results will be kept this summer for use of other growers who wish to organize. A potato-dusting ring has been organized by the growers at Meadowland, Minnesota. This ring will handle about 100 acres of potatoes, and records of cost and results will also be kept for comparison with liquid-spraying.

Farmers' clubs.—There are estimated to be 1,025 farmers' clubs in the state and while it is impossible for the club specialist to be actively in touch with each club his work with the various county agents along this line has assisted in the maintenance of worth while programs at club meetings. During the year the club specialist visited 166 clubs with a total attendance of approximately 5,419 persons.

Beginning with the first of the year four counties were selected; namely, Pope, Morrison, Dakota, and Lyon, and visits were made to these counties once each month during January, February, and March. The plan was to concentrate on selected farm groups in order to assist with more definite programs of work and to compare this type of service with the old methods of meeting with one group for one meeting. The results so far indicate that more definite progress is being made in the selected communities than under the old plan and by the proper kinds of publicity and information better service can be rendered to the clubs that are not visited than has been possible heretofore. There is a great need for the educational and social development of rural communities and one of the marks of progress along these lines has been the development of the farmers' clubs with definite programs at meetings followed by a discussion of common farm problems.

Soils.—The projects that received chief attention during the past year were the value of acid phosphates on soils of all kinds, the use of various fertilizer combinations for field and truck crops upon mineral soils, the reclamation of peat soils, liming of lime-deficient soils in preparation for alfalfa and clover, and the use of gypsum upon alfalfa and clover.

In the work with acid phosphates there were demonstrations on over 400 farms, these being mostly in the southeastern, southwestern, west-central, and northwestern parts of the state, altho all parts of the state were represented. Most of these demonstrations were on mineral soil and a smaller number on peat. Many very striking results were obtained on clover and wheat. Probably the most significant case was that of a field of clover where the treble superphosphate increased the yield of hay 300 per cent. This was on land which had long been used as a livestock farm, with a naturally rich soil, where a liberal amount of manure was produced and applied to the soil and a good rotation and a most commendable system of farming had been practiced.

With peat soils the requests for assistance far outrun our resources. In Anoka County, 37 demonstrations have been started this season with phosphate and potash on peat soils. In these demonstrations the phosphate and potash have been applied both separately and combined. Oats, clover, and corn are the crops used. The clover has been seeded both alone without a nurse crop and with the oats. On these fields where oats or clover was used as the trial crop, the differences in growth are already sufficient to show clearly what fertilizers are necessary, and part of these farmers secured this information from the effect on oats early enough to permit them to order the fertilizers they needed for their field lots of corn planted this season.

In the northwestern part of the state, a large amount of phosphate is being used because of the work at Golden Valley and the demonstrations based upon the results obtained there, and in Anoka County, several hundred acres of peat are producing satisfactory crops because of the fact that the knowledge obtained on the experiment plots has been carried to the peat land owners. A much larger amount of the phosphate would be used in the northwestern counties if it were possible for the farmers to obtain credit. The same might be said concerning the use of phosphate and potash on the peat soil in Anoka County.

The value of peat soils, when properly fertilized, for the growing of clover should be demonstrated wherever farmers are trying to reclaim such soils. Clover, either medium red, or alsike, or preferably a mixture of the two, appears to be a sure crop any season on properly drained and properly fertilized peat.

There were about twenty demonstrations with phosphate and potash in the southeastern part of the state and the same number in the northeastern section in the Hibbing district. While the actual yields were not determined in many cases we may report that no striking results were obtained in the southeastern counties, while in the Hibbing district the results were such that the present season mineral fertilizers are being used on a commercial scale. Complete fertilizers were tried on about the same number of potato and truck crops in the Hibbing district, on half a dozen head lettuce fields near Duluth, and on ten cabbage and onion fields in the southeastern counties.

Twelve demonstrations with lime for clover were started in the Hibbing district in 1921. The lime was applied rather late to show much effect during the 1921 crop season. The plots will be kept under observation during the next two or three seasons. In Anoka County, several liming demonstrations were conducted with alfalfa, and the results confirmed those obtained in the Coon Creek Sand Experimental Field.

THE EXPERIMENT STATION

Satisfactory progress has been made in the experiment station work as a whole. There have been no serious interruptions on the important investigational projects, tho there have been some temporary disturbances in certain ones by changes in staff. There has been close coöperation be-

tween the workers in the various divisions throughout the year. The inspector from the Office of Experiment Stations, in reviewing the work of the experiment station last year commended highly the spirit of co-operation existing between the workers and complimented the staff on the thoroughness and accuracy of the investigations. Definite progress has been made on many of the important investigations.

Staff meetings have been held monthly throughout the year. They have been devoted to a study of the agriculture of the state. The various phases have been presented by the chiefs of divisions or by workers assigned by them to cover the line of work under discussion. The meetings have been marked by keen interest on the part of the staff members and by good attendance. A wide understanding of the needs of agriculture in the state has been acquired and there is much closer acquaintance with the various agricultural industries than before this series of meetings was programmed. A definite attempt has been made to acquaint the extension workers with the activities of the experiment station in order that they may carry to the farmers the results of the experiments under way. The extension specialists have been encouraged to bring back to the workers in the experiment station the problems of the farmers as found by them. Through the cooperation of the director of extension several trips of inspection have been made about University Farm in order that the extension workers may become closely acquainted with the work and the workers in the various divisions. This has led to a better appreciation by the extension workers of the value of the experiment station work. Through the knowledge gained of the agricultural industries of the state, and through contact with extension workers and with the farmers themselves, the members of the experiment station staff have acquired a comprehensive view of the problems of the farmers and are bending their efforts toward their solution. The results of the investigations are widely used by extension workers and farmers.

There are in effect at the present time 149 projects on which work is being actively pursued. Seven projects have been completed and 9 discontinued during the year. Thirty new projects have been initiated.

Of the projects now in effect, 81 may be classified as research; 47, as experimental; and 17, as demonstration and survey. Practically all of the regulatory projects formerly carried have been transferred to the State Department of Agriculture. The classification as outlined above is only approximate. It is difficult to distinguish between the research and experimental at times. Some of the subprojects of the main projects are experimental rather than research, tho the project as a whole may be in the research class. The number of projects carried through the year has again increased slightly over the number carried last year. It is not the aim of the administration to encourage the formation of a large number of projects but rather to advise the workers to concentrate on a few important and well organized projects. Some lines of work, however, have heretofore been but little developed and the increase in projects this year is due to the development of new work in some divisions not previously

active. New investigations have been undertaken by the Division of Soils due to special legislative appropriations which call for information on the peat land and sandy land soils of the state. Studies of low lime upland soils in southeastern Minnesota are being actively pursued. Investigations are also being made of the value of marl as a soil amendment. The special investigation of the manufacture of sirup from sweet corn provided for by legislative enactment has been centered at Wells, Minnesota, and definite progress has been made in determining the process of manufacture.

There is great need for more greenhouse room and especially for greenhouse space in which the temperature can be controlled. The Plant-Breeding Section has need for greenhouse space in the development of hybrid varieties and in determining the resistance to disease. Sufficient use has been made of greenhouse space to learn that hybrid cereals can be brought to maturity in the greenhouse, thus making it possible to grow two generations within a year. Since it takes ten years or thereabouts to develop a hybrid variety under the ordinary process, it would be possible by providing greenhouse space, to shorten the period of development to five or six years. The Plant Pathology Section in working on hardiness of plants and the physiology of plant growth also needs greenhouse space in which temperature and other conditions can be closely controlled. Co-operative work in the development of new cereals conducted by the Plant-Breeding and Plant Pathology sections calls also for a large amount of greenhouse space in growing and testing for rust resistance the various new productions. The importance of the plant-breeding operations in providing disease resistant grains can hardly be overestimated. Greenhouse space and controlled temperature should be supplied as soon as possible.

Numerous manuscripts have been prepared from investigational data during the year. It is considered unwise to try to publish in experiment station bulletins the results of all investigations. Many of the manuscripts are accepted for publication by scientific journals. The results of the completed projects are published in the Experiment Station Series. During the year three bulletins have been approved for publication in the Technical Series, five in the regular Experiment Station Series, and sixty-four articles have been approved for publication in the Journal Series. The members of the staff have also prepared numerous articles and papers for the public press. Twelve articles have been thus published.

The funds expended for experiment station work during the fiscal year amounted to \$311,201. Of this amount \$15,000 is provided by the Federal government under the Hatch Act, and \$15,000 under the Adams Act. The balance is furnished from general University support and from special appropriations for specific investigations. The annual report of the experiment station to the United States Department of Agriculture gives the distribution of these funds among the various divisions of the experiment station and the amounts expended by each. It also covers fully the progress on various projects and states in a brief manner the most important findings made during the year.

THE SUBSTATIONS

There has been no change in the plan of investigational work at the substations during the year. The investigations are directed toward the solution of problems particularly significant to the regions in which the stations are located. Much of the work at the substations is carried on in coöperation with the investigators at the Central Station. In this way more comprehensive tests are made and the methods employed at the substations are more closely correlated with those at the Central Station. The coöperative testing of field and garden crops, the distribution of important seed stocks, the testing of fertilizers and manures, and the investigations in livestock feeding and management have been carried on coöperatively as heretofore. Each of the substations has prepared an annual report showing the work accomplished during the year. The investigations are conducted under carefully formulated projects as at the Central Station.

Respectfully submitted,

W. C. COFFEY, *Dean and Director*

THE LAW SCHOOL

To the President of the University:

SIR: I have the honor to submit the following report of the work of the Law School during the session of 1921-22.

Progress of legal education.—The year was marked by a notable forward step in education for the profession of law. The section on legal education, of the American Bar Association, in 1920 appointed a special committee of prominent lawyers to "report recommendations in respect to what, if any, action can be taken to create conditions which will tend to strengthen the character and improve the efficiency of those admitted to the practice of the law." The chairman of the committee was Mr. Elihu Root. The committee reported the following resolutions:

(1) The American Bar Association is of the opinion that every candidate for admission to the Bar shall give evidence of graduation from a law school complying with the following standards:

(a) It shall require as a condition of admission at least two years of study in a college.

(b) It shall require its students to pursue a course of three years duration if they devote substantially all their working time to their studies, and a longer course, equivalent in the number of working hours, if they devote only part of their working time to their studies.

(c) It shall provide an adequate library available for the use of the students.

(d) It shall have among its teachers a sufficient number giving their entire time to the school to insure actual personal acquaintance and influence with the whole student body.

(2) The American Bar Association is of the opinion that graduation from a law school should not confer the right of admission to the Bar, and that every candidate should be subject to an examination by public authority to determine his fitness.

(3) The Council on Legal Education and Admissions to the Bar is directed to publish from time to time the names of those law schools which comply with the above standards and of those which do not, and to make such publications available so far as possible to intending law students.

(4) The President of the Association and the Council on Legal Education and Admissions to the Bar, are directed to co-operate with the state and local bar associations to urge upon the duly constituted authorities of the several states the adoption of the above requirements for admission to the Bar.

(5) The Council on Legal Education and Admissions to the Bar is directed to call a Conference on Legal Education in the name of the American Bar Association, to which the State and local bar associations shall be invited to send delegates for the purpose of uniting the bodies represented in an effort to create conditions favorable to the adoption of the principles above set forth.

These resolutions were adopted by the American Bar Association, September 1, 1921.

The Conference on Legal Education called for by the fifth section was held in Washington, D.C., February 23, 24, 1922, and was attended by delegates from the American Bar Association, forty-four state bar associations, one hundred sixteen local and foreign associations and twenty-seven law schools. The conference adopted the following statement in regard to legal education:

1. The great complexity of modern legal regulations requires for the proper performance of legal services lawyers of broad general education and thorough legal training. The legal education which was fairly adequate under simpler economic conditions is inadequate to-day. It is the duty of the legal profession to strive to create and maintain standards of legal education and rules of admission to the bar which will protect the public both from incompetent legal advisers and from those who would disregard the obligations of professional service. This duty can best be performed by the organized efforts of bar associations.

2. We endorse with the following explanations the standards with respect to admission to the bar, adopted by The American Bar Association on September 1, 1921.

3. Further, we believe that law schools should not be operated as commercial enterprises, and that the compensation of any officer or member of its teaching staff should not depend on the number of students or on the fees received.

4. We agree with The American Bar Association that graduation from a law school should not confer the right of admission to the bar, and that every candidate should be subjected to examination by public authority other than the authority of the law school of which he is a graduate.

5. Since the legal profession has to do with the administration of the law, and since public officials are chosen from its ranks more frequently than from the ranks of any other profession or business, it is essential that the legal profession should not become the monopoly of any economic class.

6. We endorse The American Bar Association's standards for admission to the bar because we are convinced that no such monopoly will result from adopting them. In almost every part of the country a young man of small means can, by energy and perseverance, obtain the college and law-school education which the standards require. And we understand that in applying the rule requiring two years of study in a college, educational experience other than that acquired in an American college may, in proper cases, be accepted as satisfying the requirement of the rule, if equivalent to two years of college work.

7. We believe that the adoption of these standards will increase the efficiency and strengthen the character of those coming to the practice of law, and will therefore tend to improve greatly the administration of justice. We therefore urge the bar associations of the several states to draft rules of admission to the bar carrying the standards into effect and to take such action as they may deem advisable to procure their adoption.

8. Whenever any state does not at present afford such educational opportunities to young men of small means as to warrant the immediate adoption of the standards, we urge the bar associations of the state to encourage and help the establishment and maintenance of good law schools and colleges, so that the standards may become practicable as soon as possible.

9. We believe that adequate intellectual requirements for admission to the bar will not only increase the efficiency of those admitted to practice but will also strengthen their moral character. But we are convinced that high ideals of professional duty must come chiefly from an understanding of the traditions and standards of the bar through study of such traditions and standards and by the personal contact of law students with members of the bar who are marked by a real interest in younger men, a love of their profession and a keen appreciation of the importance of its best traditions. We realize the difficulty of creating this kind of personal contact, especially in large cities; nevertheless, we believe that much can be accomplished by the intelligent coöperation between committees of the bar and law school faculties.

10. We therefore urge courts and bar associations to charge themselves with the duty of devising means for bringing law students in contact with members of the bar from whom they will learn, by example and precept, that admission to the bar is not a mere license to carry on a trade, but that it is an entrance into a profession with honorable traditions of service which they are bound to maintain.

The Minnesota State Bar Association approved the above resolutions, September 1, 1922. These resolutions show that the leaders of the bar are dissatisfied with the status and reputation of their profession. They seek a remedy in the training that the university law schools afford. When these resolutions are in operation legal education will have attained the position long since held by education for other professions. It is gratifying to find the bar adopting the standards already deemed requisite by the leading university law schools. The influence of the universities has caused the profession to change from the individualistic to the public point of view. Our school has for ten years maintained the standards now demanded by the American Bar Association, the National Conference of Bar Associations, and the State Bar Association. It remains for the bar of the state to secure recognition of these standards by the authorities which control admission to the bar.

This recognition carries added responsibility to the university law schools. Their facilities must be expanded to take care of the additional students that will resort to them. Their libraries must be improved, their faculties must be recruited from men qualified to execute the trust reposed in them by the profession. Their work is fundamental to the maintenance of law and order and to confidence in our institutions. Only men of the highest intellectual attainments, of the finest character and personality are fit to train the future leaders of the state. They must be men who respect the accumulated experience of the past, and yet of such imagination that they can see the possibilities of a better order. The reactionary and the radical are equally dangerous. Law faculties must have men who teach improvement, but improvement by evolution and not by revolution. They should be trained in the history and experience of the past, in comparative law, and in sociological and economic theory. They should have the wisdom cautiously to adapt old laws and institutions to the changing order. It is peculiarly the privilege of law teachers to impress the minds of those who will be intimately connected with the management and molding of our institutions. Men fit for this task are rare and in great demand. Law-teaching should be made so attractive that the schools can attract the best of them.

Improvement of the law.—In the long run the most effective work in improving the law will be done through adequate training of the future lawyers. But the law is now in such state that it can hardly await their time. The law and its administration have not kept up to the necessities of changing conditions. The universities have been particularly neglectful of the field of legal research. The natural sciences, medicine, and many other branches of learning have been liberally supported in their investigations, but the law has not been aided in such work. Just as the profession has turned to the universities for proper legal education, so it is ready to welcome their aid in the improvement of the law. The bench is driven by the necessity of keeping up with its docket. The common law is becoming more confused, contradictory, and uncertain. Our legislative enactments are perhaps worse. Expert technical ability is imperatively necessary in both fields. It is a remarkable fact that there is no competent

expert agency in the state charged with the duty of working for the improvement of the law. True, the legislature has the duty of effecting necessary changes, but with the best will imaginable, our legislators can not give the time or find the technical knowledge necessary for a systematic scientific study of the law and its operation. Legislation is haphazard, enacted with imperfect knowledge of the technique of law-making, and with a limited knowledge of the incidental effect of the enactments on the body of the law. Our other legal machinery is organized for the administration of the law as it is.

As the system works, defects that appear in operation from time to time where they affect only the public interest are not attended to. Private interests initiate bills which are enacted without due understanding of their incidental effects on the public interest. There are sporadic attempts by lawyers and other public-spirited persons to remedy the most glaring defects but these efforts are restricted by the limitations of public interest, expert knowledge, and time for the study of the problems. There should be a group of experts to attend to these matters. This body should receive suggestions for the improvement of the law. It should be subject to the call of the legislature to study the probable effect of private bills and to aid in the proper drafting of necessary bills. In general the bar, through its associations, is watchful for these things. But they lack the necessary agencies for study and research. We believe that these should be supplied by the state University Law School. Its faculty is as competent a body for this task as the state possesses. Its research facilities should be made available to the legislature and to the Bar Association. The faculty is now endeavoring to cooperate with the State Bar Association to these ends of which we hope to have more to say in future reports.

Faculty.—The faculty was the same as last year with the addition of George E. Osborne as assistant professor. His thoro training and previous record raised great expectations for his success as a teacher. These have been fully realized. There has been nothing but commendation of his work both by the students and his colleagues.

It is a pleasure to record the school's continued indebtedness to Homer B. Dibell, associate justice of the Supreme Court of Minnesota, for valuable courses on real property and mortgages, and to Bert Fesler, judge of the District Court, for valuable lectures on legal ethics. Both Justice Dibell and Judge Fesler render these onerous services without compensation.

Professor Noel T. Dowling resigned at the close of the year to accept an appointment to Columbia University. Professor Dowling has been only three years in our Law School, but his ability and personality have greatly impressed both students and faculty. Besides his work in the school, he did valuable work on the Committee of Jurisprudence and Law Reform of the State Bar Association. His resignation is a great loss to the school and to the bar of the state.

The resignation of Professor Dowling raises again the question of the rapidly changing personnel of our Law School faculty. In our report for last year we said:

Of the full time faculty in the Law School in 1916-17 but two remain. The loss from this change in personnel is very great. The Law School faculty should contribute to the improvement of the law of the state. It is obviously impossible for a faculty to accomplish anything along this line if, when they have secured a grasp of their subjects and have become familiar with the peculiarities of the state law, they are to be lost to the school. It is to the highest interest of the state that conditions in the University Law School be such as to secure and to hold a group of the ablest men that may be had in the profession.

It is a tribute to this school that its faculty is in such demand elsewhere. But unless we can find means to hold the able men who come to us, it is a question whether it would not be wiser to appoint men who would be less sought after by other schools, than to continue to be a training school for faculties elsewhere. We believe that the loss of professors from the Law School has been proportionately greater than from any other department of the University.

Registration.—Table I shows the registration for the year as compared with 1920-21. The total registration increased 35. The first-year class was larger by 37 students. A smaller percentage of the class was composed of special students due to the policy of scrutinizing closely applications for admission to this class. It is doubtful whether the entering class of next year will be so large. There were 42 regular students of the first-year class who did not have the honor points in their academic course requisite for entrance next year. The unsatisfactory grade of work done by this group will be noted later.

TABLE I

CLASS	REGULAR		SPECIAL		TOTAL	
	1920-21	1921-22	1920-21	1921-22	1920-21	1921-22
First year.....	73	123	46	33*	119	156
Second year.....	60	52	30	16	90	68
Third year.....	52	61	8	19	60	80
Totals	185	236	84	68	269	304

* Fourteen of these men have 75 or more academic credits which entitle them to privilege of becoming regular.

Preliminary education and scholarship of first-year class.—Table II shows preliminary training and scholarship of the several groups of the first-year class.

The study of this table shows startling facts. The per cent of successful students in Group I was satisfactory. But the per cent of successful students in Groups II and III was distressingly low. The poor record

made by these groups led to an investigation of their standing in the academic college. It was found the requirement of honor points for entrance to the Senior College in Arts and several other schools of the University, and the absence of such requirement in the Law School, caused many poor students, ineligible for other schools, to register in the Law School.

TABLE II

	GROUP I	GROUP II	GROUP III
	Graduates and Academic Seniors	Students with Less Than 3 Years Credit but More Than 1 2/3 Years	Less Than 1 2/3 Years Academic Credit, Including High School Graduates
1. Total enrolment.....	26	111	19
2. Number taking examinations...	21	100	14
3. Number passing all examinations	17	39	4
4. Per cent of students taking examinations who passed all examinations	81	39	27
5. Number delinquent in three or more subjects—classed as failed in year's work.....	2	39	7
6. Per cent of students taking examinations who failed in year's work	10	39	50

Table III shows the comparative record of three groups.

TABLE III

RELATION OF SCHOLARSHIP IN THE LAW SCHOOL TO GRADE IN ACADEMIC COLLEGE OF 151 STUDENTS WHO FIRST REGISTERED IN LAW SCHOOL IN 1921-22

	Students with Average Academic Grade of C or Better	Students with an Average Academic Grade Lower Than C	High School Graduates without Academic Credits
1. Total enrolment.....	93	47	11
2. Number taking examinations...	80	43	9
3. Number passing all examinations	44	13	3
4. Per cent of those taking examinations who passed all examinations	55	30	33
5. Number delinquent in three or more subjects—classed as failed in year's work.....	18	26	4
6. Per cent of students taking examinations who failed in year's work	22½	60½	44½

The above table explains the distressing record of the first-year class and shows the wisdom of requiring honor points for admission to the Law School. Never in the experience of the faculty has such a class entered the school. It threatened to break down its traditions and morale. The honor system of conducting examinations had been successful in the Law School. It continued to be a success this year in the upper classes, but in the first-year class it broke down completely. Sixteen members of the class have been expelled or suspended for taking or giving aid in the spring examinations. The record of the general fraternity members of the class is deplorable. A very large proportion of them failed to make a successful course. Many of the students who had satisfactory academic records did themselves little credit in the course. Investigation shows that outside employment had little to do with the failures. They were due to a lack of application to study often attributable to devotion to fraternity, social, and athletic activities. The faculty believes that steps must be taken to counteract the tendencies shown by this class. A plan has been worked out to maintain close supervision during the first year of each student who enters the school in the hope of developing in him a proper attitude towards his work. A law school faculty should not have to do this work, but under present conditions it seems necessary.

The following summary shows the progression of the first-year class:

Total number registered.....	156
Withdrawals before final examinations.....	21
Dropped for poor scholarship.....	28
Required to repeat first year because of poor scholarship.....	6
Expelled or suspended for dishonesty in examinations.....	16
	— 50
Advanced to second-year class	
Without conditions.....	52
With one condition only.....	15
With two conditions (on probation).....	12
With three conditions (provided the conditions are removed in fall examinations, otherwise first year must be re- peated)	6
	— 85

TABLE IV
SCHOLARSHIP

	YEARS		
	1st	2nd	3rd
1. Total enrolment.....	156	68	80
2. Number taking examinations....	135	58	77
3. Number passing all examinations	60	36	63
4. Number delinquent in one subject only	15	7	11
5. Number delinquent in two subjects only	12	7	1
6. Number delinquent in three or more subjects.....	48	8	2
7. Percentage of conditions and fail- ures to total examinations....	30	10.9	3.8
8. Percentage of successful students to total enrolment.....	38.4	53	78.75

Table IV shows the scholarship record of all three classes. It is gratifying to be able to report that the upper classes did as good work as usual. In fact the third-year class kept up their interest and effort to the end of their course to an unusual degree.

Minnesota Law Review.—The *Minnesota Law Review* completed its sixth year with sustained quality. Perhaps its greatest value lies in its effect on the scholarship of the leading students in the school. These students carry a heavy burden without credit or pecuniary reward. They are amply repaid by the development of their mental power and by their training in methods of research. They are much more valuable men when they go into practice both from a private and public point of view. The *Review* contributes to the development of the law in the state by conveying to the profession the fruits of legal research from various sources not readily available in other ways. It also seeks to make a special study of the problems peculiar to the law of our state. About four hundred lawyers of the state are subscribers, but it should reach more members of the bar. An arrangement has been made with the Minnesota State Bar Association for sending it to all members of the association. In this way it will reach the majority of the lawyers of the state. The thanks of the school and of the profession are due the editor, Professor Henry J. Fletcher, and its business manager, Professor James Paige, for their untiring and unselfish work in its development. Its financial position is excellent. It closed the year with a surplus of \$833.49.

Library.—During the year there were added to the library 2,303 volumes, making a present total of 36,004. The annual appropriation for the purchase of new books should be increased. It is smaller than that of other leading law schools. There is, however, now no space for new books except by displacing older and less useful ones. Attention was called in our last report to the necessity of more stackroom and reading room space, neither of which can be had in the present building.

Building.—As to the necessity for a new building for the school, we will merely refer to the dean's annual reports for a considerable number of years. Repetition of the arguments is needless.

Summer quarter.—Summer instruction has been continued in a limited measure. The school course is so organized that students must attend three regular academic years. It is also thought desirable that beginning students take the first year in regular course carrying the several subjects together through the year. Consequently no beginning work is offered in the summer quarter. Only those are admitted who have already completed a year of law study. The credits earned may be used to reduce the

normal load of the regular session or to supplement the course required for the degree. Students with outside employment avail themselves of the opportunity. A number of students on the *Law Review* take this means to lighten the burden of the school year that they may give more time to their work on the *Review*. The total registration for the summer of 1921 was 58 and for 1922 was 59.

Respectfully submitted,

EVERETT FRASER, *Dean*

THE MEDICAL SCHOOL

To the President of the University:

SIR: I herewith submit the report of the Medical School for the year 1921-22.

The report of the Survey Committee consisting of Dr. Frank Billings, of Chicago; Dr. Victor C. Vaughan, of Ann Arbor; and Dr. J. M. T. Finney, of Baltimore, was published in the summer of 1921. This constructive document reinforces the recommendations which the Administrative Board has made for the early enlargement of the University Hospital and completion of Millard Hall and the Institute of Anatomy. The committee states that it "is impressed with the excellent reputation of the Medical School." The detailed recommendations of the committee will be of continuing value to the school.

FACULTY CHANGES

Resignations.—Dr. Harold E. Robertson, professor of pathology, resigned to accept a position in the Mayo Foundation and Clinic. In this change the Medical School sustained a heavy loss.

Dr. Charles C. Gault, one of our graduates, resigned as assistant professor of physiology to accept the professorship of physiology at the University of Texas.

Other resignations were: Dr. John Sundwall, professor of hygiene; Dr. Conrad Jacobson, associate professor of surgery; Dr. Samuel E. Sweitzer, associate professor of dermatology and syphilis; Dr. Frederick H. Poppe, assistant professor of surgery.

Promotions.—Professor Elexious T. Bell was promoted to the headship of the Department of Pathology. We were fortunate to find an excellent successor to Dr. Robertson in our own faculty.

Miss Louise M. Powell, for many years superintendent of nurses, is given the faculty rank of associate professor and is promoted to be director of the School of Nursing. This school has been enlarged to include the facilities of the University, the Minneapolis General, the Northern Pacific, and the Miller hospitals. This is a well-deserved promotion. Miss Powell is a leader in nursing education and has done much for the school here.

Other promotions were: Dr. John Butler from assistant professor to associate professor of dermatology and syphilis; Dr. Harry G. Irvine from assistant professor to associate professor of dermatology and syphilis; Dr. Ernest M. Hammes from assistant professor to associate professor of nervous and mental diseases; Dr. Charles C. Gault from instructor to assistant professor of physiology; Dr. Hjalmar L. Osterud from instructor to assistant professor of anatomy; Dr. Rae T. LaVake from instructor to assistant professor of obstetrics and gynecology; Dr. Wallace Cole from

instructor to assistant professor of orthopedics; Dr. William E. Patterson from instructor to assistant professor of ophthalmology and oto-laryngology; Dr. Chauncey A. McKinlay from instructor to assistant professor of medicine; Dr. James S. McCartney from instructor to assistant professor of pathology; Dr. Naboth O. Pearce from instructor to assistant professor of pediatrics; Dr. Henry E. Michelson from instructor to assistant professor of dermatology and syphilis; Dr. Charles B. Wright from instructor to assistant professor of medicine; Dr. George R. Dunn from assistant to instructor in surgery; Dr. Erling W. Hansen from assistant to instructor in ophthalmology and oto-laryngology; Dr. Henry Odland from assistant to instructor in dermatology and syphilis; Dr. Samuel A. Weisman from assistant to instructor in medicine; Dr. William A. Sawat-sky from assistant to instructor in medicine; Dr. E. T. W. Boquist from assistant to instructor in medicine; Dr. Thomas Ziskin from assistant to instructor in medicine; Dr. Robert G. Green from assistant to instructor in bacteriology.

Appointments.—Dr. George E. Fahr, a man of splendid training, research accomplishment, and teaching experience, has been appointed full-time assistant professor of medicine.

Dr. Angus L. Cameron, who took the three-year graduate course in surgery here and held our teaching fellowship, was, on receiving his Ph.D. degree, appointed assistant professor of surgery on a full-time basis. Similarly, Dr. J. Charnley McKinley, after three years graduate work in nervous diseases and the earning of his Ph.D. degree, was appointed assistant professor of neurology.

We think these three appointments should be but a beginning in the connection of young, scientifically trained clinicians with our faculty under a full-time arrangement.

Other appointments were: Dr. Warren A. Dennis, associate professor of surgery; Dr. Moses Barron, assistant professor of medicine; Dr. Chester A. Stewart, assistant professor of pediatrics; Dr. Leroy A. Calkins, assistant professor of obstetrics and gynecology; Dr. Benjamin J. Clawson, assistant professor of pathology; Dr. Harold S. Diehl, assistant professor of public health; Bessie Baker, Katharine E. Dougherty, Irene R. English, and Marion L. Vannier, assistant professors of nursing; Dr. Frank L. Jennings, instructor in medicine; Dr. John F. Noble, instructor in pathology; Calvin P. Stone, instructor in anatomy; Edith A. Barber, Blanche E. Lawrence, Louise Newcombe, Orlena Ordahl, Mathilda C. Schlutz, and Barbara Thompson, instructors in nursing.

Prizes.—The prizes offered by Dr. Geist for work in anatomy prove again a great stimulus to scholarship and research. They were awarded: (a) for the best research by a student, \$200 to Oliver H. Morehead; (b) for the best dissection, \$20 to Richard H. Ahrens.

The Cutts prize in surgery was given to Fred S. Richardson for his invention of an instrument to facilitate the threading of surgical needles. This is an ingenious and useful device.

The short course for practitioners was given a second time in May, 1922. Thirty-four physicians were in attendance. An attempt was made to make the work less didactic and more practical than the first course given the year before.

Todd Memorial Hospital.—The Medical School feels that a real forward move was made by the Board of Regents in appropriating \$110,000 for the Todd Memorial Hospital. To this will be added \$20,000 donated by Mrs. F. C. Todd and \$20,000 given by Mrs. E. C. Gale. It is hoped to secure \$100,000 additional among the friends of Dr. Todd before the building is constructed.

Dr. Frank C. Todd was one of the leading ophthalmologists of the country and had been for several years chief of our department devoted to the head specialties. He went early in the war into the army medical service and advanced rapidly to a lieutenant colonelcy. He was a commander of the great base hospital at Camp Dodge and died while on duty, July, 1918.

Among his papers were found memoranda pertaining to the construction of an eye, ear, nose, and throat hospital. All concerned were struck by the broad conception of Dr. Todd, by the need of such a hospital in the state and the Medical School, and by the appropriateness of the suggestion (made at that time) that the unfulfilled plan of his life time should become the permanent memorial of the fallen physician-soldier.

The idea of raising the necessary funds among friends of Colonel Todd and the University had to be given up temporarily on account of the hard times. Now the gifts of Mrs. Todd and Mrs. Gale, together with the University appropriation, ensure the erection of the memorial.

Attendance.—The attendance for the year 1921-22 was as follows:

Summer quarter, 231; fall quarter, 329; winter quarter, 300; spring quarter, 276.

In addition, 102 were registered for the seventh or graduate interne year.

There were also 18 special students (physicians) and 12 unclassified students (undergraduates).

Seventy-eight students received the degree of bachelor of medicine and eighty-five received the degree of doctor of medicine.

Appended is the report of the University Hospital.

Respectfully submitted,

E. P. LYON, *Dean.*

THE UNIVERSITY HOSPITAL

The following report of the Elliot Memorial Hospital is submitted for the fiscal year ending June 30, 1922. The reports of the superintendent of the School of Nursing and the director of the Social Service Department are included.

COMPARATIVE STATISTICAL REPORT

	1920-21	1921-22	Average
HOSPITAL (Statistical)			
Patients in hospital at beginning of the period—July 1.....	160	148	....
Patients admitted during year.....	2,444	1,907	....
Patients treated during year.....	2,253	2,055	....
Total days hospital care.....	54,750	49,320	....
Average days per patient.....	21+	24	22.5
Highest daily census.....	179	174	....
Daily average number of patients.....	150	151	150.5
HOSPITAL (Financial)			
Daily average cost per patient.....	2.65	2.56	2.60
Daily cost per capita for provisions for all persons supported.....	.474	.357	.425
OUT-PATIENT DEPARTMENT (Statistical)			
New patients treated.....	15,647	15,898	....
Total patients' visits made.....	69,133	69,548	....
Average visits per day.....	288.16	281.17	284.66
Total prescriptions issued.....	25,470	23,710	....
Total X-ray requests.....	2,336	1,921	....
OUT-PATIENT DEPARTMENT (Financial)			
Daily average cost per patient's visit (net) exclusive of Social Service Department .....	.088	.083	.085
Daily average cost per patient's visit (net) inclusive of Social Service Department .....	.188	.189	.1885

THE SCHOOL OF NURSING

The following report for the School of Nursing is submitted for the year ending June 30, 1922:

Students in Central School of Nursing.....	99
Students in three-year course.....	81
Students in five-year course.....	18
Seniors	14
Juniors	19
Freshmen	54
Preliminary students.....	12
Affiliating students.....	88
Students graduated in December.....	11
Students graduated in June.....	1

Since last year's report was rendered, one more hospital has been merged in the University of Minnesota Central School of Nursing. The Northern Pacific Beneficial Association Hospital was formally included in the group in September, 1921. The group now consists of the University and Minneapolis General hospitals in Minneapolis and the Northern Pacific Beneficial Association and Charles T. Miller hospitals in St. Paul. These four hospitals comprise 1,257 hospital beds and, with the

exception of psychopathic, offer a complete variety of experience for the students. When all of the hospitals are fully staffed, the school will show an enrolment of 394 students. In May, of this year, a director for the Central School of Nursing was approved by the Board of Regents and Miss Louise Powell, now away on a year's leave of absence, was promoted to fill this position. The enrolment of students is almost double that of last year, with a considerable increase in the number registering in the Arts and Nursing Course.

The Public Health Nursing Course has been rearranged to conform with the University quarter system and is now prepared to offer a summer quarter of intensive field work, for which University credit is given. Three quarters, or nine months, are now required to earn the certificate.

A course for instructors in schools of nursing and a course for school nurses will be offered in the fall in connection with the College of Education to senior students in the Arts and Nursing Course. It is hoped that at the beginning of the winter quarter these courses may be opened to postgraduate students also.

Altho the growth and development of the school has been encouraging, it has undoubtedly been handicapped by the insufficient and inadequate housing facilities and the serious lack of classroom accomodations.

Respectfully submitted,
MARION L. VANNIER, *Acting Superintendent*

THE SOCIAL SERVICE DEPARTMENT

The following statement of the work of the Social Service Department of the University Hospital covers the period ending June 30, 1922.

The major work of the department has been in the following clinics:

Obstetrics and gynecology, dermatology and syphilis, cardiac (Department of Medicine), diabetics (Department of Medicine), nutritional (Department of Medicine), and nervous and mental. Such other types of cases as have been referred to us from dispensary clinics and hospital wards have been cared for.

A departmental report issued January, 1922 shows the type of service rendered and the need of extending the service.

Students have been registered in the department for field work as follows:

United States Public Health Service.....	1
Sociology Department.....	2
Public health nurses.....	4
Home Economics.....	24
	—
Total	31

Lectures and conferences have supplemented the actual practice in the field.

Statistical:

Number of individual families worked with (intensive) ..	1,429
Number of additional instances of patients assisted (clinic)	3,929
Number of visits made.....	2,210

THE PRESIDENT'S REPORT

Number of reports given agencies.....	2,337
Number of agencies cooperated with.....	246
Number of interviews with patients.....	3,900
Number of letters sent.....	4,874
Number of pieces educational literature distributed.....	2,261

Personnel.—The staff which carried on this work has been Miss Marion Tebbets; Miss Lydia Christ; Miss Lydia Madsen; Mrs. Frances Cushman (left June 30, 1922); Miss Caroline Manger (left October 1, 1921); Miss Mary C. Smith; Miss Bertha Brubacker (October 27 to November 2, 1921); Mrs. Erma MacLelland (half time—December, 1921 to June 30, 1922); Miss Isabel Gibson (March 20, 1922 to June 30, 1922); Miss Rebecca Pond (February 1, 1922).

We wish to thank all those who have assisted us in carrying on our work during the past year.

Respectfully submitted,

MARION TEBBETS, *Director*

The past year has been a difficult one because of several epidemics of communicable disease occurring among the patients and hospital personnel. These epidemics are largely due to the fact that we have insufficient facilities for isolation of cases of communicable disease when they develop in the hospital.

It will be noted from the statistical table herein that the daily average cost per patient is nine cents lower during the year 1921-22 than during the year 1920-21. This cost would have been still lower had it not been necessary to employ a relatively large number of graduate nurses in order to fulfill, in a measure, the need caused by an acute shortage of student nurses in the School of Nursing.

Respectfully submitted,

L. B. BALDWIN, *Superintendent*

THE COLLEGE OF DENTISTRY

To the President of the University:

SIR: I beg to submit herewith my report for the year 1921-22.

FACULTY

New appointments.—Arthur A. Zierold, M.A., D.D.S., M.D., who returned to the faculty after completing his medical course, was made associate professor. Carl W. Waldron, D.D.S., M.D., formerly in charge of oral surgery for the Canadian overseas army was made assistant professor. Dr. Allen T. Newman, Dr. Theodore W. Maves, Dr. Raymond H. Lundquist, Dr. Ingvald S. Veblen, Dr. Vernon G. Lauer, Dr. Harold C. Hillman, and Dr. Fred D. White were appointed instructors, the last three without salary.

Promotions.—Dr. Max E. Ernst, Dr. Robert O. Green, Dr. Alfred A. Pagenkopf, Dr. George W. Reynolds, and Dr. Charles Wiethoff were promoted from associate professors to full professors; Dr. Norman J. Cox, Dr. Carl O. Flagstad, Dr. Harold J. Leonard, Dr. Joseph M. Little, Dr. Everett E. MacGibbon, Dr. William A. Roll, and Dr. Charles E. Rudolph from assistant professors to associate professors; Dr. Archibald B. Butter, Dr. Rudolph W. Delton, Dr. Charles E. Hermann, Dr. Houghton Holliday, Dr. Lehman Wendell, and Dr. Daniel E. Ziskin from instructors to assistant professors.

Dr. Bert G. Anderson, assistant professor of oral surgery, has been called to the Union Medical College, Peking, China, as associate oral surgeon where he will teach his specialty. Dr. Anderson is exceptionally well qualified for such pioneer work.

During the summer Professors Peter J. Brekhus and Forrest H. Orton gave clinics in the Scandinavian countries, Dr. Brekhus in Norway and Finland, Dr. Orton in Sweden.

STUDENTS

Following the war a number of former students who had been in service were readmitted in addition to the regular limited class of 90. This resulted in a crowded senior class this year, the class numbering 114.

During and immediately after the war the number of foreign students was considerably lessened. Now they are coming in larger numbers. There are men from England, Norway, Sweden, and China.

There is an increased attendance (24) in the Course for Dental Nurses (formerly called dental hygienists), with a notably high quality of matriculants. The class of mechanics was the largest ever entered (45), with a high percentage of Federal Board students.

Thirteen seniors received their commissions this year as first lieutenants in the Officers Reserve Corps, Dental Branch. The former ruling has been changed to enable students to receive commissions upon graduation.

The classes of 1922 and 1923, assisted by the faculty, have presented the college with a handsome bronze bust, life size, of Dr. Green Vardaman Black, the leading pioneer in modern scientific dentistry.

BUILDINGS

The old building has long been overcrowded. With increasing demands continually being made on dentistry, this condition becomes more acute each year. A proposed solution of the problem is a joint clinical building for medicine and dentistry. This possibility offers the widest opportunities for the training and future development of both dental and medical students. As the most advanced policy in dental education looks forward to an ultimate reunion of dentistry with medicine, the logic of such a step is beyond question. It is to be hoped that we may realize it soon.

CARNEGIE SURVEY

In May an inspection committee for the Carnegie Survey of Dental Education, composed of Dr. William J. Gies, of Columbia University; Dean C. R. Turner, of Pennsylvania State University; Dr. C. A. Nixon, member of the Indiana State Board of Dental Examiners; and Dr. A. H. Reynolds, secretary of the Pennsylvania State Board of Dental Examiners, visited Minnesota, inspecting also the graduate section at the Mayo Foundation.

The inspection work of the survey is now completed in the United States and Canada. The findings, to be embodied in a report this fall, are eagerly awaited by all educators interested in the advancement of dental education.

Respectfully submitted,

ALFRED OWRE, *Dean*

THE SCHOOL OF MINES

To the President of the University:

SIR: I herewith submit my report for the University year 1921-22.

SCHOOL OF MINES EXPERIMENT STATION

Personnel.—Mr. C. L. Wallfred has been added to the staff of the station, and is in charge of the investigation of peat fuel. No other changes in staff have been made.

New equipment.—A laboratory-sized Herreshoff roasting furnace was bought from the General Chemical Company, to be used in connection with the concentration of manganese ores. This furnace is approximately 8 feet high and 6 feet in diameter, and is used to convert non-magnetic ore into magnetic ore.

A No. 10, Type "B" (100 BHP) Akerlund Down Draft Gas Producer has been secured for use in connection with the investigation of peat fuel. This machine is now being installed, and will be ready for operation late in July.

During the year, several pipe launders were built and dismantled. These machines were used for special experimental work and can hardly be classed as permanent equipment.

Several magnetic concentrating machines have been built embodying the latest principles of magnetic concentration as developed from our research work in this line.

Activities.—The work of the station may be grouped as follows:

- A. Work submitted by citizens of the state:
 - a. Large scale tests ($\frac{1}{2}$ ton or more)..... 22
 - b. Small scale tests (less than $\frac{1}{2}$ ton)..... 165
 - c. Samples submitted for assay and examination..... 375
 - d. Number of samples referred to other departments..... 8
- B. Special experimental work:
 - a. Investigations are being carried on in connection with the following problems. In some cases the North Central Station of the United States Bureau of Mines has offered its cooperation.
 - 1. Mechanical concentration of Lake Superior hematites. The United States Bureau of Mines cooperates.
 - 2. Concentration of the iron and manganese in the Cuyuna manganiferous iron ores. A special appropriation of \$5,000 per year for two years was made by the legislature for this work.
 - 3. Concentration of the iron and titanium in the titaniferous iron ores. The United States Bureau of Mines cooperates.
 - 4. Magnetic concentration of Lake Superior magnetites. The United States Bureau of Mines cooperates.
 - 5. The consideration of the cost of the removal of silica from iron ores. Mechanical means versus blast furnace. The United States Bureau of Mines cooperates.
 - 6. Magnetic roasting and concentration of the Lake Superior hematites. The United States Bureau of Mines cooperates.

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7. The agglomeration of fine iron ore. The United States Bureau of Mines coöperates.
 8. The design of an efficient roasting furnace for hematite ores. The United States Bureau of Mines coöperates.
 9. The smelting of fine iron ore. The United States Bureau of Mines coöperates.
 10. Technological investigation of peat. A special appropriation of \$10,000 per year for two years was made by the legislature in order to carry on this investigation.
 11. The development of a high power wet magnetic separator.
 12. Magnetic head motion for tables.
 13. Magnetic assayer.
 14. Methods for determining the amount of iron in the magnetic state in iron ores.
 15. A proper design of magnetic poles for magnetic separators.
 16. Lixiviation of manganese iron ores. The United States Bureau of Mines coöperates.
 17. The use of air lifts for pumping mixtures of ore and water. This investigation has been completed and a report made.
 18. The use of pipe launders for conveying mixtures of ore and water. This investigation has been completed and a report made.
 19. The development of apparatus for rapidly cooling red hot sinter. This investigation has been completed and a report made.
 20. Sharpening and tempering churn drill bits. The United States Bureau of Mines coöperates.
- b. The experiment station has agreed to coöperate with the North Central Station on the following Bureau of Mines' problems:
1. Experimental smelting of manganese ores.
 2. Beneficiation of low grade iron ores from the Birmingham district.
 3. Design and construction of experimental blast furnaces.
- c. In coöperation with the Department of Geology of the University of Minnesota, the following investigations have been made:
1. Microscopic study of sintered and partially reduced iron ores.

Magnetic concentration.—The plant of the Mesabi Iron Company at Babbitt, Minnesota, in which eleven magnetic log washers are installed, will be ready for commercial operation about the first of July, 1922. This plant will produce a high grade iron ore from material heretofore considered of no value. If this plant proves to be economically successful, it will mean the beginning of the growth of a large low grade iron ore industry in the state and substantial increase to funds in the state treasury. The University of Minnesota will also receive a certain amount of money on account of the contracts that have been made with Mr. Davis regarding the use of the magnetic log washers at Babbitt. The Mines Experiment Station has been coöperating with the Mesabi Iron Company in various tests and experiments in order to give all possible assistance in an endeavor to make the operation of the plant successful.

Assays.—The total number of assays made in connection with all these activities during the past year was 10,197.

Publications.—The *Mining Directory* for 1922 was published and distributed in May, 1922.

Bulletin No. 9, of the Mines Experiment Station, entitled *Magnetic Concentration of Iron Ore*, was distributed in January, 1922. This is a

138-page, illustrated bulletin dealing with all phases of magnetic concentration as applied to iron ores.

Bulletin No. 10 is now in the process of preparation, and will pertain to the use of pipe launders for conveying material in mine plants. This publication will probably be distributed some time after the first of the year.

New building.—After considerable delay, due to changes in the plans of the Northern Pacific Railway Company, the new Mines Experiment Station Building is actually in the process of construction. Building and equipment will cost approximately \$320,000 and will house the School of Mines Experiment Station and the North Central Experiment Station of the Bureau of Mines. It will be, without exception, the best laboratory in the world for the study of iron and manganese ores. The building will be a factory type construction and no pains have been spared in making it convenient and flexible. It is not in the least ornate or elaborate but is designed for the purpose of furnishing suitable laboratories that will not become antiquated as scientific methods change. The first concrete was poured May 29, 1922, and the work is going forward rapidly. It is expected that the building will be completed and ready for occupancy about the first of December.

UNITED STATES BUREAU OF MINES

Object.—The North Central Experiment Station of the United States Bureau of Mines was established in 1917 to acquire and disseminate useful information to the mining and metallurgical industries of the entire country and more specifically to the Lake Superior district, which includes Minnesota, Michigan, and Wisconsin. In order to promote safety among those employed in the mining industries of the Lake Superior district, mine rescue car No. 10 is employed to conduct mine rescue and first aid work. The general administration of car No. 10 is conducted at this station.

Personnel.—Mr. C. E. Julihn has been temporarily relieved from duty as superintendent at the North Central Experiment Station to serve as chief engineer of the War Minerals Relief Commission in Washington, D.C. Mr. T. L. Joseph, assistant metallurgist, is acting superintendent in the absence of Mr. Julihn. Associated with Mr. Joseph are F. B. Foley, metallurgist; P. H. Royster, assistant metallurgist; Harvey J. Livermore, laboratory assistant and analyst; R. V. Ageton, chief engineer in charge of mine rescue car No. 10; S. Olson, principal clerk. Three men are employed as skilled laborers.

Activities.—The principal problems now under consideration are:

1. Neumann bands in mild steel, their production and detection—continued from previous year
2. Effect of carburization in tubes of oil stills—continuous
3. Heat treatment of churn drills
4. Drill steel survey

5. Study of iron mining shafts of the Lake Superior district
6. Metallographic study of synthetic cast iron
7. Critical study of methods of chemical analysis in Minnesota iron mines
8. Experimental blast furnace research

The object of the research in the experimental blast furnace is to establish means for smelting iron and manganese ores in such a way that it can be determined in advance of the operation in commercial furnaces how ores will act and how they may best be treated.

There has been designed and built an experimental laboratory blast furnace which can be made to operate efficiently as a miniature furnace having attached to it all necessary means for making observations and securing scientific data covering all conditions affecting the results obtained in its operation.

The second step in the development of the problem is to determine from the operation of small laboratory furnaces the proper design for an experimental blast furnace of sufficient size to make it comparable to a commercial furnace. This part of the work resolves itself into such problems as:

1. Effect of size of materials upon operation of furnace
2. Effect of bosh angle, bosh height, and stock line diameter
3. What is the most effective rate of driving or supplying forced air
4. Factors affecting the temperature obtained in the combustion zone, the slag, and the metal
5. The maintenance of proper hearth temperature

The data obtained from the foregoing will be used in the design of an experimental blast furnace which will ultimately be employed for making industrial tests upon iron and manganese ores.

All work of this station is conducted in close coöperation with the School of Mines Experiment Station.

MINNESOTA TAX COMMISSION

Object.—The School of Mines still continues its service to the State Tax Commission. The ore estimates, as checked and submitted, are used as a basis for the valuation of mineral properties in the state of Minnesota.

Services.—Owing to the fact that our report to the Tax Commission is made biennially and as the report for the biennial period, 1920-22 is not due until September 1, 1922, no detailed statement will appear in this year's report.

Personnel.—Mr. E. M. Lambert, assisted by Mr. A. J. Carlson, continues in charge of the work. The cordial relations with the officials of the various mining companies and the expressions of appreciation of this branch of the service to the state which come to us both from the Tax Commission and the mining companies are a source of considerable gratification.

EDUCATION

Registration.—The total registration during the year was 170, distributed as follows:

Seniors	23
Juniors	46
Sophomores	49
Freshmen	52
	<hr/>
Total	170

Geographical distribution of students.—The above students were registered from Minnesota counties as follows:

Becker	1	Morrison	1
Clay	1	Mower	1
Crow Wing	3	Otter Tail	1
Douglas	1	Pipestone	1
Faribault	1	Ramsey	28
Fillmore	3	Red Lake	1
Freeborn	1	Rice	1
Grant	1	St. Louis	15
Hennepin	59	Scott	1
Hubbard	1	Stearns	2
Isanti	1	Steele	1
Itasca	3	Todd	1
Lake	1	Wabasha	2
Lyon	3	Winona	4
McLeod	2	Wright	1
Meeker	1		

Students registered also from outside of the state as follows:

China	6	North Dakota	3
Colorado	1	Ohio	1
France	1	Pennsylvania	1
Illinois	2	South Dakota	2
Iowa	1	Spain	1
Michigan	1	Wisconsin	3
Montana	3		

Withdrawals.—During the year, twenty-seven students withdrew. These students were distributed by classes as follows:

Seniors	0
Juniors	1
Sophomores	11
Freshmen	15

The reasons for these withdrawals were as follows:

Financial	6
Ill health	3
Transferred to other colleges within the University	3
Transferred to other institutions	1
Suspended	1
Scholastic deficiency	6
Unknown	7

Faculty.—There were no resignations of members of the faculty during the past year. To provide for the work of Mr. Comstock, who was on a leave of absence for the year, various members of the faculty assumed classes previously taught by him, thus increasing, materially, their teaching load at a considerable sacrifice of time and energy.

Mr. Clayton M. Reasoner, a graduate of the University of Minnesota in 1920, was appointed instructor in metallography. Since graduation he has worked with the Weston Electric Company. He comes to us fully qualified to assist both in instructional work and in certain investigations being carried on by the department.

No other additions were made to the faculty during the year.

Curriculum.—No changes in the curriculum have been made for the coming year.

Attendance.—The total attendance during the year showed an increase of two. The large increase in the number of students enrolled in other colleges taking the courses in metallography has taxed the facilities of that department to the utmost as well as making necessary the securing of additional assistance which was provided for by the appointment of Mr. Reasoner as noted above.

Respectfully submitted,

W. R. APPLEBY, *Dean*

THE COLLEGE OF PHARMACY

To the President of the University:

SIR: I herewith submit my report of the College of Pharmacy for the University year 1921-22.

Registration.—The college completed its thirtieth year on June 14, 1922, on which date occurred the twenty-ninth commencement of the college. A total of thirty-three students graduated—twenty-seven taking the degree pharmaceutical chemist and six the degree bachelor of science in pharmacy. This is the largest class ever graduated by the college. The number of graduates last year was thirteen but certain reasons accounted for that smaller number.

The total registration during the year reached 125. Last year's enrolment was 113. The normal student capacity of the Pharmacy Building is 80. The overcrowded condition, resulting from a student population of over fifty per cent in excess of the normal capacity, equipment, and teaching force, naturally created difficulties for all concerned and made the prosecution of the regular work not only difficult but more or less unsatisfactory. However, it can be said of the faculty that it did the best it could under the circumstances.

Instruction.—The full work of the courses was carried on as usual but with more difficulty than usual owing to the crowded condition of the building. The very unsatisfactory method of conducting laboratory classes of different years in the same laboratory at the same time and, in one case, of requiring students of the same class to do their work in different laboratories at the same time had to be resorted to again. The difficulty, in connection with laboratory work, was increased by the small supplies budget which necessitated not only unwarranted economy in the use of supplies but in the curtailing of some laboratory work. Work under these circumstances sometimes became discouraging for the faculty but the instruction was kept at a competent and efficient standard.

Mr. Martin B. Chittick, instructor, was appointed to take the place of Mr. C. W. Folkestadt who helped us out temporarily last year. Mr. Earl B. Fischer, instructor, was added to the Department of Pharmacognosy on January 1, 1922, to assist Dr. Newcomb. Because of the addition of the one new instructor, a lesser number of student helpers were required than last year. The following named students acted as student assistants but of course did not instruct: George M. Rud, George Lark, and Earl M. Hodel. Mr. C. V. L. Netz, instructor, could give only about two thirds of his full time to teaching. The rest of the time he required in the prosecution of the work for the Master's degree.

The laboratory work was somewhat facilitated during the third quarter by the addition of \$2,100 to the supplies budget. This additional

sum enabled the college to complete the laboratory work in a fairly satisfactory manner and to replenish the current depleted stock of expendable supplies in a small degree.

The student body petitioned for less work three times during the year. These petitions of course were not granted. There is a basis for these periodical petitions in that the full course which is now completed in three years, covers a total credit value of 215 which represents considerably more work than is required in some colleges whose minimum course is carried on in four years. The faculty will soon make a recommendation in this connection.

The work of the student body on the whole has not been as satisfactory as heretofore. There has been a noticeable increase in the number of grades of D, E, F, and I, and this despite the fact that the instructional staff has worked much harder with students than it normally can be expected to work. Unquestionably there has been a lowering of students' ideals everywhere. There appear to be more students who lack application and industry. No noticeable diminution in capacity in students has been noticed. I feel there is growing up a great and very pressing need of some means that will encourage and stimulate character-building. This means, of course, should be supplied long before students attend the University but there is unmistakably an increasing evidence that definite character-building is receiving less and less attention in some of the homes from which students come. Whether it is the function of the University to engage in this sort of work, of course, may be a debatable question but personally I feel that under the present circumstances, the University would be warranted in doing more along these lines.

Dr. C. Norman McCloud gave the regular course in first aid to the injured. This course had been omitted last year for budgetary reasons. The usual botanical field trips were made by the students of the freshman class. The entire student body attended the sessions of the scientific and practical section of the Minnesota State Pharmaceutical Association at the West Hotel during February.

The college gave instruction in metrology to two classes of about one hundred nurses and in elementary pharmaceutical laboratory work to about eighty-seven medical sophomores. The faculty therefore gave instruction to a total of over three hundred students.

Pharmacy prizes.—Kenneth L. Bacon won the Minnesota State Pharmaceutical Association scholarship prize of \$90. No student entered the competition for the Fairchild scholarship prize.

Free Dispensary.—Miss Hallie Bruce, who succeeded Instructor O. J. Blossmo as hospital pharmacist, was in charge of the drug room of the Free Dispensary during the year and instructed pharmacy seniors in the practical dispensing of the drug room. The total number of physicians' prescriptions dispensed during the year, largely by the senior class under supervision and instruction, approximated 22,906.

Departmental library.—As heretofore the library reading room had to be used frequently for instructional purposes because of lack of lecture

and recitation rooms in the building. No appreciable additions were made to the library during the year. One of the needs of the college is a person who can give from one-half to three-fourths time to the library.

Pharmaceutical service.—The extensive service and activities of the college have continued through the year. (See previous annual reports.)

Outside activities.—The faculty has continued its usual outside activities. Two members attended the annual convention of the American Pharmaceutical Association, the American Conference of Pharmaceutical Faculties, and the National Association of Boards of Pharmacy. One member attended as usual the annual conventions of the state pharmaceutical associations of North and South Dakota, Iowa, and Wisconsin. All members of the faculty and student body attended the annual meeting of the Minnesota State Pharmaceutical Association. The faculty contributed in a very large measure to the proceedings. One member of the faculty was reelected to the secretaryship of the association. Another was reelected for the seventeenth time to the chairmanship of the scientific and practical section of the association. One member of the faculty attended the annual meeting of the Board of Trustees of the United States Pharmacopoeial Convention at Washington, D.C., in May. One member was reelected to the chairmanship of the Northwest Drug Conference and presided at the annual conference. The Department of Pharmacognosy arranged for a conference of teaching pharmacognocists at the college following the state association meeting. Representatives were present from Ohio, Indiana, Illinois, Wisconsin, Iowa, North and South Dakota, Michigan, Missouri, Utah, and Minnesota. The faculty, especially that of the Department of Pharmacognosy, has been doing much valuable research work in connection with the pharmacopoeial revision work. This and other work of the college has been receiving most favorable notice throughout the country and most flattering references are made to the college and its work. One of our foremost pharmacists recently stated in a letter: "the College of Pharmacy of the University of Minnesota represents the highest type of achievement in pharmacy in this country." Referring to a member of the faculty, he said: "His career of achievement places him as the greatest leader in pharmacy that we have had in the past one hundred years. He has set an example for a century to come." Another has referred to the college as "a living monument to an indefatigable leader."

The faculty gave over forty talks and addresses outside of the college in various parts of the United States, including Minnesota, Iowa, Wisconsin, Michigan, North and South Dakota, Louisiana, District of Columbia, Ohio, Illinois, Pennsylvania, and New York.

College survey.—Following the survey made of the University by Professor Sears, the College of Pharmacy made a comprehensive survey of itself. This survey will be published in the *Minnesota State Pharmaceutical Association Proceedings* for February, 1922, and in the *American Druggist* of New York City (probably in the July or August number).

This is the first exhaustive survey of any college of pharmacy ever made. The college has been requested to present it at the coming meeting of the American Conference of Pharmaceutical Faculties at Cleveland in August, 1922.

Building and equipment needs.—The need for more room and equipment is growing more urgent continually. Fortunately the necessity under which the college found itself the past few years of limiting its enrolment, has not brought forth as much criticism as was expected but the need for more room will certainly require very early administrative attention. These needs have been fully set forth and described heretofore.

Geographical distribution.—The student body came from the following political divisions in the numbers indicated: Russia 1; Philippines 1; Illinois 1; Montana 1; Nebraska 1; North Dakota 2; South Dakota 2; Wisconsin 2; and the rest from Minnesota counties as follows:

Beltrami	1	Morrison	1
Chippewa	1	Olmsted	1
Chisago	3	Otter Tail.....	2
Crow Wing.....	2	Ramsey	20
Faribault	2	Renville	2
Freeborn	1	Sibley	1
Goodhue	4	Stearns	5
Grant	1	Steele	2
Hennepin	47	Stevens	1
Houston	2	Swift	1
Itasca	1	Todd	3
Koochiching	1	Waseca	2
Lac qui Parle.....	2	Watonwan	2
Lake	2	Wright	1
Martin	2	Yellow Medicine.....	1
Meeker	1		

Respectfully submitted,

FREDERICK J. WULLING, *Dean*

THE SCHOOL OF CHEMISTRY

To the President of the University:

SIR: I have the honor to submit my report for the School of Chemistry for the year 1921-22.

FACULTY

New appointments.—Gladstone B. Heisig, instructor in general inorganic chemistry; Ralph E. Brewer, instructor in technological chemistry.

STUDENTS REGISTRATION

Fall Quarter, 1921-22

CLASS	CHEMISTRY	CHEMICAL ENGINEER- ING	ARTS- CHEMISTRY	TOTAL	1920-21 TOTAL
Freshmen	12	15	..	27	51
Sophomores	6	21	..	27	37
Juniors	5	19	2	26	23
Seniors	5	23	..	28	26
Total	28	78	2	108	137

Winter Quarter, 1921-22

CLASS	CHEMISTRY	CHEMICAL ENGINEER- ING	ARTS- CHEMISTRY	TOTAL	1920-21 TOTAL
Freshmen	12	11	..	23	32
Sophomores	7	21	..	28	31
Juniors	4	18	4	26	23
Seniors	8	16	..	24	26
Total	31	66	4	101	112

Spring Quarter, 1921-22

CLASS	CHEMISTRY	CHEMICAL ENGINEER- ING	ARTS- CHEMISTRY	TOTAL	1920-21 TOTAL
Freshmen	9	13	..	22	29
Sophomores	6	20	..	26	21
Juniors	1	19	4	24	24
Seniors	5	17	..	22	23
Total	21	69	4	94	97

THE PRESIDENT'S REPORT

DEGREES CONFERRED, 1921-22

	December, 1921	June, 1922	Total
Bachelor of science, in			
Chemistry .....	..	4	4
Chemical engineering.....	2	12	14
	—	—	—
Total	2	16	18
Total, last year, in same courses.....			18

Student participation in disciplinary affairs.—At the request of the Student Council of the School of Chemistry a cooperative plan has been adopted for the administration of cases of discipline, particularly those resulting from dishonesty in examinations. This differs essentially from the usual "Honor System." The instructor is required to remain in the examination room and to exercise reasonable vigilance so as to prevent cheating. The students are thus relieved of the responsibility of watching and reporting upon one another, which distasteful and otherwise objectionable duty is seldom well performed by them. Thus, the honor system often fails to accomplish its purpose, that is, to prevent dishonesty. In this new plan, the Student Council will investigate cases of infraction which are referred to it and will suggest to the faculty such action as is deemed advisable for the maintenance of the good name of the school and its student body. In some respects, this plan is undoubtedly an improvement over honor systems, in general, both theoretically and practically. It does not require for its success that a student report the delinquency of his classmates.

CURRICULUM

Beginning in the fall of 1922, the freshman year of the chemistry curriculum will include drawing and shopwork. This year will then be the same as the first year in the chemical engineering course. Students will be able to postpone their choice between the two courses until the beginning of the sophomore year. This principle is in accordance with the most recent developments in technical education.

BUILDINGS

The completion of the Chemistry Building has been effected during the past year and provides a very satisfactory increase in the facilities for both instruction and research.

The new construction includes in the basement a laboratory for chemical manufacture which is being equipped with the most modern apparatus and machinery for practical instruction in industrial chemistry. On the first floor there are a library and reading room and a laboratory which will be used for research by advanced students. The second floor laboratory is devoted to qualitative analysis and the third to organic chemistry. All of these laboratories are equipped with the best types of desks and lockers.

The fourth floor is at present utilized for drafting rooms besides housing about one half of the ventilating machinery for the entire building. Also, a considerable portion of the basement and sub-basement is used by the General Storehouse of the University. The offices of the dean of student affairs and the Federal Board Coördinator are situated in this building pending the provision of suitable quarters in the proposed Administration Building.

It seems that with the gradual elimination of activities which do not pertain to the School of Chemistry, this building should be adequate for our needs for some years. The development of chemical engineering, however, with its requirement of space and special construction for the accommodation of its various testing and manufacturing units, forces us to keep in mind the proposed building for this department which is included in the Comprehensive Building Plan, even tho it may not be needed in the immediate future.

EQUIPMENT

As stated above, the new part of the Chemistry Building is being equipped in a thoroly satisfactory manner. With such additions and replacements as may be provided from time to time, we should be able to improve our equipment both as to quality and quantity and to maintain it in first-class condition.

In the older laboratories, however, many of the desks are in very poor condition. They were brought from the former laboratories to this building, when it was built, and have never been replaced. The action of heat and chemicals has produced a disintegration of the wood. Moreover, by the adoption of a new design the capacity of a laboratory could be increased about fifty per cent. Provision should be made for replacing these desks by up-to-date types with the more durable alberene tops to resist heat and chemical action.

Respectfully submitted,

O. M. LELAND, *Dean*

THE COLLEGE OF EDUCATION

To the President of the University:

SIR: I beg to submit herewith my report as dean of the College of Education for the year 1921-22.

ENROLMENT, DEGREES, AND CERTIFICATES

The substantial increase in enrolment in this college in recent years has continued during the current year. The total number of students enrolled in the year 1920-21 was 599. The total number for the current year is 882, an increase of 283 students, or 47 per cent of the previous year's enrolment. Details are given in the following tables. Since students on the University Farm campus, planning to teach, are enrolled this year for the first time in the College of Education, the data for this group are given separately.

ENROLMENT BY YEARS, TERMS, AND CLASSES

	1919-20			1920-21		
	FALL	WINTER	SPRING	FALL	WINTER	SPRING
Seniors	134	139	130	146	145	134
Juniors	109	100	130	163	195	214
Sophomores	32	49	40	52	49	41
Freshmen	42	39	41	41	48	46
Unclassed	128	136	84	119	136	109
Agric.—home econ....						
—seniors .....	...	...	...	48	50	52
Agric.—home econ....						
—juniors .....	...	...	...	90	91	92
Total	455	463	425	659	714	688

TOTAL ENROLMENT BY YEARS

YEAR	MEN	WOMEN	TOTAL
1917-18	40	159	199
1918-19	46	240	286
1919-20	110	386	496
1920-21	95	504	599
1921-22			
Main campus.....	102	608	710
Farm campus.....	44	128	172
	— 146	— 736	— 882

ENROLMENT IN COLLEGE OF EDUCATION IN SUMMER SESSION

YEAR	MEN	WOMEN	TOTAL
1918	31	161	192
1919	71	171	242
1920	106	304	410
1921	152	453	605

TOTAL NUMBER UNDERGRADUATE STUDENTS IN REGULAR ACADEMIC YEAR AND SUMMER SESSION

YEAR	ENROLMENT
1919-20	906
1920-21	1,204
1921-22	1,487

ENROLMENT OF STUDENTS IN GRADUATE SCHOOL WITH MAJOR IN EDUCATION

YEAR	REGULAR YEAR	SUMMER SESSION	TOTAL
1919-20	31	52	83
1920-21	55	49	104
1921-22	63	91	154

NUMBER OF STUDENTS ENROLLED FOR UNDERGRADUATE AND GRADUATE WORK IN EDUCATION

YEAR	UNDERGRADUATE	GRADUATE	TOTAL
1919-20	738	83	821
1920-21	599	104	1,113
1921-22	1,487	154	1,641

Degrees and certificates.—The degree of bachelor of science has been granted to 163 students since June, 1921.

The University teacher's certificate has been granted as follows:

Administration and supervision.....	26	Home economics.....	30
Agriculture	16	Latin	6
Americanization	10	Mathematics	14
Animal biology.....	2	Natural science.....	1
Art education.....	10	Political science.....	11
Botany	5	Public speaking.....	3
Chemistry	4	Public school music.....	3
Commercial subjects	5	Physical education (women).....	10
Elementary subjects.....	1	Physics	5
English	30	Scandinavian	2
French	10	Sociology	2
German	3	Spanish	3
History	32		

Advanced degrees granted since June, 1921:

Master of arts.....	12
Doctor of philosophy.....	1

CHANGES IN STAFF

New appointments.—The following new appointments were made to the staff for the current year: M. G. Neale, professor of educational administration; S. R. Powers, instructor in education; F. L. Whitney, instructor in theory and practice of teaching; Mrs. Leah Miller Hanley, instructor in art education; Mrs. Henry Barnes, instructor in art education; Sherman Dickinson, instructor in agricultural education; K. Egbert

Rollefson, instructor in science, University High School; Margaret McGuire, instructor in mathematics, University High School; Agnes Mary Keefe, instructor in French, University High School; Clara McCluskey, instructor in Latin, University High School; Suzanne Bourgoin, instructor in French, University High School.

Resignations.—Mrs. Hermione L. Dealey Dvorak, assistant professor of educational psychology; Mrs. Hazel Martin, instructor in art education; Josephine de Boer, instructor in French, University High School.

SPECIALIZED CURRICULA

In addition to the special curricula listed in previous reports, the faculty of the College of Education has this year adopted special curricula in the following subjects:

Natural science
Physical education for men
Social studies

Revisions of previously announced special curricula have been made in the following subjects:

High school teacher-training
Public school music
Teachers of subnormal children

COMMITTEE ON APPOINTMENTS

The activities of the College of Education in regard to the recommendation of graduates for teaching positions are represented by the following table:

TEACHERS RECEIVING APPOINTMENTS	1920-21			1921-22		
	NUM- BER	AVERAGE SALARY	TOTAL SALARIES	NUM- BER	AVERAGE SALARY	TOTAL SALARIES
High school academic.....	197	\$1,417	\$279,319	217	\$1,356	\$294,298
Junior high school and grades	6	1,370	8,820	10	1,496	14,960
High school principals.....	20	1,758	35,165	16	1,756	28,090
Superintendents and graded school principals.....	18	1,980	35,640	16	2,000	32,000
Normal school and college teachers	9	1,811	16,300	7	1,893	13,250
Teachers of home economics	32	1,347	43,125	33	1,350	46,435
Teachers of agriculture.....	6	2,166	13,000	14	2,016	28,220
Special .....	..	....	....	15	1,814	27,210
Total	288	....	\$431,369	328	....	\$484,463

PRIZES AND SCHOLARSHIPS

The Elizabeth Carse scholarship of \$50 was this year awarded to Miss Margaret Jackson, a member of the senior class. Miss Carse has given notice of the discontinuance of this scholarship for next year.

The Pi Lambda Theta prize of \$50 was this year won by Mrs. Laura Price, a member of the senior class.

Phi Delta Kappa prize.—The Phi Delta Kappa Fraternity has provided for an annual prize of \$50 to be awarded under the following conditions:

1. The basis of selection shall be a paper upon some educational problem. This paper shall be the result of original study and research.

2. The study shall be judged on the ability shown by the student in the consideration of the topic, on the style of its presentation, and on its value to the profession.

3. A committee consisting of the dean of the College of Education, a member of the education faculty, and an active member of Eta Chapter, having a Bachelor's degree or its equivalent shall select the winning paper.

4. The prize will be withheld if, in the opinion of the committee, no paper of sufficient merit is presented.

5. Papers must be filed with the dean of the College of Education not later than April 20.

Coffman Foundation.—The students in the College of Education have this year organized to raise an endowment fund to provide for the promotion of scholarship and research. By their request the fund is to be known as the Coffman Foundation, and the following articles of agreement have been entered into:

I. We the undersigned students, alumni, faculty, and other friends of the College of Education of the University of Minnesota hereby associate ourselves together for the purpose of raising by subscription and such other means as may seem advisable a sum of money which shall be used as a foundation to provide an income for the promotion of scholarship and research in the field of Education.

II. This fund shall be known as the Coffman Foundation for the Promotion of Scholarship and Research in Education.

III. It is understood that the tentative goal of this foundation shall be \$25,000.00.

IV. When this sum has been raised, or such portion of it as may later be determined upon, the administration of the foundation shall be placed in the hands of the Board of Regents of the University of Minnesota to be administered in the same manner as are other funds devoted to scholarship and research in the field of Education. The income and all parts thereof shall be used for the encouragement of scholarship and research on the part of undergraduate and graduate students and members of the faculty of the College of Education, but provided in early stages primary consideration be given to graduate and undergraduate students. Such encouragement may take any one of the following or similar forms:

1. Research fellowships to be held without service to the University.

2. Budgets to defray expenses of proposed research.

3. Prizes or awards for scholarly work accomplished.

4. Funds to promote publications.

The determination of the particular use of the income of the fund in any year will be made by a committee consisting of the Dean of the College, two members of the faculty of the College of Education appointed by him, the President of the

Junior and Senior classes of the College of Education, and two alumni, not in the employ of the University, one a man and one a woman appointed by the President of the Alumni Association of the College of Education whose recommendation shall be forwarded by the Dean of the College of Education to the President of the University and to the Board of Regents for final approval.

V. Committee of Fifty

1. For the purpose of raising this fund it is intended to create a committee of fifty which shall have complete charge of all activities connected with the raising of the amount specified above.
 2. This committee shall elect from among its members a chairman, a vice-chairman, a recording secretary, a corresponding secretary, a treasurer and such other officers as may be necessary to conduct the business of the group.
 3. The five officers named above shall constitute an executive committee which shall have the powers commonly entrusted to such a committee.
 4. The committee may provide for sub-committees to take charge of special subdivisions of the work.
 5. Meetings shall be held at any time necessary, and may be called either by the chairman or by ten committeemen, provided only that due notice is given of the time and place.
 6. The committee shall provide for the perpetuation of its membership and officers by electing new members and officers to fill vacancies as they occur.
- VI. The funds for the foundation shall be secured:

1. Thru pledges of \$25.00 solicited from students, alumni, faculty and friends of the College of Education.
 - a. Payable in installments of \$5.00 each year for five years, beginning immediately or at graduation.
 - b. Payable in installments at the convenience of the subscriber covering a period not to exceed five years.
2. Thru pledges of any amount exceeding \$25.00 or in amounts less than this sum.
3. In any other manner deemed advisable by the Committee.

The solicitation of subscriptions on the basis of this agreement are now in progress.

THE UNIVERSITY HIGH SCHOOL

The enrolment in the University High School continues at the maximum possible with the space and present teaching staff. The details of enrolment are given in the following table:

FIRST QUARTER

CLASS	BOYS	GIRLS	TOTAL
Seniors	21	29	50
Juniors	18	28	46
Sophomores	29	30	59
Freshmen	32	30	62
Total	100	117	217

SECOND QUARTER

CLASS	BOYS	GIRLS	TOTAL
Seniors	21	31	51
Juniors	17	26	43
Sophomores	30	30	60
Freshmen	31	31	62
Total	99	117	216

THIRD QUARTER

CLASS	BOYS	GIRLS	TOTAL
Seniors	18	30	48
Juniors	17	26	43
Sophomores	28	30	58
Freshmen	31	31	62
Total	94	117	211

During the current year Mr. Reeve, principal of the high school, made a study of the success of the graduates of this high school in later life. The outstanding facts of this study are as follows:

From 1915 to 1921 the University High School had graduated 141 students. Of this total, 95 or about 68 per cent have entered the University of Minnesota. Of the 95, 54 or about 57 per cent of the total number entering the University, have either graduated or are still in school; 28, or about 30 per cent have left school with passing records. This makes a total of eighty per cent who have made a satisfactory record in their first year. Thirteen of the 95 or about 20 per cent were dropped for low scholarship during the first year. However, some of these have since been readmitted and are now making good records in college.

Twelve of the 141 graduates have gone elsewhere to college and succeeded. This makes a total of 107 or about 76 per cent who have gone on to college. Finally, of all the 107 who have gone on to college 94 or about 87 per cent have done passing work the first year. Seven or about 5 per cent of the girls among the 141 are married. The remainder of the girls and boys are in business. Only one, a boy, is dead.

PSYCHO-EDUCATIONAL CLINIC

The work of the psycho-educational clinic may be viewed from two angles.

1. *Public service.*—During the year 1921-22 fifteen different agencies have referred cases to this clinic. One hundred forty-six individuals

have been given intelligence examinations. These individuals were grouped by intelligence levels as follows:

Superior	18
Normal	38
Backward	29
Border line.....	6
Deficient	55
Total	146

While an appreciable per cent of the patients were brought to the clinic as "mentally deficient," 58 per cent of the patients were "problems" of superior, normal, or backward mentality, indicating that the referring agencies no longer look upon psychological tests as tests for mental deficiencies alone but also as helpful in the diagnosis of "problem" cases. A variety of cases was referred to the clinic, including 19 unmarried mothers, 17 psychopathic cases, children with sensory defects and children suffering from wretched habit formation.

2. The primary purpose of the clinic, however, from the standpoint of this college is the actual training in clinical work of advanced students in educational psychology. Only students with extended training in psychology are admitted to the work of the clinic. Six students have registered in the clinic during the year. These students, in addition to observation and testing in the clinic and outside reading, have carried on problems in (1) the Home for Children and Aged Women, (2) the Vocational Guidance and Placement Bureau of Minneapolis, (3) a School for Delinquent Boys, and (4) sundry schools of Minneapolis (speech defective children).

The following tabulation shows the distribution of patients referred by 15 cooperating agencies, 1921-22.

University Social Service.....	47	Physicians	4
Hennepin County.....	24	Friends	3
General Hospital.....	20	Jewish Charities.....	2
Parent	15	Board of Education.....	2
Woman's Coöperative Alliance.....	7	Schools of Minneapolis.....	2
Visiting Nurse Association.....	7	Dakota County.....	1
Associated Charities	6	Catholic Bureau.....	1
Children's Protective Society.....	5		

EDUCATIONAL RESEARCH

Interest in educational research on the part of the faculty and advanced students in the College of Education continues to grow. The current year has seen more activity in this field than has any previous year. Outstanding facts in this program of research are the following:

A. A study of the junior college by Professor Koos on a subvention of \$10,000 from the Commonwealth Fund.

B. Studies in school finance by Professor Swift. These studies include an investigation under the direction of the Bureau of Education of the school financial problems of the state of Arkansas.

C. The conduct of four public school surveys in the state of Minnesota by Professors Neale, Miller, Van Wagenen, Whitney, and others, as follows:

1. School building survey for the Edina school district.
2. Survey of supervision and instruction in the public schools of Austin, Minnesota.
3. School building survey for the city of Winona.
4. School building survey for the city of Duluth.

D. A survey of educational achievement in the rural schools of the state of New York by Dean Haggerty.

The total amount of money expended on the above projects was approximately \$35,000. All of these funds were provided by sources outside the University.

Other researches have been made by a number of members of the faculty and graduate students. Some indication of these may be obtained from the list of publications reported elsewhere.

The continued prosecution of educational research is of very great importance to the life and welfare of this college, and properly organized and conducted, should render a great service in college teaching and to the public at large.

PROFESSIONAL SPIRIT

It is believed that there has been a growth in professional spirit on the part of students in this college and of graduates who are planning to teach. The development of a genuinely professional attitude toward teaching is rendered unusually difficult in this University because of the large variety of fields in which students are preparing to teach, a variety which necessitates enrolment in other colleges and associations elsewhere. The fact that our student body for the fall quarter of the current year was recruited from thirty-six different institutions and that our students were not generally acquainted with each other rendered difficult the development of a community and craft point of view regarding the teacher's work. Some progress has been made in this direction, particularly through the efforts of the social committee. Much less than is desirable, however, has been possible and there is apparent a very great need for increased attention to this matter.

Respectfully submitted,

M. E. HAGGERTY, *Dean*

THE GRADUATE SCHOOL

To the President of the University:

SIR: I beg leave to submit the following report for the Graduate School, covering the year ending June 30, 1922.

COMPARATIVE TABLES OF REGISTRATION

REGISTRATION, 1917-22

YEAR	STUDY	MASTER	DOCTOR	ENGINEER	MEN	WOMEN	TOTAL
1917	29	328	107	..	347	117	464
1918	21	200	155	..	248	128	376
1919	19	219	134	..	268	154	372
1920	24	358	226	..	443	165	608
1921	49	462	283	20	604	210	814
1922	42	606	301	39	755	233	988*

* Of these, 183 were registered only in the Summer Session of 1921.

DISTRIBUTION ACCORDING TO YEAR OF GRADUATE WORK, 1921-22

FIRST YEAR	SECOND YEAR	THIRD YEAR	FOURTH YEAR
633	219	97	9

GRADUATE STUDENTS DOING FULL- OR PART-TIME WORK

	FULL TIME	PART TIME	TOTAL
Men	417	338	755
Women	76	157	233
Total	493	495	988

MEMBERS OF STAFF REGISTERED IN GRADUATE SCHOOL

	MEN	WOMEN	TOTAL
Instructors doing graduate work†.....	131	26	157
Graduate students serving as assistants...	63	17	80
Graduate students holding scholarships...	26	8	34
Teaching fellows	39	23	62
Fellows (Mayo Foundation).....	163	10	173
Total	422	84	506

† Twelve assistant professors.

The increase of 22 per cent in the registration in the Graduate School over last year, a gain in numbers of over 60 per cent in the last two years, distinctly emphasizes the place the University of Minnesota is taking in the educational work of the Northwest. Indeed when one notices the distribution of the institutions from which the graduate students come (172 different institutions, 38 states, and 12 foreign countries) one may well feel that the University has become an educational institution with obligations much wider than the state or section. All that can be done ought to be done in supporting and strengthening a faculty which is carrying the work of graduate instruction in addition to burdens of undergraduate teaching that have increased in equal proportion. The facilities of laboratories and libraries can not be made too rich and varied for such a faculty and such a significant group of students. The building of a great university is proved by no better evidence than the gathering within its walls of a body of instructors and students devoted to advanced scholarship and research in the varied fields of letters and science. They are the university in the proper sense of that word. Their needs and their nurture ought to make every appeal to the pride and generosity of the state and of the metropolitan center in which the university is located.

The most serious concern of anyone connected with graduate instruction is the maintenance of what we usually call "standards." This means something more than marks in class work. Such recognition of the doing of formal tasks is not to be neglected but the real problem raised by numbers is how to maintain inspiring contacts between individual students and graduate instructor. Real graduate students are not in need of constant supervision but the instructor burdened with large undergraduate classes is in serious danger of not being in a position to carry on his own research continuously enough to offer fruitful coöperation to graduate students who wish to work with him. If the numbers of these graduate students increase also as they have with us, we shall need to be doubly vigilant in seeing to it that their work is fully worth the recognition implied by an advanced degree. Just as the increased numbers in undergraduate colleges have reduced us to handling juniors and seniors in groups and by methods approximating those heretofore held defensible only with Junior College students so the graduate student is in danger of being taught too much in classes in undergraduate fashion.

The comparative table on page 184 compiled by the Association of American Professors shows the general character of this problem.

I sincerely hope that as the circle of the University's friends is widened the opportunity at hand now to support its large social service in what it is doing in research will appeal to the generous men and women of wide vision. When one sees what comparatively small sums may do to help struggling students or investigators one feels that the day can not be far distant when generous gifts will uphold their hands by scholarships, loan funds, and endowments for research and for enriching our library and making it the most adequate of its kind west of the Atlantic seaboard.

NAME OF UNIVERSITY	HOURS OF A PROFESSOR TEACHING UNDER-GRADUATE CLASSES	HOURS OF A PROFESSOR TEACHING SOLELY GRADUATE OR BOTH GRADUATE AND UNDER-GRADUATE CLASSES	IS THERE A REVOLVING FUND FOR RESEARCH?	HAS THE UNIVERSITY GIVEN AID TO PUBLICATIONS?
California	8-12	6-9	Yes	\$20,000 last year
*Catholic University	Up to 10	No difference	No reply	No reply
Chicago	10-15	6-8	No	\$35,000 last year
Clark	Up to 12	2-6 or 8?	No	Yes
Columbia	6-9	No difference	Yes	Yes
Cornell	8-10	No difference	Yes	\$5,000 last year
Harvard	6-12	5-9	No	Yes
Illinois	8-12	No difference	Yes	Yes
Indiana	Up to 15	No difference	No	Yes
Iowa	10-15	No difference	Yes	Yes
Johns Hopkins.....	5-12	No difference	No	Yes
Kansas	10-15	10-12	No	Yes
Leland Stanford...	8-10	No difference	Yes	Yes
Michigan	16	Average 8.5	No	Yes
Minnesota	8-12	No difference	Yes	Yes
Missouri	12	No difference	No	Not last year
Nebraska	6-15	6	No	Yes
Northwestern	10-14	No difference	No	Not last year
Ohio	8-15	No difference	No	Yes
Pennsylvania	12	6-12	No	Not last year
Princeton	9-12	No difference	No	Yes
Virginia	9-12	No difference	No	Not last year
Wisconsin	12-15	10-12	Yes	Yes
Yale	10-12	Average 8.5	Yes	Yes

* The Catholic University reports that teaching hours depend on rank, not on the fact of teaching graduate courses. "Professors teach five hours; instructors up to ten." A similar practice prevails in other universities but is not shown in this table.

This interest and support should come first and foremost from the Twin Cities. It will not come until the people of this metropolitan center realize that while they are directing their generosity to distant educational institutions, there has grown up here in their midst a great institution which will train the youth of this state and section and offer the educational opportunities which will enrich the lives and affect the thought and life of their children and children's children. This new interest and loyalty can come only through knowledge of what the University of Minnesota is, and of what it is doing. That this is woefully lacking, partly through our own fault, was strikingly shown this last year by an editorial in one of the local papers on the lack of research and scientific spirit at the University of Minnesota and the consequent "provincial" character and "provincial" mindedness of its faculty. This may amuse those who

know what the University is doing and have before them the testimony of the leadership of members of our staff in various fields of research, public service, and the scientific organizations. The *Alumni Weekly* very properly treated it with seriousness and in a series of articles from various departments showed the research being carried on in several typical departments.

My hope is that we can, through regular University channels, keep up and expand such a campaign about the University's work, and that out of it will result new appreciations, wider loyalty, and richer support from individual citizens.

Nothing that has been done this year is of greater significance for the future of the University and its place as a center of scholarship than the breaking ground for a great library building that will furnish space for books and study space for advanced as well as undergraduate students. The hundreds of students who have had no place to work near the books which are their tools can look forward at last to working quarters comparable to those found in neighboring institutions. In the next few years the University must make a direct and special effort to increase its collection of books, for, as a recent writer in *School and Society* has pointed out, the University of Minnesota has steadily declined in rank in the last six years in its library facilities. In 1915, we were second in book appropriations among university libraries and in 1921 we were but thirteenth. In general development, taking in all factors, we have exchanged a rank of sixth for that of tenth. We must not be content until our new building houses a really significant collection of books. It is in the field of book-buying that small gifts or endowments for special collections would in the matter of a relatively few years work wonders in strengthening and enriching our library and giving it a distinction that it has now in only one or perhaps two limited fields.

The chronicle of the year shows that the graduate work under the various group committees and individual advisers of candidates for degrees has gone forward in the usual orderly and effective way. The teaching faculty discussed and adopted an important change in the requirements for printing the Doctor's thesis. On June 12, 1922, it approved the following regulations which will hereafter govern this matter.

The publication requirement for the thesis for the degree of doctor of philosophy may be satisfied either by complete publication or by deposition of the thesis in manuscript and publication in summary as defined below.

1. *Complete publication.* Complete publication shall consist of: Publication substantially in full as a separate book or pamphlet or as an independent article in some approved medium of publication. There shall also be published a brief abstract of the thesis, 1 to 4 pages in length, (at the expense of the University) in the University Thesis Series. This abstract shall include an exact bibliographic reference to the original complete publication.

2. *Deposition of the complete thesis in manuscript and publication in abstract or summary.*

(a) The complete manuscript shall be deposited in triplicate in the University Library. The University Librarian shall also copyright the manuscript, the fees to be paid by the candidate and the copyright to be in his name or the name of the university as the candidate may elect.

(b) The thesis shall also be published in summary in one of the two following methods.

1. Publication of a summary of the original thesis of (usually) 8 to 16 pages in the University Thesis Series at the expense of the author. The summary shall be approved by the candidate's department and by the Executive Committee of the Graduate School and shall include the statement that the original thesis is on file in manuscript in the University Library.

2. Publication of an approved abbreviation or summary of the original thesis not less extensive than that provided for in the preceding section, in an approved medium of publication, and, also, publication (at the expense of the University) of an abstract of 1 to 4 pages in the University Thesis Series. The approval referred to will be given by the candidate's thesis committee. Both the summary and the abstract shall include the statement that the original thesis is on file in manuscript in the University Library. The abstract shall also include an exact bibliographic reference to the published summary.

(c) The candidate must submit the abbreviated summary or the abstract with the typewritten copy of the thesis. When published in full, or in summary in any other medium than the University Thesis volume, the candidate must deposit with the Librarian one hundred copies properly bound and indicating on the title page that it has been submitted in partial fulfillment of the requirements for the doctor's degree.

Another significant thing is the growing number of graduate students seeking advanced work during the Summer Session. The increase in these far exceeds the percentage of growth of the session itself. This emphasizes from their standpoint the importance of enriching as rapidly as possible the offerings in the Summer Session and the rapid development of the work into a full summer quarter. We have now reached the point where a considerable body of students are meeting all residence and course work for the Master's degree through the work they take during the summer. The unevenness of offerings from summer to summer in certain departments has given rise to embarrassment and disappointment for some of this group. I feel sure that if the summer quarter were put on a basis similar to the others and the ability to accumulate time for leaves of absence on pay were offered as at Chicago we should have less difficulty in keeping our staff here in the summer.

I have in mind also the advantage in encouraging our staff to take their leaves of absence for research and study as they do not now on the system of sabbatical leaves. One of the discouraging points brought out by the report to the Interim Commission is the table showing that of those who could, and for the sake of scholarship should, take the sabbatical leave only 7 out of 140 who became eligible took advantage of it in 1920-21. That is, 5 per cent benefited by the system as at present administered. The University has a real interest in seeing that men secure free time for travel and study. It certainly must admit that its present plan is a failure.

In the field of publication our output in the research series is this year more scanty than it has been for years. I am glad to say that the promise for the coming year is of greater activity. Probably next year we shall be able to report a more adequate method of handling the printing and

distribution of our research monographs. At present the distribution is on the basis of old lists which are being revised. If the library were able to put this matter in the hands of a competent exchange librarian the returns in the publications of other institutions would more than repay our costs.

EDUCATIONAL INSTITUTIONS REPRESENTED IN THE GRADUATE SCHOOL, 1921-22*

Alabama, University of.....	1	Drury College.....	1
Alberta, Canada.....	1	Dubuque University.....	2
Arizona, University of.....	2	Earlham College.....	1
Arkansas, University of.....	1	Edinburgh, Scotland.....	1
Augsburg Seminary.....	4	Fargo College.....	2
Augustana College.....	3	Franklin and Marshall.....	1
Baker University.....	1	Furman University.....	1
Beloit College.....	3	Geneva College.....	2
Bethel College.....	1	George Washington University.....	2
Bowdoin College.....	3	Georgetown University.....	2
Boston University.....	2	Georgia, University of.....	1
Bradley Institute.....	2	Glasgow, Scotland.....	1
Brown University.....	2	Grenoble, France.....	1
Bryn Mawr College.....	1	Grinnell College.....	4
Bucknell College.....	1	Gustavus Adolphus College.....	7
Cambridge, England.....	1	Hamline University.....	18
Canton Gov't Med. School, Ch....	1	Hanover University.....	1
Carlton College.....	14	Harvard Medical School,	
Carroll College.....	1	Shanghai, China.....	1
Catholic University.....	2	Harvard University.....	9
Central University.....	1	Hope College.....	2
Charleston College.....	1	Huron College.....	2
Chicago, University of.....	26	Illinois, University of.....	12
Chile, Univ. of, South America....	1	Indiana, University of.....	7
Cincinnati, University of.....	3	Iowa State College.....	5
Clark University.....	1	Iowa State University.....	9
Clemson Agricultural College.....	2	Jamestown College.....	1
Colorado, University of.....	3	Johnson College.....	1
Columbia University.....	9	Kansas, University of.....	7
Concordia College.....	3	Kansas State College.....	2
Connecticut Wesleyan University..	3	Kentucky, University of.....	1
Copenhagen, Univ. of, Denmark....	1	Lafayette College.....	1
Cornell University.....	11	Lawrence College.....	2
Cornell College.....	3	Louisville University.....	1
Creighton University.....	4	Luther College.....	2
Cumberland University.....	1	McGill University, Canada.....	4
Dakota Wesleyan University.....	4	Macalaster College.....	25
Dartmouth College.....	3	Madrid, Spain.....	1
Davidson College.....	4	Maine, University of.....	1
Des Moines University.....	3	Manitoba, Canada.....	1
Dennison University.....	1	Marquette University.....	1
Denver University.....	1	Massachusetts Institute of Tech....	2
De Pauw University.....	1	Miami University.....	1
Drake University.....	1	Michigan, University of.....	12

* In cases where the rating of a college is low the student's entry blanks show extra undergraduate work here or elsewhere or tested qualifications in their major work.

Michigan Agricultural College.....	3	Southern California, University of	3
Minnesota, University of.....	446	Southwestern University.....	2
Missouri, University of.....	6	Stanford University.....	3
Monmouth College.....	2	Sydney, Australia.....	2
Montana, University of.....	3	Syracuse University.....	2
Nanking, University of, China.....	1	Tennessee, University of.....	1
Nebraska, University of.....	15	Toronto, University of, Canada....	10
Nebraska Wesleyan University....	3	Trinity College.....	3
New Mexico, University of.....	1	Tufts College.....	2
New York University.....	2	Tulane University.....	4
North Carolina, University of....	1	Union College.....	2
North Dakota, University of.....	7	Upper Iowa University.....	4
Northwestern College.....	1	Utah, University of.....	2
Northwestern University.....	4	Upsala, Sweden.....	1
Notre Dame University.....	1	Vanderbilt University.....	3
Oberlin.....	3	Vassar College.....	3
Ohio State University.....	7	Virginia, University of.....	4
Ohio Wesleyan University.....	5	Wabash College.....	2
Oklahoma, University of.....	1	Wafford College.....	1
Oregon Agricultural College.....	1	Wartburg Seminary.....	2
Paris, France.....	1	Washington, University of.....	3
Park College.....	1	Washington and Jefferson.....	1
Pennsylvania, University of.....	15	Washington and Lee.....	1
Pittsburgh, University of.....	1	Washington State College.....	1
Philippines, University of.....	1	Wellesley College.....	5
Pomona College.....	4	Wells College.....	2
Princeton University.....	5	Western Maryland.....	1
Purdue University.....	4	Western Reserve University.....	2
Queens College, Canada.....	2	Westminster College.....	1
Radcliffe College.....	1	West Virginia.....	2
Red Wing Seminary.....	3	Whitman College.....	1
Ripon College.....	1	William Jewell College.....	1
Roanoke College.....	1	Williams College.....	1
Rochester University.....	1	Winona State College.....	1
St. Benedict.....	1	Yale University.....	5
St. Catherine.....	9	Yankton College.....	2
St. Clara.....	1	Zurich, University of Switzerland..	1
St. John.....	3		
St. Lawrence.....	2	Total.....	988
St. Louis.....	1		
St. Olaf.....	19	Foreign countries represented.....	12
St. Teresa.....	1	Total colleges represented.....	173
St. Thomas.....	2		
Saskatchewan, Canada.....	2	Total registration from other col- leges.....	542
Simpson College.....	2	Minnesota registration.....	446
Smith College.....	2		
South Dakota, University of.....	2	Total registration.....	988
South Dakota State College.....	1		

MASTERS' DEGREES GRANTED IN 1922 BY DEPARTMENTS

DEPARTMENT	MINNESOTA GRADUATES		OTHER COLLEGES		TOTALS		Total
	Men	Women	Men	Women	Men	Women	
Agricultural Economics.	5	..	..	..	5	..	5
Agronomy	1	..	1	..	2	..	2
Anatomy .....	..	..	1	..	1	..	1
Animal Husbandry.....	3	..	2	..	5	..	5
Astronomy .....	..	..	..	1	..	1	1
Bacteriology	1	..	2	..	3	..	3
Biochemistry	1	..	1	1	2	1	3
Botany .....	..	..	1	2	1	2	3
Chemistry .....	..	1	1	..	1	1	2
Chemical Engineering...	7	..	..	..	7	..	7
Civil Engineering.....	1	..	..	..	1	..	1
Dairy Husbandry.....	1	..	2	..	3	..	3
Dermatology .....	..	..	1	..	1	..	1
Economics	1	..	..	..	1	..	1
Education .....	..	1	..	1	..	2	2
Educational Administ'n	4	..	3	1	7	1	8
Educational Psychology	1	..	..	2	1	2	3
Electrical Engineering...	2	..	..	..	2	..	2
English .....	..	1	1	..	1	1	2
Entomology	1	1	1	1	2	2	4
Forestry	1	..	..	..	1	..	1
Geology	3	..	..	..	3	..	3
History .....	..	1	1	1	1	2	3
Horticulture	1	..	1	..	2	..	2
Latin .....	..	2	..	..	..	2	2
Mechanical Engineering	4	..	..	..	4	..	4
Medicine .....	..	..	2	..	2	..	2
Oto-Laryngology .....	..	..	1	..	1	..	1
Pathology	2	..	2	..	4	..	4
Pharmacology .....	..	..	1	..	1	..	1
Philosophy .....	..	..	..	1	..	1	1
Physiology	1	..	1	..	2	..	2
Plant Pathology.....	3	..	2	..	5	..	5
Political Science.....	1	..	..	..	1	..	1
Romance Languages ....	..	1	2	..	2	1	3
Sociology .....	..	1	..	1	..	2	2
Structural Engineering.	1	..	..	..	1	..	1
Surgery	2	..	10	..	12	..	12
Urology .....	..	2	..	..	2	..	2
Veterinary Medicine...	..	1	..	..	1	..	1
Total	48	12	40	12	91	21	112

GRADUATE STUDENTS MAJORING IN THE VARIOUS DEPARTMENTS

DEPARTMENT	MEN	WOMEN	TOTAL
Agricultural Biochemistry	23	2	25
Agricultural Economics	15	..	15
Agricultural Education	13	..	13
Agronomy and Farm Management.....	15	..	15
Anatomy	6	2	8
Animal Biology.....	..	4	4
Animal Husbandry.....	8	..	8
Anthropology .....	..	1	1
Architecture	2	..	2
Bacteriology	8	3	11
Botany	3	7	10
Chemical Engineering.....	12	..	12
Chemistry	40	9	49
Comparative Literature.....	..	2	2
Civil Engineering.....	8	..	8
Dairy Husbandry.....	13	..	13
Dermatology	3	..	3
Economics	34	2	36
Education	80	19	99
Educational Administration.....	36	5	41
Electrical Engineering.....	13	..	13
English	23	37	60
Entomology	13	1	14
Forestry	1	..	1
Geology	15	..	15
German	6	5	11
History	27	28	55
Home Economics.....	..	12	12
Horticulture	10	..	10
Latin	3	3	6
Mathematics	9	7	16
Mechanical Engineering.....	12	..	12
Medicine	51	4	55
Metallography	1	..	1
Neurology	3	..	3
Obstetrics and Gynecology.....	5	..	5
Ophthalmology	10	..	10
Oto-Laryngology	7	..	7
Pathology	11	4	15
Pediatrics	11	..	11
Pharmacology	2	..	2
Philosophy	1	2	3
Physics	16	5	21
Physiology and Physiologic Chemistry...	6	1	7
Plant Pathology.....	19	3	22
Political Science.....	9	3	12
Psychology	15	18	33
Rhetoric .....	..	2	2
Romance Languages.....	19	25	44
Roentgenology	3	..	3
Scandinavian	1	..	1
Sociology	16	17	33
Soils	2	..	2
Structural Engineering.....	4	..	4
Surgery	87	..	87
Urology	5	..	5
Total	755	233	988

DOCTORS OF PHILOSOPHY 1921-22

- Louis Angelo Boettiger, B.A. '14, Illinois, M.A. '18, Minnesota. Major, sociology; Minor, economics. Thesis: *Historical Development of Employers' Welfare Work as a Phase of Industrial Relations.*
- Angus Luverne Cameron, B.A. '13, Indiana, M.S. '14, Chicago. Major, surgery; Minor, pathology. Thesis: *A Study of the Developmental Topography of the Organs of the Human Abdomen, with Particular Reference to Their Congenital Abnormalities and Displacements.*
- Mary Ellen Chase, B.A. '09, Maine, M.A. '18, Minnesota. Major, English; Minor, English and Romance (French). Thesis: *A Comparative Study of Several Versions of Thomas Hardy's Novels, The Mayor of Casterbridge, Tess of the d'Urbervilles, and Jude the Obscure.*
- Ferdinand Albert Collatz, B.S. '18, M.S. '20, Minnesota. Major, biochemistry; Minor, plant pathology. Thesis: *Flour Strength as Influenced by the Addition of Diastase Ferments.*
- William Carmichael Cook, B.S. '17, Cornell, M.S. '20, Minnesota. Major, entomology; Minor, entomology. Thesis: *Studies in the Physical Ecology of the Noctuidae.*
- Louise Dostall, B.A. '16, M.A. '17, Minnesota. Major, plant pathology; Minor, botany. Thesis: *Factors Influencing the Pathogenicity of Helminthosporium Sativum Pammel, King and Bakke.*
- Georgina Talbot Droitcoir, B.A. '18, M.A. '20, Minnesota. Major, history; Minor, political science. Thesis: *The English Manorial Group with Special Reference to the Manors Belonging to the Bishopric of Winchester in the Thirteenth Century.*
- Ralph John Garber, B.S. '12, Illinois, M.S. '17, Minnesota. Major, agronomy; Minor, botany. Thesis: *Inheritance and Yield with Particular Reference to Rust Resistance and Panicle Type in Oats.*
- John Walter Gruner, B.A. '17, New Mexico, M.A. '19, Minnesota. Major, geology; Minor, chemistry and petrology. Thesis: *Organic Matter and the Origin of the Biwabik Iron-Bearing Formation of the Mesabi Range.*
- Elden Bennett Hartshorn, B.S. '12, Dartmouth. Major, chemistry; Minor, physics. Thesis: *Some Substituted Arylpialkylamine Oxides.*
- Marshall Hertig, B.S. '16, Minnesota. Major, entomology; Minor, bacteriology. Thesis: *Some Phases of the Pathological Histology of the Honey Bee with Special Reference to Infection with Nosema Apis.*
- Margaret Kincaid, B.A. '17, Vassar, M.A. '18, Cornell. Major, psychology; Minor, educational psychology. Thesis: *An Experimental Study of Variability in Learning.*
- Julian Gilbert Leach, B.S. '17, Tennessee, M.S. '18, Minnesota. Major, plant pathology; Minor, biochemistry. Thesis: *The Parasitism of Colletotrichum Lindemuthianum.*
- Margaret Newton, B.S. '18, M.S. '19, McGill. Major, plant pathology; Minor, botany. Thesis: *Studies in Wheat Stem Rust.*

- Norville Clarence Pervier, B.S. '16, M.S. '17, Iowa State College. Major, biochemistry; Minor, physiologic chemistry. Thesis: *The Estimation of Pentoses.*
- Archie Dayton Power, B.S. '11, Baker, M.A. '12, Kansas. Major, physics; Minor, chemistry (physical). Thesis: *The Coefficient of Recombination of the Natural Ions in Atmospheric Air, and Allied Phenomena Associated with Weak Atmospheric Ionization.*
- Louys Anthony Rumsey, B.S. '12, M.S. '13, Dennison University. Major, biochemistry; Minor, chemistry (physical). Thesis: *Diastatic Enzymes of Wheat Flour in Their Relation to Flour Strength.*
- Helen Margaret Scurr, B.A. '17, Simpson, M.A. '20, Minnesota. Major, English; Minor, German. Thesis: *Henry Brooke.*
- Paul Francis Sharpe, B.A. '17, Nebraska Wesleyan, M.S. '20, Minnesota. Major, biochemistry; Minor, chemistry (physical). Thesis: *Viscosity as a Measure of Hydration Capacity of Wheat Flour and Its Relation to Baking Strength.*
- Frederick Lamson Whitney, Ph.B. '06, M.A. '14, Chicago. Major, educational administration; Minor, educational psychology. Thesis: *The Administration of Practice Teaching in Normal Schools.*

DEGREE CONFERRED POST OBITUM

- Oswald Rognley,* B.A. '15, St. Olaf, M.A. '17, Minnesota. Major, physics; Minor, mathematics. Thesis: *The Motions of Ions in the Atmosphere.*

PUBLICATIONS

Since the last report the following have appeared:

Studies in Engineering

- George A. Maney and John I. Parcel, *An Investigation of Secondary Stresses in the Kenovæ Bridge.*

Education Series

- Fletcher H. Swift, *Studies in Public School Finance—The West: California and Colorado.*

In press are the following:

Biological Series

- Richard E. Scammon and Leroy A. Calkins, *Prenatal Growth.*
Arthur M. Johnson and others, *Minnesota Studies in Plant Science*

APPROPRIATIONS FOR RESEARCH

Allotments from the research funds of the Graduate School have been made by the Executive Committee during the past year to the following persons for the purposes stated, with results as summarized:

* Died April 7, 1922.

- M. J. Van Wagenen, \$300 for printing and clerical assistance in developing scales for measuring achievements in reading history and geography. A series of reading scales in geography completed, to be used in elementary schools. A series of reading scales completed, to be used in elementary and high schools.
- M. E. Haggerty, \$500 for study of gifted children. A competent assistant, under direction, made detailed studies and reports on gifted children found in the Minneapolis and St. Paul schools.
- L. I. Knight, \$400 for study of dormancy in Peruvian daffodil. Results to be published in *National Magazine*.
- J. E. Tilden, \$400 for photographic work and assistant on source books of Pacific Ocean algae. First volume in press, two more volumes in progress.
- W. W. Folwell, \$500 for assistant in preparing materials for *History of Minnesota*. Work in progress, to be continued.
- A. T. Henrici, \$600 for assistant on statistical study in growth of bacteria under varying conditions.
- W. F. G. Swann, \$525 for assistant in physics investigations. Two problems under way: The atmospheric penetrating radiation at high altitudes, and the coefficient of electrons from metal surfaces.
- F. H. Swift, \$300 for assistant on public school finance. Bureau of Education Bulletin published, another bulletin in press. Four magazine articles published during year. Report prepared for the United States Chamber of Commerce. Two manuscripts in press in University of Minnesota Research Series.
- F. F. Grout, \$300 for assistant on determinative tables in mineralogy, chemical analysis on clay. A state bulletin by Geological Survey in preparation for press. Work to be continued.
- J. F. McClendon, \$500 for animals, supplies, and apparatus, vitamine problems. The following papers have been published: *Calcium Phosphate Metabolism in the Diagnosis of Rickets*; *The Diagnostic Value of Phosphate Metabolism in Experimental Rickets*; *The Significance of Wheat Flour in Relation to Rickets*; *Are Iodides Foods? Experimental Rickets*. Work to be continued.
- Oscar E. Harder, \$300 for assistant on study of carburization of steel. Work done on content carbon steels where resistance to impact is required; heat treatments; drawing temperature, and chrome-nickel steels. Report to be published this summer.
- Mildred Weigley, \$150 for equipment for studies in mineral losses in vegetables. Experiments to be published. Work still in progress.
- W. H. Emmons, \$400 for assistant on studies on accumulation and recovery of oil from reservoirs in which it accumulates naturally. Investigations to be published. Work to be continued.
- E. J. Lund, \$75 for equipment. Problem in morphogenesis, with special reference to the question of polarity in *obelia* (hydroid).
- L. L. Bernard, \$100 for tabulations of seven rural surveys of reading habits and cultural interests. To be published in bulletin.

- F. B. Kingsbury, \$300 for apparatus and supplies, study of the synthesis and elimination of hippuric acid. Two articles published: one in *Archives of Internal Medicine*, August, 1921, and the second in the *Journal of Biological Chemistry*, September, 1921. Further results to be published. Work to be continued.
- R. E. Scammon, \$600 for assistant on study of growth measurements of children. A report made before the Society of Experimental Biology and Medicine. Six papers published during year. Prenatal and postnatal growth rates. Report presented at annual meeting of American Association of Anatomists. Paper published. Work to be continued.
- B. D. Mudgett, \$200 for assistant on study of problem of business forecasting of statistical methods. Report with charts presented at annual meeting. Investigations to be published.
- L. V. Koos, \$50 for assistant on tabulation study of current high school courses, and study of high school principalship. Work to be published. To be continued.
- A. D. Hirschfelder, \$500 for assistant on pharmacological studies in cooperation with the United States Interdepartmental Social Hygiene Board. Many phenyl carbinols synthesized. Two compounds synthesized: 1. Hydroxy. 2. A dialcohol of paracresol. Work in progress, to be continued.
- F. H. Scott, \$400 for studies on the control of respiration and metabolism. Animals. Two papers published and a third paper now ready for publication.
- J. P. Sedgwick, \$275 for investigation on breast feeding. Work in progress, to be continued.
- J. I. Parcel, \$200 for assistant on experimental studies in concrete and reinforced concrete. Two bulletins ready for publication: I. *A Series of Tests on Trial and Mix Methods of Proportioning Concrete*; II. *A Series of Tests on Shrinkage and Time Effects*.
- J. B. Johnston, \$500 for assistance and materials, problem of the evolution of the forebrain. Results of investigation to be published in fall number of *Journal of Comparative Neurology*.
- K. S. Lashley, \$300 for animals and equipment in problem of function of the motor cortex in primates. Three papers published: II. The Effects of Long Continued Practices upon the Cerebral Localization. *Comparative Psychology*, June, 1921. III. Studies in Cerebral Function in Learning, Motor Areas. *Brain*, 1921. IV. Vicarious Function after Destruction of the Visual Areas. *American Journal of Physiology*, 1922. Work to be continued.
- W. H. Hunter, \$300 for assistant on investigations of organic electrochemical reductions and related problems. Three papers to be published soon. Work to be continued.
- G. L. van Roosbroeck, \$200 for purchase of books along the line of French literature and bibliography. A number of valuable books purchased.

- W. S. Cooper, \$175 for assistant on four problems in the field of plant ecology. Three papers will be published this fall: *Forest Development after Glacial Recession at Glacier Bay, Alaska*; *The Interglacial Forests of Glacier Bay*; and *A Botanist's Contribution to the Glacial History of Southeastern Alaska*.
- Hal Downey, \$100 for assistant on "myeloblast" and blood changes in cancer. Investigation completed and publication will follow. Work to be continued.
- C. M. Jackson, \$50 for copying material on autopsies at the Johns Hopkins University.
- E. C. Stakman, \$300 for the construction of soil temperature apparatus in connection with investigations on the relation of Fungi Imperfecti to reduction in yield of cereals in Minnesota.
- Frank Lillie, \$50 for the support of one table at Woods Hole laboratory.
- Charles E. Shepard, fellow in physiology, sent to Woods Hole to use this table during the summer of 1922.
- D. E. Minnich, \$50 for investigation and experiments on the sense organs of insects. **Work in progress.**

Respectfully submitted,

GUY STANTON FORD, *Dean*

THE SCHOOL OF BUSINESS

To the President of the University:

SIR: I submit herewith the annual report of the School of Business for the academic year 1921-22.

THE STUDENT BODY

Enrolment.—The comparative registration for the past two years is as follows:

ENROLMENT

	1920-21			1921-22		
	FALL	WINTER	SPRING	FALL	WINTER	SPRING
Seniors	46	43	32	58	64	54
Juniors	40	53	59	56	82	88
Unclassed	16	11	10	17	7	8
Total	102	107	101	131	153	150

The degrees conferred at the four quarterly convocations of 1921-22 were:

Summer	1
Fall	4
Winter	10
Spring	44
Total	59

Under the quarter system new students are admitted at the beginning of each quarter and persons who have fulfilled the requirements for graduation are awarded their degrees. To date this has caused a decline in the number of seniors enrolled in the spring quarter and an increase in the size of the junior class. The operation of the newly adopted quality credit plan, whereby exceptional students may substitute both for entrance and graduation an excess of honor points for credits, will tend to increase the number of winter and spring quarter matriculants and graduates. A large proportion of this year's winter quarter graduating class, however, continued their studies while others who left the University elected to postpone the receipt of their degrees until the June commencement.

The entrance requirement of one honor point for each credit hour has curtailed considerably the expansion in numbers, but it has enabled the staff to devote the school's limited facilities entirely to a select group who have demonstrated that they possess the ability and seriousness of purpose to pursue advanced professional work.

THE FACULTY

The teaching staff during 1921-22 was distributed as follows: professors, 6; associate professors, 5; assistant professors, 8; professorial lecturer, 1; lecturer, 1; instructors, 20. Of the above group three professors, three associate professors, and one assistant professor were budgeted with allied departments of other colleges. The large proportion of instructors is due to the great size of the elementary and intermediate classes in this field and to the number of schools and colleges of the University in which elementary work in economics is offered by this staff. The following table of registrations by colleges compiled for the winter quarter indicates the extent to which the School of Business is acting as a "service station" for the other schools and colleges:

Business	489
Science, Literature, and the Arts.....	1,191
Engineering	197
Agriculture	216
Education	38
Graduate	103
Chemistry	21
	2,255

The figure for agriculture does not include work in economics given by persons on the budget of the Department of Agricultural Economics at the University Farm.

Encouraging progress is being made in raising the standard of preparation for teaching business subjects in universities. While the ideal requirements of a Doctor's degree in economics, successful business experience, and proven capacity as a teacher and scholar, have not been fully met in every case, the more recent acquisitions to our own staff measure up more fully than have those of preceding years.

There were no losses by resignation in the group of professorial rank, while two additions were made, viz., John J. Reighard, assistant professor of accounting, and H. Bruce Price, assistant professor of agricultural economics. Associate Professor Frederic B. Garver was promoted to the rank of professor.

THE COURSE OF STUDY

Like all newly developed fields the course in business education has suffered from a lack of high grade teaching material. This is especially true in those lines in which fundamental principles have not been fully evolved. During the past year, much progress has been made at Minnesota and elsewhere in the preparation of materials of real scientific viewpoint and content. In addition to the work of our own staff, the admirable "case books" of the Harvard Graduate School of Business Administration and the "materials for the study of business" of the University of Chicago have added much to the effectiveness of our teaching.

Satisfying progress is being made away from the imparting of mere information about business and toward a thoro training in the analysis of situations and the formation of sound business judgments. In order to aid seniors in bridging the gap which exists between "theory and practice," training classes have been formed in a number of Twin City business establishments. Under this arrangement, a student spends two days a week in a business of the type he is preparing to enter. He is rotated systematically through the various departments and is afforded every facility for understanding the important administrative problems of the establishment. The character and conduct of the men and women who were in training in 1921-22 is best evidenced by the fact that all of them were offered permanent positions by the establishments in which they worked.

Of the immediate questions confronting the staff two have been discussed in preceding reports, viz., the acute need for an adequate plant and the desirability of establishing a bureau of business research. It is the earnest hope of our faculty that both may be realized as soon as economic conditions warrant.

Two other problems to be taken up by our faculty are of interest to the entire University. Thus far the activities of both the Students' Work Committee and those concerned with vocational guidance and placement of graduates have been hampered by a lack of suitable data regarding the persons with whose cases they have to deal. During the coming year the faculty propose to work out a comprehensive rating system covering each student's entire course. Much attention, also, will be given to the correlation of the various economics and business courses with one another and with the work of the secondary schools. The School of Business inherited a miscellaneous array of courses from the old Department of Economics. Some progress has been made toward the proper articulation of studies, but the program as a whole does not yet afford the student a sufficiently well-rounded view of economic society nor is it based upon a sufficiently thoroughgoing analysis of the business executive's job. The survey made by the Commission on Social Studies in Secondary and Collegiate Schools will form an admirable basis for a study of our own needs.

Respectfully submitted,

GEORGE W. DOWRIE, *Dean*

THE DEAN OF WOMEN

To the President of the University:

SIR: The dean of women herewith submits the following report for the year 1921-22:

REGISTRATION OF WOMEN

Science, Literature, and the Arts.....	1,786
Engineering and Architecture.....	8
Law	13
Medicine	32
*Nurses	137
Dentistry	4
Dental Hygienists.....	29
Pharmacy	23
Chemistry	10
Education	752
Graduate	178
Business	28
Agriculture and Home Economics.....	413
War Specials	4
Technicians' Course	3
	3,420
Total	3,420
During Summer Session, 1921.....	1,135
	4,555
Total for the year.....	4,555

* Including 26 in Public Health Nursing courses.

The distribution as to residence (figures based on the census cards supplied by the registrar's office, and by private information obtained by this office) during the regular session of 1921-22, is as follows:

At home	1,480
In private families; apartments.....	115
In approved houses.....	326
In sorority houses.....	175
In dormitories	214
In coöperative cottages.....	42
†In home management houses.....	30
In nurses homes.....	90
Working for room and board.....	60
	2,532
Total	2,532
Wholly self-supporting	228
Partly self-supporting	360
Wholly dependent	1,572
No reply	372

† Permanent residents; 16 different workers each quarter.

Domestic employment.—All domestic work for students, that is, care of children or general housework by the day or hour, is handled by this office. All placements for students working for room and board are also made through this office.

Delinquents.—The dean of women has worked in coöperation with Dean Nicholson, Dean Shumway, and Dean Freeman in dealing with delinquent students on both the University and the Farm campuses.

Absences.—The dean of women has written excuses for all absences during the fall quarter. Dr. Diehl very naturally felt that all excuses for sickness should be handled by the Health Service. Therefore, for the winter and spring quarters, only excuses for legitimate absences due to causes other than for sickness, have been handled by this office.

Houses for women—Sanford Hall.—The fall of 1921 found the additions to the building nearly completed. By October 15 the new fourth floor rooms were completely furnished and ready for use. There are 89 single rooms, and 55 double rooms, accommodating in all 199 girls. There are 50 girls on the waiting list for the fall of 1922. Miss Ruth Phelps is the chaperon of East Sanford, and Miss Ruth Raymond, of West Sanford. We have been fortunate in having Mrs. Ora C. Gayle for house director. Mrs. Gayle has proved to be a most valuable guide for the students as well as an excellent manager. We have a resident nurse at Sanford Hall who has also answered many calls from girls in boarding houses. For the present, if we had one more dormitory, housing not more than from 75 to 100 women, we would feel that we were adequately housing our women. If we lose our coöperative cottages, some way of caring for this group of 42 women will have to be found.

Home management houses.—These houses furnish a laboratory for the practical working out of the principles laid down in the courses on foods and nutrition, textiles, clothing, and child-training.

Coöperative cottages.—Northrop Cottage, chaperoned by Mrs. Gertrude Pitts, houses ten girls, all of whom are medical students. Loring houses sixteen girls and is chaperoned by Miss Jean Alexander. Winchell and Winchell Annex together house sixteen students. Mrs. Mary E. Staples is the chaperon. The room rent in all these cottages is \$7.50 a month, and board varies from \$15 to \$20 a month. With the exception of the cooking all the work and managing is done by the students. This means a great lessening of expense. Altogether, forty-two students are housed in this very pleasant manner. The coöperative cottages make it possible for many women to attend the University who otherwise would not be able to do so. The Daughters of the American Revolution are planning to give us a cottage as a memorial to Professor Maria Sanford. This cottage is to be run as a coöperative cottage. We are most anxious not to have the coöperative cottages discontinued when the plans for the greater campus necessitate the removal or tearing down of the present cottages. The Sarah Heywood Folwell Cottage, formerly a coöperative cottage, is now used as a home for graduate nurses. The coöperative cottages are under the direct supervision of the dean of women.

Sorority houses.—We now have fifteen sorority houses. The living conditions in all the houses are excellent. Each sorority has a chaperon who acts as housemother. Semimonthly meetings of the chaperons are held and have proved to be valuable in a great many ways.

I have noticed a decided change for the better in the attitude of the sorority women towards non-sorority women. We would welcome the day when we will have a sufficient number of sororities so that every girl who so desires may belong to one. A short rushing season will be tried out in the fall of 1922, the best features being fewer parties, consequently less interference with school duties, less expense, and less excitement.

Boarding houses.—We are constantly improving living conditions for our students. The four houses turned over for the use of the men will be under the supervision of our housing director, Mrs. Mary E. Staples. As all our houses on the approved list are personally inspected and graded A, B, C, etc., there is a constant effort on the part of the householder to raise the standard of her house. The semimonthly meetings of the householders are well attended. Matters of vital interest, such as the conduct of the students, uniform prices for room and board, etc., are discussed in an informal and friendly fashion. We feel that we have the coöperation of the householders in all matters pertaining to the students.

Summer school.—No printed lists of rooming houses were sent out. Arrangements for rooms were again made through the Housing Bureau. This has proved to be very satisfactory. Shevlin Hall was open for the social activities of the women. The Minnesota Union served meals to both men and women.

WOMEN'S ORGANIZATIONS

W.S.G.A.—All women students belong to the Women's Self-Government Association which is a most important and useful organization. The Big Sisters Organization, the Tutoring Bureau, the Shevlin Hall Committee, the House Council, the Vocational Committee, and the Book Exchange are all managed by the W.S.G.A. This year the W.S.G.A. has given fifteen sunlites and twenty-five social hours. The Big Sisters have arranged a number of teas and parties. Christmas parties for settlement children were given by the W.S.G.A., the Y.W.C.A., and the W.A.A.

Women's University Club.—For the last two years the W.U.C. has occupied a room in Shevlin Hall. On account of the crowded condition of Shevlin, the club is moving to other club rooms. Dr. J. Anna Norris is the president. This club not only furnishes an opportunity for pleasant social contacts among the teaching staff, but also helps the new members to find suitable living accommodations and to form a friendly social center.

Women's Athletic Association.—The W.A.A. is an organization to stimulate interest in athletics and to arrange for the various athletic events. It has a membership of sixty-four.

Social activities.—Shevlin Hall has been a center of social life here on the campus. There is hardly an afternoon when some organization is not holding a tea. These pleasant get-togethers are most valuable in forming close friendships.

The fireside reading hour has been continued during the year. "Examination Teas" have proved of real value in lessening the strain of the examination time.

Many small parties have been given at the home of the dean of women.

Teas by sororities.—Each sorority in turn has given teas for both sorority and non-sorority girls. This has had a tendency to break down the artificial and deplorable barriers between sorority and non-sorority women. As the teas are given in Shevlin Hall, the common clubhouse, the non-sorority women do not hesitate to attend.

The Hestian Club.—This club seems worthy of mention as it is entirely democratic, every girl living in a rooming house being eligible. The club, with Miss Carmen Harpman as president, has given a number of delightful social affairs and in this way has reached and cheered many lonely girls.

Chaperonage.—Evening parties on the campus, and in the sorority houses, have been confined to Friday and Saturday evenings. With the coöperation of the W.S.G.A. a satisfactory method of managing the chaperonage for these evening parties has been worked out. A request to the Interfraternity Council that they report to this office the names of the chaperons for their parties has met with cordial consent.

I think that the past year has been full of promise, in that the women students, in the main, are seriously intent upon fitting themselves to take their part in the work of the world. The work of the W.S.G.A. with all its varied branches, the spiritual influence of the Y.W.C.A., the healthful and invigorating work of the W.A.A. all tend to produce a type of well-rounded womanhood.

Much of the publicity given our girls by the press is false and misleading. In my opinion we have never in the past had such sensible and healthy-minded girls at the University as we have at the present time.

Financial aid to students.—With the exception of the Duluth loan scholarship, all of the following loan scholarships are administered through the office of the dean of women. The Faculty Women's Club has increased its loan fund, by \$200 and the Minnesota Alumnae Club by \$100. The St. Paul Alumnae Club has given us a loan fund this year.

The Faculty Women's loan fund.....	\$900.00
The Faculty Women's emergency loan fund.....	250.00
The Minnesota Alumnae Club loan fund.....	200.00
The St. Paul Alumnae Club loan fund.....	100.00
The Minneapolis College Club loan fund.....	200.00
The Puritan Colony loan fund.....	50.00
Minnesota Federation of Women's Clubs, loan scholarships	350.00

From the Faculty Women's loan fund, from April 1, 1921 to April 1, 1922, 45 students borrowed a total of \$1,809.50; 57 students paid back a total of \$1,851.85. We also have the interest from \$2,000 invested in two British and Canadian bonds, to add to the loan fund.

Scholarships.—For this year we have had an increase of three scholarships. Mrs. George P. Douglas and the P. E. O. Organization have

each given a scholarship, and the Minneapolis College Club has given an additional scholarship. All of the scholarships given below are handled by this office:

Mrs. Elbert L. Carpenter scholarship.....	\$ 100.00
Mrs. George C. Christian scholarship.....	100.00
Nina Morais Cohen scholarship.....	100.00
Mrs. George P. Douglas scholarship.....	100.00
George H. Partridge scholarships.....	500.00
College Women's Club of Minneapolis.....	600.00
College Women's Club of St. Paul.....	750.00
Faculty Women's Club.....	150.00
P. E. O.....	100.00
Women's Club of Minneapolis.....	100.00
Women's Self-Government Association.....	400.00
	<hr/>
Total	\$3,000.00

Respectfully submitted,

JESSIE S. LADD, *Dean*

THE DEAN OF STUDENT AFFAIRS

To the President of the University:

SIR: I herewith submit my report as dean of student affairs for the year 1921-22.

General conditions within the student body show, in my judgment, an improvement over the previous year. The general unrest which followed the war has largely disappeared. It has shown itself this past year, only in isolated cases and among comparatively small groups. The main body of the student group has followed ordinary pursuits, study and normal extra-curricular activities in a sane manner. The fact that for the fall quarter of this year there was a noticeable decrease in the number of conditions and failures given in the freshman class, in the various colleges, bears out this statement.

Student councils.—Not all of the councils have been alive and progressive this year. Some three or four have been quite active, others intermittently active, while one or two have been dormant. This is a condition which will vary from year to year, depending largely upon the measure of leadership and initiative possessed by those making up the various councils.

Student publications.—The *Minnesota Daily*, the University student daily paper, the *Gopher*, the annual published by the Junior class, the *Minnesota Techno-Log*, published by the association of engineering students, the *Minnesota Farm Review*, published by the students of the College of Agriculture, the *Minnesota Law Review*, published by the students of the Law School, and *Ski-U-Mah*.

Ski-U-Mah is the new publication mentioned in the report of last year as in process of formation. It was organized by the Sigma Delta Chi, professional journalistic fraternity, whose membership is drawn from the entire student body. This group acted as the Board of Publishers with the dean of student affairs as a member. It has taken the place of the old *Minnesota Magazine* and the *Minnchaha*. Great credit is due its editor-in-chief for an exceptionally clean and well gotten-up magazine.

The *Minnesota Daily* has been a real force in the student body this year and it is greatly to be regretted that a way can not be found to put it in the hands of every member of the faculty and the student body.

All of the publications, from the standpoint of material published and general make-up, have been very successful.

There are two very important changes planned for the future, affecting those publications which are University in character:

First: Up to this time and for the coming year each of these publications has been under the direction and supervision of an elected Board of Publishers with a managing editor elected by the student body. The Board of Publishers has had control of finances—in some cases only in theory. At the last general student election it was voted that, beginning with 1923-24, these publications should be brought under the control of one general Board of Publishers, elected by the students. Serv-

ing with it will be three members of the faculty. This board, besides controlling finances, will have the power to select the editorial staff, thus, it is hoped, removing politics, at least to some extent, from their management.

Second: It has recently been decided to make use of the old Music Building, beginning with this coming year, to house the Department of Journalism and the three University publications—the *Minnesota Daily*, the *Gopher*, and *Ski-U-Mah*. This will not only give these publications permanent quarters, but the friendly advice and assistance of the Department of Journalism, while the Department of Journalism will be able to some extent to use the publications as a laboratory for its students.

Finances.—Finances of student organizations have not been in as good shape this year as in the past few years.

The *Daily* at the present time shows a considerable deficit. By elimination of salaries for the last two months and energetic action in collection of outstanding accounts their books will balance. There are one or two accounts outstanding from last year. At present I am certain that all bills against the *Daily* will be cared for by early fall.

The 1922 *Gopher* has cleared up all outstanding indebtedness and leaves a balance of eight dollars. It has taken all year to clear these accounts.

The 1923 *Gopher* is in good financial condition. There is a good book balance, tho, as a matter of fact, there are outstanding bills which can not be cared for until certain funds are released, which will probably necessitate court action. This will be merely a case of delay.

Ski-U-Mah will close the year with all bills paid, but no balance.

The *Minnesota Farm Review* has bills outstanding to quite an amount, but arrangements are under way to care for these properly.

The *Law Review*, I understand, has had a financially successful year.

The *Minnesota Techno-Log*, with all accounts in, will just about break even.

The dramatic organizations closed the year with all bills paid except the possibility of one or two minor ones in each case, tho in the case of the older organizations this has been accomplished by drawing on their reserve from a year ago.

There have been no calls this year for help in collecting bills from fraternities.

Dramatics.—There has been added to the group of recognized dramatic clubs one new one—the Arabs, a club composed of men selected from the College of Engineering. This club puts on its first performance this year—*The Caliph of Kolynos*—written and staged by members of the club.

The year has been a very successful one for the clubs from the standpoint of performances and improvement in standards of production. As stated previously the income of none of the clubs has been sufficient to meet expenses, the deficit being cared for from reserves and assessments.

In an attempt to bring these dramatic clubs more closely together, giving them a greater community interest, there has been organized an unofficial dramatic committee composed of the president of each club, the coach, the professor of public speaking, and the dean of student affairs.

All questions of interest to the dramatic group are brought before this committee for discussion, and recommendations from them are received and considered by official committees and officers of the University. It is hoped through this committee to develop a better coördination of the dramatic efforts of student groups.

General social activities.—Of the formal recognized social affairs the Senior Promenade, the Junior Ball, the Military Ball, and the Common People's Ball, have continued with their usual popularity and success.

Added to the formal University functions listed above are the formal parties given by each of the fraternities and sororities, and the many informal parties given largely by fraternity, sorority, and class groups. No one group has given an undue number of parties, but when the large number of organizations is taken into consideration, each with its right to a party each quarter, there is given the appearance of a never ending round of such parties.

Fraternities and sororities.—A detailed report on the condition of fraternities and sororities will be submitted by the dean of women for sororities and the president of the Interfraternity Council for the fraternities.

The fraternities for the year 1920-21 maintained their slightly higher scholastic standing over the average. Our group is the only one among those colleges keeping such a record that did not drop below the general average following the war.

The sororities are slightly below the general average for women, the position they have consistently held since the beginning of these comparisons.

As usual and as expected, professional fraternities and sororities have maintained a distinctly higher average than the non-fraternity and non-sorority group of their colleges.

There has been added one national undergraduate social fraternity, Pi Kappa Alpha, during the year, and six professional—Delta Kappa Psi professional business; Delta Sigma Psi, honorary Norwegian; Alpha Pi Omega, honorary mines; Phi Sigma Phi, local professional band; Chi Sigma Tau, professional engineering and architecture; and Pi Tau Sigma, honorary engineering.

Military Department.—Petitions for drill credit during the past year show a considerable decrease from previous years since the war. A total of 819 was acted on; 277, allowed to postpone drill; 155, allowed one quarter credit; 25, two quarters; 59, one year; and 303, two years; reasons being either previous service in the army or training in some preparatory school under the direction of a detailed army officer.

There was organized in the department the past year the Society of Mortar and Ball. Membership is drawn from the Artillery Unit of the R.O.T.C.

Self-supporting students.—A study of the census cards submitted by the students at the beginning of the year shows the following interesting data. During the fall quarter of the past year there were:

1,011 men students entirely self-supporting
 1,946 men students partly self-supporting
 1,440 men students not self-supporting
 153 women students entirely self-supporting
 370 women students partly self-supporting
 1,164 women students not self-supporting

Many of the students, both men and women, failed to fill out census cards so the above is only approximate.

Student loan funds.—During the year just past 291 students have made application for loans through our student loan funds. Of these 42 were not granted; 188 were granted one loan; 50, two loans; and 10, three loans. In no case did the total granted exceed the \$200 allowed a student during any school year, and in most cases the total was considerably less than \$200. Owing to unusual conditions more students found it necessary to borrow than in previous years and as a consequence the loan funds more than once were entirely exhausted.

In addition to these regular University loan funds, there was placed at my disposal by a group of business men, the sum of \$500 to be loaned in small amounts to men students who might be in urgent need. These loans are all short time loans. During the year there was a total of twenty-six loans made, totalling \$527.

I also have a fund of \$25 contributed by one of last year's freshman students to be used to assist some needy student. This money was contributed in appreciation of assistance which the student felt he had received.

Veterans' Bureau students.—During the past year there have been registered with us over six hundred students sent us by the United States Veterans' Bureau. At the close of the spring quarter there were 454 in attendance, 228 were withdrawn during the year, some because of physical disability, some on recommendations of the University that they be transferred to some other type of work.

There were registered as candidates for a Bachelor's degree, 391; registered in the Graduate School, 4; as War Specials, 265. Of this last group some are qualified for regular admission, some are short in their entrance requirements, but are making these up as they progress.

It is interesting to note the type of work done by many of the students of the War Special group. There are students of this group, without further school training than the eighth grade, who are carrying practically regular work, maintaining an average above that of the students in the college where they are carrying their work.

In recognition of this there is a recommendation from the Senate Committee on Relations of the University with Other Institutions of Learning to the effect that such students, on the recommendation of the dean of student affairs and the dean of the proper college, be granted the appropriate degree. Two colleges have already signified their intention to follow this course.

THE PRESIDENT'S REPORT

For the past year the average scholarship of the Veterans' Bureau students has been slightly higher than the average for men students in general.

Veterans' Bureau students.....	1,061
Other men students.....	1,045

Respectfully submitted,

EDWARD E. NICHOLSON, *Dean*

THE GENERAL EXTENSION DIVISION

To the President of the University:

SIR: I herewith submit the annual report of the General Extension Division for the year 1921-22.

This report contains rather complete statistics not only upon the activities of the General Extension Division for the current year, but also a summary of the statistics for the Extension Division since it was formally organized as a major division of the University of Minnesota in 1912-14.

A study of these statistics reveals a consistent growing demand on the part of adult persons, who for various reasons do not enroll in the regular sessions of the University, for an opportunity to secure a collegiate and professional education through extension teaching.

Extension teaching, as it has developed in the University of Minnesota and in other American universities, has been conducted by two methods: correspondence study and special classes usually held in the afternoon and evening. A number of state universities, following the policy of the land grant colleges, are also conducting an informal type of instruction—institutes, conferences, club study, club work, and various other instructional activities. Then, too, there are many latent resources of a university which can not be utilized excepting through some form of extension service. The university has valuable latent resources in its laboratories, libraries, and staff of men and women, experts in their various fields of work. Out in the commonwealth all sorts of individual, corporate, and community problems require for solution the assistance of these resources. In order to release them for service to the various individuals or agencies in need of them, or to the communities organized to accept them, the university must necessarily conduct many forms of extension work. For instance, some types of research work can be conducted only through experiment stations and through organized coöperative relationships established between the university and the community. The importance of these various types of extension work has been widely recognized. A survey made by the United States Bureau of Education in 1919 showed that approximately one hundred colleges and universities in the United States with combined budgets of over \$2,000,000, were engaged in general extension work, all of this in addition to the much larger budgets for agricultural extension.

The University of Minnesota has developed its extension teaching service rapidly. It has not, however, conducted as much of the informal type of service as have many other state universities. It is not because this service is not needed in the state nor because it has not been demanded. The reason for this situation is largely because the rapid growth of the other colleges of the University has absorbed practically all the financial support the legislature has provided for the University. In due time when

the University of Minnesota has sufficient funds to develop a better balanced budget and program, more funds will have to be provided for the public service activities of the Extension Division.

FINANCES

During the last year the Extension Division faced a deficit and the possibility of an increasing deficit. Student fees for evening class instruction had not been increased for a number of years. The cost of such instruction had steadily increased since 1913. The financial condition of the University was such that no further allotment from support or public taxation could be made for extension teaching. It was necessary therefore either to reduce the compensation given instructors for extension teaching or to increase the fees charged to students. In view of this situation the following changes in the schedule of salaries paid instructors were recommended:

Old Schedule Based on Resident Salary Was:	
\$1,500 to \$1,950.....	\$175
2,000 to 2,450.....	200
2,500 to 2,950.....	225
3,000 to 3,950.....	250
4,000 to 4,950.....	275
5,000 and up.....	300

The new schedule recommended, based on college grade of work and extension teaching experience of instructor, was:

1. Junior College Work

- An instructor with no experience in extension teaching shall be paid \$80 per credit hour, or \$160 per two-hour course.
 - An instructor with two years' experience in extension teaching shall be paid \$90 per credit hour, or \$180 per two-hour course.
 - An instructor with four years' experience in extension teaching shall be paid \$100 per credit hour, or \$200 per two-hour course.
- Instructors carrying more or less than two credit hours shall be paid pro rata upon the basis outlined above.

2. Senior College Work

- Experience basis same as for Junior College work
 Fee for teaching to be increased \$10 per credit hour
 Scale would then be as follows:
- \$180 per two-hour course
 - \$200 per two-hour course
 - \$220 per two-hour course

The following changes in fees charged to students were recommended:

The Old Scale in Force	The New Scale Recommended
\$2.50 per credit hour for academic subjects	\$5.00 per credit hour
3.75 per credit hour for business subjects	5.00 per credit hour
A laboratory fee of \$2.50 per course	

Since most of the extension classes were of a Junior College grade, the old schedule of salaries made the cost of extension teaching higher than that paid for the same grade of resident instruction. Furthermore, it was higher at Minnesota than that paid for extension teaching in most

of the other state universities, while on the other hand the fees charged students at Minnesota were lower than those charged in most of the other state universities.

These recommendations were approved by the Board of Regents on May 17, 1922.

FULL-TIME FACULTY

The teaching staff of the Extension Division is made up almost entirely of the overtime service of the resident faculty. This dependence has made it difficult to conduct extension teaching on as high a scholastic plane as the resident work. The primary interest of the overtime instructor is his work during the day. He is rated by his faculty associates and his dean largely upon the character of his resident teaching and study. Consequently he does not usually show the same interest in, nor give concentrated attention to, the problems peculiar to extension teaching. Furthermore, he runs the constant risk of taking on such a heavy teaching load that he will not do any of his work satisfactorily. A number of the heads of departments and deans of colleges have complained that members of their staffs have too heavy a teaching load because of their evening class work. In due time the Extension Division will have to depend upon a teaching faculty of its own, just as do the other colleges.

EXTENSION WORK ORGANIZED UPON A COLLEGE BASIS

The increasing number of adult men and women, who are either unable, or do not desire, to enter the University as resident students, is emphasizing the question of whether extension work should be organized upon an extra-mural college basis, such as the University College of the University of Chicago. Extra-mural does not mean, however, that all the instruction will be given off the campus, for there are a large number of persons who live in the Twin Cities or who come to live in the Twin Cities so as to enroll in the late afternoon and evening classes conducted both on the campus and in downtown districts. Then, too, a few of the extension classes, such as those for dental mechanics and for students in the course for embalmers, are conducted on the campus during the regular resident day. Other fields of instruction will be developed through day classes. And again many of the so-called unclassified students should be enrolled in an extra-mural college, instead of a resident college.

A number of institutions have recognized this situation. Columbia perhaps has advanced farthest in adjusting itself to this new and growing field of extension teaching. At the present time more students are registered in the extension division at Columbia than in any of the other colleges. The director of the extension division functions as a dean. At the university he has the title of dean. Last year Columbia had a staff of 126 instructors for extension teaching only. To be sure, this extra-mural work will continue to draw a considerable portion of its teaching staff from the resident staff, but when, as is the case in Minnesota, in

Wisconsin, and in Columbia, it becomes one of the major teaching divisions of the university, it should have a staff of instructors who give their undivided attention to organizing curricula, developing methods of instruction and policies of administration for this special group of students—students with a background of experience and environmental conditions quite different from the normal resident students. The budget as adopted by the Board of Regents for the extension staff for the coming year has made provision for the addition of seven full-time instructors for extension teaching. This action makes a beginning of the organization of the Extension Division upon a college basis. It should go on as rapidly as the funds are available and as the demands for extra-mural work warrant.

In due time the University must further recognize the importance and value of extension teaching by the granting of a certificate, a diploma, or a degree for a definite curriculum completed by extra-mural students. It should be a new degree—one that will be understood and recognized by academic institutions throughout the country. A degree granted for work completed by extension instruction is not equivalent to that granted in residence. Since the curriculum is modified for extra-mural students and the methods of instruction and the policies of administration differ from those adopted by the resident colleges, then a different kind of recognition for the work completed must necessarily be made by the Board of Regents. It does not necessarily follow so far as the scholastic attainment of the students or the character of the teaching are concerned that the value of the degree would be at all inferior to a degree obtained through resident study, but fairness both to the resident colleges and to the Extension Division, as well as a policy of accuracy demands that a distinctive degree or diploma, or both, should be granted.

TEACHING LOAD

The average teaching load for resident instructors in the University of Minnesota during the year 1920-21 was approximately 13.8 hours per week. The teaching load of the extension staff should be made equivalent to that of the resident staff. It is difficult to adjust the time of the extension classes to such a schedule, since most of the classes are held in the evening, but if the Extension Division is to have men of scholastic attainments equal to those in residence, then it must give its staff opportunities to prepare class work and to do research and investigation for self-improvement and for social service, equivalent to those afforded the resident staff. Furthermore, in justice to the extension staff, especially to members of the staff who have families, they should not be asked to teach more than four nights a week. A schedule which will provide for late afternoon as well as evening classes will make it possible for the full-time instructor to teach four days a week and carry a load of fourteen teaching hours. In addition to his class teaching each extension instructor should teach some students by correspondence study, grading

and criticizing papers not to exceed forty a week. It should be a policy of the Extension Division to reduce the number of teaching hours for those members of the staff who are assigned administrative work, just as are similar adjustments made for members of the instructional staff in residence who are assigned administrative work. The salary schedule for an extension staff should also be the same as that for the resident staff. In short, members of the Extension Division staff should have approximately the same duties, privileges, and advantages as do members of the resident staff.

EXTENSION CENTER OFFICES ESTABLISHED

During the past year the establishment of three extension center offices had been authorized, one in the down town district of Minneapolis, one in St. Paul, and one in Duluth. Since most of the students in our evening classes are persons who are engaged in work down town during the day, such an office in the down town district is a matter of great importance. It is accessible to the students and provides a center for the direction of the evening classes. It also places the organization of the evening classes in the down town district in charge of the office manager. In the case of a city distant from the University, like Duluth, it is practically impossible to conduct extension work consistently without a representative from the University who devotes his whole time to making the community acquainted with what the University is doing, to meeting students interested in extension work, and to organizing the classes. This system has been adopted by practically all university extension divisions that have become state-wide or even city-wide in their activities.

THE CENTRAL OFFICE

The central office of the Extension Division is located in the basement of the Main Engineering Building. It was originally placed there because no other space on the campus was available. The rooms have always been inadequate, and now that the Extension Division has grown to considerable proportions they are even more unsatisfactory. The inadequacy of these rooms makes many limitations upon the Extension Division, the most serious of which is that of overcrowding which tends to create inefficiency. Either some of the activities of the Extension Division will have to be separated from the central office and put into other rooms, or else a new place will have to be provided by the University. Satisfactory plans have been made for housing the Extension Division in the new Administration Building. If that building is built within a reasonable time, by shifting some of the work of the central office to the down town offices, the central office may be able to continue in the space it now has until the new space is provided. As soon as the new quarters are ready, the Municipal Reference Bureau and all of the other central office activities should be housed in contiguous rooms and organized on lines of greater efficiency than is possible at present.

THE PRESIDENT'S REPORT

CLASS REGISTRATION FOR THE YEAR 1921-22

DEPARTMENT	FIRST SEMESTER	SECOND SEMESTER	YEAR
COLLEGIATE			
Minneapolis	1,497	1,222	2,719
St. Paul	766	228	994
Duluth	250	64	314
Total	2,513*	1,514*	4,027*
BUSINESS			
Minneapolis	1,123	728	1,851
St. Paul	441	318	759
Duluth	154	60	214
Thief River Falls....	32	16	48
Bemidji	44	..	44
Total	1,794*	1,122*	2,916*
ENGINEERING			
Minneapolis	450	409	859
Total	450*	409*	859*
Totals	4,757*	3,045*	7,802*

* This is the total number of student registrations for sixteen weeks each.

SUMMARY OF EXTENSION CLASSES FOR THE YEAR 1921-22

DEPARTMENT	FIRST SEMESTER	SECOND SEMESTER	YEAR
COLLEGIATE			
Minneapolis	36	46	82
St. Paul	15	12	27
Duluth	6	3	9
Total	57	61	118
BUSINESS			
Minneapolis	34	28	62
St. Paul	16	14	30
Duluth	7	4	11
Thief River Falls....	1	1	2
Bemidji	1	..	1
Total	59	47	106
ENGINEERING			
Minneapolis	21	23	44
Total	21	23	44
Totals	137	131	268

SUMMARY OF SEMESTER REGISTRATIONS FOR THE YEAR 1921-22

DEPARTMENT	FIRST SEMESTER	SECOND SEMESTER	YEAR
Total collegiate.....	2,513*	1,514*	4,027*
Total business.....	1,794*	1,122*	2,916*
Total engineering.....	450*	409*	859*
Totals	4,757*	3,045*	7,802*

Total number of student semester registrations for the year 1921-22 was 7,802.
Total number of individuals taking work 1921-22 was 4,847.

* This is the total number of student semester registrations for sixteen weeks each.

SUMMARY OF FEES FOR THE YEAR 1921-22

DEPARTMENT	FIRST SEMESTER	SECOND SEMESTER	YEAR
Total collegiate.....	\$16,177.00	\$ 8,485.00	\$24,662.00
Total business.....	13,180.00	9,109.50	22,289.50
Total engineering.....	3,562.50	2,435.00	5,997.50
Totals	\$32,919.50	\$20,030.00	\$52,949.50

COMPARISON OF THE ENROLMENT OF EXTENSION CLASSES FOR THE YEAR 1920-21 AND THE YEAR 1921-22

SUMMARY OF STUDENT REGISTRATIONS

DEPARTMENT	1920-21	1921-22	GAIN
Total collegiate.....	3,118*	4,027*	909*
Total business.....	2,713*	2,916*	203*
Total engineering.....	710*	859*	149*
Totals	6,541*	7,802*	1,261*
Total number of individuals.....	3,987	4,847	860

* This is the total number of student semester registrations for sixteen weeks each.

SUMMARY OF FEES

DEPARTMENT	1920-21	1921-22	GAIN
Total collegiate.....	\$11,844.00	\$24,662.00	\$12,818.00
Total business.....	20,917.50	22,289.50	1,372.00
Total engineering.....	5,397.50	5,997.50	600.00
Totals	\$38,159.00	\$52,949.00	\$14,790.00

COMPARATIVE STATEMENT OF EXTENSION CLASSES

1913-1922

COLLEGIATE COURSES	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Number of classes.....	39	61	67	68	65	52	63	88	118
Number of instructors from Extension Division.....	2	2	2	1*	2†	1†	1*	1*	1*
Number of instructors from outside Extension Division.....	18	24	27	34	25	25	32	47	53
Number of semester registrations	690	1,155	1,425	1,655	1,420	1,234	1,952	3,118	4,027
Fees received from registrations	\$3,695.00	\$5,863.00	\$6,569.75	\$7,608.50	\$6,255.00	\$6,007.50	\$7,780.50	\$11,844.00	\$24,662.00
Salaries paid to instructors on extension staff.....	.....	3,300.00	3,300.00	\$750.00	\$2,300.00	\$500.00	\$500.00	\$450.00	\$200.00
Fees paid to instructors not on extension staff.....	.....	\$6,709.50	\$7,975.00	\$9,875.00	\$8,756.25	\$7,590.00	\$11,270.50	\$17,664.85	\$29,227.26

* Part time collegiate; part time business.

† Part time collegiate.

COMPARATIVE STATEMENT OF EXTENSION CLASSES
1913-1922

BUSINESS COURSES	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Number of classes.....	50	69	49	62	51	43	79	102	106
Number of instructors from Extension Division.....	3	4	3	3*	2	3*	3*	3*	3*
Number of instructors from outside Extension Division.....	12	18	12	11	19	15	23	36	42
Number of semester registrations	1,100	1,846	1,080	1,739	1,056	1,012	2,337	2,713	2,916
Fees received from registrations	\$6,481.50	\$9,059.50	\$6,821.00	\$10,649.50	\$7,013.75	\$6,004.50	\$17,546.25	\$20,917.50	\$22,289.50
Salaries paid to instructors on extension staff.....	.....	\$9,100.00	\$6,100.00	\$6,250.00	\$5,750.00	\$5,200.00	\$7,550.00	\$6,350.00	\$7,180.00
Fees paid to instructors not on extension staff.....	.....	\$5,421.00	\$4,135.00	\$6,349.00	\$4,944.50	\$5,137.52	\$9,185.00	\$14,839.95	\$22,087.50

* Full time for two instructors; part time for one.

COMPARATIVE STATEMENT OF EXTENSION CLASSES
1913-1922

ENGINEERING COURSES	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Number of classes.....	23	31	27	33	25	16	44	44	44
Number of instructors from Extension Division.....	1	1	1	1	1	1	1	1	1
Number of instructors from outside Extension Division.....	14	13	8	11	6	5	17	19	16
Number of semester registrations	225	349	349	373	210	215	927	710	859
Fees received from registrations	\$1,657.00	\$2,298.50	\$2,154.00	\$2,164.00	\$1,675.00	\$1,446.00	\$5,245.00	\$5,400.00	\$5,997.50
Salaries paid to instructors on extension staff.....	.....	\$2,000.00	\$2,000.00	\$2,000.00	\$2,100.00	\$2,100.00	\$2,400.00	\$2,400.00	\$2,750.00
Fees paid to instructors not on extension staff.....	.....	\$3,000.00	\$2,325.00	\$2,787.50	\$1,925.00	\$1,700.00	\$6,092.00	\$6,122.50	\$7,687.50

COMPARATIVE STATEMENT OF EXTENSION CLASSES
1913-1922

ALL COURSES	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Number of classes.....	112	161	143	163	141	111	186	234	268
Number of instructors from Extension Division.....	6	7	6	5	5	5	5	4	4
Number of instructors from outside Extension Division.....	44	55	47	56	50	45	72	104	111
Number of semester registrations	2,215	2,350	2,854	3,767	2,686	2,461	5,216	6,541	7,802
Fees received from registrations	\$11,833.50	\$17,221.00	\$15,544.75	\$20,422.00	\$14,943.75	\$13,458.00	\$30,571.75	\$38,161.50	\$52,949.50
Salaries paid to instructors on extension staff.....	.....	\$14,400.00	\$11,400.00	\$9,000.00	\$10,150.00	\$7,800.00	\$10,450.00	\$9,200.00	\$10,130.00
Fees paid to instructors not on extension staff.....	.....	\$15,130.50	\$14,435.00	\$19,011.50	\$15,625.75	\$14,427.52	\$26,548.00	\$38,627.00	\$59,002.26

THE PRESIDENT'S REPORT

CORRESPONDENCE STUDY DEPARTMENT

The following tables summarize the work of this department for the year 1921-22:

Enrolments in force July 1, 1921.....	869
Enrolments from July 1, 1921 to July 1, 1922:	
Students registered.....	779
Registered for two courses.....	109
	888
Total enrolments in force during year.....	1,757
Deduct:	
Completions	396
Expirations	614
Cancellations	15
	1,025
	732
Add:	
Reinstatements	111
	843
Enrolments in force July 1, 1922.....	843

ANALYSES

Enrolments classified		Active during year	
Business	314	Four or more reports.....	965
Collegiate	1,179	Less than four reports..	412
Engineering	106	Recent registrations.....	117
Preparatory	158		1,494
	1,757	Inactive during year	
		Expired without report..	151
		Unexpired, no reports....	112
			263
			1,757

COMPARATIVE STATEMENT

	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Students on roll at first of fiscal year..	100	196	208	177	248	508	713
Students registered....	199	190	151	223	504	731	779
Courses enrolled for..	252	239	180	256	595	809	888
Active during year...	182	247	270	312	464	958	1,494
Courses completed....	86	110	99	91	124	226	396
Number of instructors	35	41	40	39	52	51	60
Students on roll at end of fiscal year..	196	208	177	248	508	713	759

SHORT COURSES
SUMMARY FOR THE YEAR 1921-22

COURSE	NUMBER OF REGISTRATIONS	FEES RECEIVED
DENTISTRY		
Course I (June 13 to July 9, 1921).....	15	\$3,475.00
Course II (July 11 to July 23, 1921).....	9	1,350.00
Course III (July 25 to August 6, 1921)...	18	2,700.00
EMBALMING (January 3 to March 23, 1922).....	34	1,610.00
MEDICAL (April 10 to May 5, 1922).....	34	640.00
	110	\$9,775.00

LECTURE AND LYCEUM SERVICE

Number of different attractions used.....	61
Number of members of University faculty.....	20
Number taken from outside the University.....	41
Total number of towns served.....	190
Total number of attractions.....	782
Total amount of fees.....	\$47,028.75
Total number of persons in audiences represented..	209,000

In addition to the regular lyceum courses, this department has carried on several community lecture courses.

In addition to the lecture courses the following towns were furnished with single lectures:

Total number of towns served.....	14
Engagements filled.....	31
Total amount of fees.....	\$430

For comparative figures for the years 1914-22 see table on page 222.

COMMENCEMENT ADDRESSES

In addition to the lectures and entertainments mentioned above, commencement addresses were arranged for as follows:

Number of towns served.....	64
Number of different persons used in filling these engagements	34

DRAMA SERVICE

Total number of inquiries.....	647
Total number of plays sent out.....	2,052
Total number of plays selected.....	60
Number of new plays added to the library.....	82

A list of plays has been published.

LECTURE AND LYCEUM DEPARTMENT
COMPARISON, 1914-22
COURSES

	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Number of towns having courses.....	100	110	136	180	176	178	208	190
Number of engagements filled.....	522	541	654	905	780	837	909	782
Price of courses.....	\$25,040.83	\$29,145.00	34,692.00	\$38,814.50	\$33,087.50	\$43,692.20	\$48,359.55	\$47,028.75

SINGLE LECTURES

	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Number of towns having lectures.....	89	42	14	12	16	48	25	14
Number of engagements filled.....	94	59	27	14	21	74	51	31
Amount of fees.....	\$2,784.49	\$1,785.00	\$560.00	\$280.00	\$275.00	\$880.00	\$330.00	\$430.00

Courses of from three to ten numbers have been booked in 130 towns for delivery during the year 1922-23. Additional bookings will continue to come in until the last of September.

BUREAU OF VISUAL EDUCATION

The Bureau of Visual Education submits the following report for the fiscal year ending June 30, 1922:

1. NATURE OF SERVICE

- a. Distribution of educational films
- b. Distribution of educational slides
- c. Distribution of educational bird cards
- d. Distribution of program films on a rental basis
- e. Information and advice relative to material and equipment for visual instruction.

2. FIELD OF SERVICE

- a. Educational slides, films, and bird cards have been distributed free, except for an inspection fee, to organizations making use of this material for educational purposes. This service, with but a few exceptions, has been limited to the state.
- b. The public schools have made the greatest use of this material. A large number of county agents have availed themselves of the service. Here we feel the bureau has been especially valuable. A number of churches and community clubs have also been served. A few motion picture theaters in small towns have secured films for matinees to which school children and the public were invited.

3. PUBLICITY

Very little direct publicity has been given to this service during the year in view of the fact that the bureau has had all it could take care of from unsolicited demands. Mimeographed slide and film lists have been the only material sent out.

4. MATERIAL USED IN SERVICE

Slides

- 48 sets owned by the University
- 23 sets loaned to the University

Films

- 56 reels of film owned by the University for rental service
- 15 reels of film owned by the University for free service
- 127 reels of film loaned by the United States Government. (Most of these are war films.)
- 112 reels of film loaned by commercial and industrial concerns

Bird cards

- 7 copies or sets loaned by the International Harvester Company

5. NEW MATERIAL

During the year

- 56 reels of film bought for rental service
- 2 reels of film bought for free service
- 32 reels of film loaned to the University
- 1 set of slides loaned to the University

6. NEW SERVICE

The department undertook a new line of service a year ago, namely, that of buying ten programs of story film. Most of these were of classic nature. These were procured to be distributed on a rental basis and in this way pay for themselves. These were bought at a cost of approximately \$3,500. During the year 75 institutions have made use of one or more of these programs. At the time of this report, \$2,630.59 has been received.

We consider these returns gratifying in view of the fact that theatrical film rentals were materially reduced last fall and financial depression has made money scarce during the year.

7. SUMMARY

Towns having free film service.....	132
Towns having free slide service.....	107
Institutions using free film service.....	191
Institutions using free slide service.....	122
Towns having both slide and film service.....	44
Towns having rental films.....	64
Institutions using rental films.....	75
Attendance at free showings of film.....	303,704
Attendance at slide showings.....	31,211
Films bought during the year	
Special rental.....	56
For free distribution.....	2
Films returned to owners.....	13
Number of reels withdrawn from service, because of wear..	7
Receipts on rental films.....	\$2,630.59

REPORT OF COMMUNITY SERVICE ADVISER

During the past year the adviser has visited 60 different communities and held conferences or given addresses amounting in number to over 150. Considerable publicity matter has been sent out during the year and many requests answered for information concerning community organization and community service. Special experimental work has been carried on at Carleton, Kimball, Little Falls, White Bear Lake, Northfield, Cloquet, Williams, and at Wabasha County Farm Club.

Carleton.—Carleton reports that community service has revolutionized the community; that it has continued long enough to be an established institution. A visit was made to the annual meeting at which 160 men and women sat at the table, indulged in community singing, and listened to the reports of various officers and committees, all indicating the immense possibilities of the service when it has a leader.

Kimball.—Kimball, a little town of nearly a thousand people, has a leader who is a brother of the leader at Carleton. He was so impressed with the Carleton work that the Commercial Club at Kimball changed its name to the Kimball Community Club. Under the former name it was unable to get farmer members. Under the latter name half its members are farmers.

Little Falls.—Little Falls can not be classed as an experiment station, but, as the president of one of the banks said, a place which has absolutely demonstrated one of the contentions of the community adviser, and that is that a group of people organized under the name of Commercial Club will not have the good will and coöperation of a labor union or farmer group.

White Bear Lake.—White Bear Lake which has been the chief experiment station had a proposition from a group of public spirited citizens to give to the town a large brick building, which could not be built for less than \$40,000, to be used as a community building, provided the town would undertake to pay a debt of \$5,000 against the building. The town accepted and the building is now under construction.

A notable experiment at White Bear Lake was the community meeting or forum. Two bankers and the community adviser waited on the business institutions of the town. Tickets were sold and plates reserved for 160 people, the full capacity of the hall. An effort was made to reserve alternate plates for representatives of town homes and country homes. A simple supper was served. All food was on the table at 6:15 sharp. The fundamental policy was impressed upon those who served, "We eat to meet; not meet to eat." A voluntary orchestra furnished instrumental music. An expert leader conducted a community sing. The community adviser expounded community service. After tables were dismantled an expert conducted sports and games. Community dancing concluded the meeting with adjournment at 10 o'clock. Comments were enthusiastic concerning meetings of this character. It was run on schedule.

Northfield.—Northfield has achieved much notoriety for its community spirit and activities. It was reorganized under the leadership of the man who organized Cloquet. Matters went very nicely until a new manager appeared on the scene, and now the community is embarrassed for lack of funds and the real loyalty that makes for successful community service. Northfield is demonstrating the imperative need of the right kind of a community leader. Moreover, this community is showing, as have other communities, the baleful effects of habit and loyalty to existing group organizations. The men of the town are accustomed to working for some special object and will give time and money freely for that purpose, but have not yet caught the real community spirit, nor are they willing to work for the community welfare as they work for the welfare of some lodge, church, or other special interest.

Cloquet.—Cloquet gave a wonderful response to the organization effort. It had over 500 homes out of a possible 700 and every business concern enrolled on the membership list. The enterprise started with the utmost enthusiasm, but unfortunately for its success the affairs were placed in the hands of a typical commercial club secretary. He could not grasp the vision of the community service and like others was unwilling literally to carry out the University program. At the end of the year his exclusive attention to the so-called business interests of the town killed all the community spirit. In a conference with the directors, they admitted that the plan was all right, but the execution had fallen into unfortunate hands. Another demonstration of the imperative need of a competent community leader.

Six Oakes-Pleasant Valley Farm Club.—This club invited the University community adviser to give the principal address at the dedication of a community building. A large community building, 70x30, was found out on a country road. It was covered with stucco, hard plastered inside, hardwood floors, stage, and heating plant. The night was disagreeable and the roads were bad, yet 300 people gathered to the dedication of the building. The explanation was that the building had been erected by the joint work of 40 or 50 farmers and their wives. In harvest time the superintendent called for men to shingle, and some 38

farmers left their fields and in one day shingled the building, while some 50 women worked at lathing on the inside and furnished refreshments for the occasion. The material used was obtained from an old schoolhouse which the members of the club tore down and hauled to the site of the proposed community building. It is needless to say that a wonderful spirit prevailed at the meeting. Again we have a demonstration of the value of working on a common community project to arouse community spirit. In this instance there was also demonstrated our favorite contention that the leader is the one essential requisite. This club was extremely fortunate in having a former teacher who had successfully undertaken the vocation of farming. He had been the leader of the club for seven years. In the beginning the community was divided into many factions, but as a result of seven years of community work it is now solidly united in spirit and in action.

Williams.—This little town on the Canadian border is another demonstration of the possibilities of community service. A few leaders of the town sent to the University for information. On receipt of the bulletin they held a meeting at which it was read aloud. They organized strictly in accordance with its provisions and held the monthly meetings as directed. They report that the effort was marvelous; it brought town and country into closer relationship, and with each successive monthly meeting the spirit grew. In this case there were natural leaders. The town was too small for lodges, clubs, or other organizations, and with the one community organization they were able to make it a success.

The community adviser has given addresses and held conferences that have invariably been most cordially received by the local people, but almost as invariably have failed to secure specific results because of the lack of community leadership and of follow-up supervision.

STORE BUREAUS

The latest and most significant experiment undertaken by community service is the organization and conduct of store bureaus along the same lines followed in the organization and conduct of farm bureaus. A conference was held at the University during the month of February. A luncheon was served. Heads and leaders of the extension work together with the dean of the School of Business met with delegates from ten towns. The matter was thoroly discussed and unanimously endorsed by the delegates.

Mr. Ford, who has been the local organizer for this project, was unfortunately taken sick and confined to his bed for ten weeks. However, the net result of the effort has been that store bureaus have been organized and are now being carried on in six communities. The project has been most cordially endorsed and may be the forerunner of large possibilities in creating an organization to match the Farm Bureau and we hope the two working together may be a large factor in the successful development of community service.

It is the aim and purpose of all interested in the Store Bureau to get behind a real community organization. While this project is in its infancy, it is showing hopeful signs of vigor.

In conclusion a successful community service will require:

1. Better appreciation by the public of its great importance
2. The coordination of all the community forces of the University
3. Cooperation between the University and state and national departments of education, commerce, and agriculture
4. Intensive campaign on publicity
5. Expert supervisors and directors
6. Periodical visitation by competent counsellors
7. Special community meetings at regular intervals with specific program of entertainment and instruction.
8. A working program with an adequate income for its execution
9. Competent leaders for which training should be provided at the University.

MUNICIPAL REFERENCE BUREAU

Changes in personnel.—Miss Esther Crandall succeeded Miss Sophia Hall as librarian on February 15. Miss Hall resigned to accept a position as librarian of the Municipal Reference Bureau, University of Wisconsin.

The present secretary, Mr. M. B. Lambie, succeeded Mr. J. C. Taylor, resigned, on August 18, 1921. By arrangement he devotes two thirds of his time to the work of the bureau, and one third to the Department of Political Science.

SPECIAL REPORTS

1. *Rate Bulletin for Water, Gas, Electricity, and Heat.*—This report, now in press, will contain approximately 150 printed pages. It not only gives the rates for water, electricity, gas, and heat in all municipalities in this state, but also the basis for determining the rates. One hundred seventy-five orders have been received.

2. *Sources of revenue.*—This report is now ready for the printer. It lists the sources and amounts of revenue for the Federal government, the state of Minnesota, and 5 counties and 21 municipalities in the state of Minnesota.

3. *Minnesota Municipalities.*—Six issues of *Minnesota Municipalities* have been published this year as heretofore. It is gratifying to report that the advertisements in the June issue more than paid for the cost of publishing this issue.

Replies to inquiries.—The Municipal Reference Bureau has answered 173 inquiries regarding municipal activities. One hundred forty-nine were received from municipalities in this state and 24 from cities, institutions, and villages outside of the state. Written reports, some brief, and some lengthy, were prepared for each inquiry.

The collection of material for special bulletins.—The bureau has collected considerable information which can be profitably printed in bulletin form. Material is being prepared for bulletins upon (1) sources of revenue, as heretofore mentioned, (2) Great Lakes to St. Lawrence Waterway, (3) budget, (4) civil service, (5) administrative organization, and (6) problems of interest to municipalities which will be presented to the legislature, 1923. These are all subjects of intense interest to

citizens of this state. It is proposed to publish them at monthly intervals beginning in July.

Material loaned.—Four hundred pamphlets covering a wide range of subjects, 161 clippings, and 15 books were sent to city officials and other individuals.

Coöperation with other organizations interested in municipal activity.—One of the real products of the year has resulted from the coöperation which the bureau has maintained with other associations and agencies. Special effort has been made to establish workable relationships with the Municipal Research Bureaus in Duluth, in St. Paul, and in Minneapolis; the Minnesota Section of the American Waterworks Association; the League of Women Voters; and others. The close relationship with other University departments has been maintained and special contacts made with many administrative departments of the state government. To cement this coöperative relationship the bureau called a conference on June 9 at which were present representatives from citizen agencies in the state performing special research work in municipal and state government.

The League of Minnesota Municipalities.—The secretary of the bureau is also executive secretary of the League of Minnesota Municipalities. The bureau, therefore, has intimate relationships with the league. In fact, it is responsible for conducting all league activities. There has been an intensive membership campaign. Questionnaires have been sent to the municipalities to ascertain the subjects of interest to league members. Two meetings of the Executive Committee were held at the University and all arrangements for the convention of the league attended to. The convention is to be held at Crookston, June 21 and 22. The Minnesota Section of the American Waterworks Association and the Mayor's Conference Association have been invited to meet with the league at this time. There are 174 cities and villages in the league membership.

The bureau as an agency for training for public service.—Consideration has been given to possibilities of using the bureau as an agency to train college graduates for public service. The location of the bureau and its resources should favor this consideration. Situated in a large population center it affords an excellent laboratory for all phases of municipal and state activity. The state University makes available technical and professional information on the problems of engineering, accounting, taxation, health, welfare, city-planning, charters, public safety, and education. This combination of resources and circumstances makes this location one of the most favorable in the country for government work, particularly on problems of local government.

With these points in mind the secretary has conferred with the head of the Department of Political Science and other University officials, and exchanged memoranda with other individuals interested in the problem of training for public service. Subsequently, after a conference with the acting director of the Extension Division, he has suggested a plan whereby a few, not more than six, individuals may join the staff without pay and

take advantage of the opportunities to work upon special problems of public administration. Those who may care to avail themselves of this opportunity will be able to observe the administration of government in actual operation. This experience might lead to employment in some phase of public service in paid capacities when the period of training has been completed.

Recommendations.—Material collected by the bureau during the last nine years should be cataloged. Considerable time is wasted because of the awkward system of filing now practiced. It is recommended that an assistant experienced in cataloging be assigned to the bureau for a period of four months to assist Miss Crandall in this work.

Respectfully submitted,

J. J. PETTIJOHN, *Acting Director*

COMPARATIVE STATEMENT OF ALL ACTIVITIES OF THE GENERAL EXTENSION DIVISION--Continued

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
LECTURE AND LYCEUM SERVICE									
Number of towns having courses	37	100	110	136	180	176	178	208	190
Number of engagements filled at above towns.....	184	522	541	654	905	780	837	909	782
Number of single engagements	68	124	82	100	57	73	138	51	31
Number of commencement addresses .....	....	....	....	....	....	....	....	....	64
VISUAL INSTRUCTION									
Number of towns having slide and film service.....	11	52	80	108	62	37	126	187	210
Number of showings of slides and films.....	....	106	205	343	463	185	684	1,497	....
DRAMA SERVICE									
Number of towns served....	....	....	....	193	226	178	142	106	197
Number of inquiries received..	....	....	....	353	361	329	275	225	647
Number of plays sent.....	....	....	....	1,143	1,918	1,420	1,493	2,450	2,052
MUNICIPAL REFERENCE BUREAU									
Number of towns making inquiries	53	80	100	102	72*	96	88	119	101
Number of inquiries received..	....	....	200	225	225	200	216	147	173

* This does not indicate a lack of interest in, or failure to appreciate, the service rendered by the Municipal Reference Bureau as it might seem at first glance. Inquiries were anticipated by questionnaires and the results after being compiled were sent out.

THE SUMMER SESSION

To the President of the University:

SIR: I herewith submit the report for the Summer Session of 1922.

During the past six years, the Summer Session at the University of Minnesota has had the following growth:

1917	1918	1919	1920	1921	1922
1,111	1,259	1,467	2,025	2,687	3,203

The total income from student fees last summer was: \$96,374.01. These figures indicate the growing importance of the summer work. This year our Summer Session ranked fifth in the United States. The percentage of resident students who attend during the Summer Session in order to shorten their period of residence during the regular academic year is increasing slightly in comparison with the total attendance. But there is an increasing number of adult persons interested in the various professions, who enroll for summer work. Of these by far the largest group is that of teachers, yet among this group are doctors, lawyers, and others who wish to keep abreast of the progress of their profession.

Last spring we formally announced a second term in the Summer Session beginning July 29 and extending to September 3. For that term there were 1,145 students registered. The curriculum was a very restricted one, consequently it did not attract as many students as it should have. But the experiment proved beyond a doubt that there is a demand for the second term.

With the development of the second term it is possible for the University to adopt a four-quarter year. Whether a quarter system will modify the administration of the Summer Session is not important. There will always be a group of students who do not come during the regular year and whose interests will require the attention of the director or dean. However, the regular academic year student who stays through the summer quarter must necessarily be governed by the regulations of the college in which he is enrolled.

Should the University adopt the four-quarter system, the fees of the summer quarter should be made the same as those of any other quarter.

The recreation program adopted two years ago, for which we collect a fee of one dollar from each student, has proved highly successful. Excepting for a few students in medicine, practically no one has complained of the additional charge. The program of lectures, concerts, dramatics, intramural sports, and other activities has been one of the most beneficial as well as attractive features of the Summer Session.

The Summer Session fee for law students has been \$25 per term, plus the health, recreation, and Minnesota Union fee. The full time work for a law student is three courses but law students have had the privilege of taking one subject for a fee of approximately one half the full fee. I

believe that since we have adopted the flat fee of \$25 for all other colleges excepting the School of Medicine and the College of Dentistry it would be advisable to charge the law students a flat fee of \$25 whether they carry one subject or more. This would relieve them of the special fees and at the same time place them under the same regulations that are applied to the students in most of the other colleges.

For a number of years the question of the status of the graduate student in the Summer Session who has a scholarship or fellowship during the regular year has arisen. During the regular academic year such a student is given his free tuition. Every summer some graduate students enroll in the Summer Session and ask to have this free tuition regulation made applicable to the Summer Session. So far as the history of these cases indicates, and so far as I can find the interpretation of the regulations governing these students, I do not believe they are entitled to exemption from fees in the Summer Session. If the University wishes to extend the free tuition privilege to them in the Summer Session, the Board of Regents should act upon it. In case they should do so, then it would be hardly fair to ask the Summer Session, which is supported from the fees of the students, to carry the financial loss arising from the fee exemption of graduate students. In other words, the Summer Session budget should be given an allotment from support to the extent of the fees lost from this group of graduate students.

The Summer Session has never offered more than a very limited program of work in physical education for men. Since, however, we have established a Department of Physical Education and Athletics, it has become possible to provide a large number of physical education courses such as are offered in the summer sessions of the universities of Illinois, Wisconsin, Michigan, and other state universities. With the combined activities of the Department of Physical Education for Men and the one for women the summer recreational program will be further improved.

The income from student fees and tuition has grown to such an extent that we can increase the curriculum of the Summer Session particularly in the second term. A study of the statistics of registration and attendance in the various departments indicates that expansion should take place in the departments of Physical Education, Animal Biology, Economics, Political Science, Sociology, History, English, Mathematics, and German; in most of the subjects offered in the College of Education; and in a few subjects given in the College of Engineering. Such expansion can be made without any financial risk from taxation upon the University income.

In view of this year's experience I recommend that the fees for law students be made the same as the fees for the regular students; that definite action by the Board of Regents be taken upon the question of fees for graduate students who have scholarships during the academic year; and finally that the Summer Session program be expanded upon a

budget based upon last year's income, and that the greater portion of the expansion be given to the second term of the Summer Session so as to provide a curriculum that will give students who attend the second term of the Summer Session a larger group of subjects from which to choose their programs of study.

Respectfully submitted,

J. J. PETTIJOHN, *Director*

THE DEPARTMENT OF PHYSICAL EDUCATION AND ATHLETICS

To the President of the University:

SIR: I submit herewith a brief report for the newly organized Department of Physical Education and Athletics for the spring quarter of the academic year, 1921-22. This report is not so much one of achievements as a record of observations, needs, and projected plans. In order that the record for the year may be more complete, I have asked Dr. Cooke also to present a report covering observations during the full year.

Organization.—The recent more complete unification into one department of such activities as (1) general physical education, (2) intercollegiate athletics, (3) intramural athletics, and plans for (4) a training course for teachers, coaches, and directors of physical education and athletics, is of fundamental importance. This arrangement is logical, permits the establishment of a more unified program, reduces duplication of staff and equipment, and in every instance prepares the way for healthy growth and development.

Physical education.—In an ideal sense, physical education should also include all athletics. Unfortunately this ideal is not as yet near attainment, for many of our college athletic activities are still greatly lacking in educational content. It is the purpose of the newly organized department to build up a staff personnel sensitive to the educational values and possibilities of this work.

For the coming year it is planned to broaden this work as follows: (1) by beginning the classes in required work in the fall just as soon as the physical examinations of entering students are completed (this will materially lengthen the amount of required work, which on the present basis of two hours a week is at best too short); (2) by reducing the emphasis on strength tests and measurements in physical examinations, and developing further the present general efficiency tests; (3) by providing some class work in medical gymnastics and substituting recreational games for students physically subnormal; (4) by a greater development of student leaders corps; and (5) by extending, in coöperation with the Department of Preventive Medicine and Public Health, the course in personal hygiene to include social and community hygiene, and taking steps to secure its establishment on a credit basis.

The physical equipment of the department for general physical education courses is extremely poor. The University of Minnesota is one of the very few institutions of higher learning in the United States which never has had a gymnasium for the large body of its men. We have an excellent gymnasium for women, and another, equally good, for the men and women at the College and School of Agriculture. For the great body of Minnesota men, however, this fundamentally important educational activity has been inadequately housed in the University Armory,

a building largely given over to the Military Department, convocations, musicales, dances, etc. The seriousness of this situation becomes even more apparent when considered with a recent report from the Student Health Service indicated that forty per cent of the students at the University were physically deficient, and when it is realized that a large percentage of these physical deficiencies are remediable by a well-ordered course in physical education. This average deficiency of the student body is higher than the average of the United States as revealed by the Draft Board. An adequate gymnasium would soon pay for itself in terms of increased efficiency of students and faculty.

Intramural athletics.—Dr. Cooke's report and the report of the Intramural Committee indicate that much valuable work has been done in intramural athletics. The University is to be congratulated on having such an active interest in this work on the part of faculty and students.

The College of Engineering and Architecture, especially, under the leadership of Professor Zelner has done notable work in this field. As yet, however, but a small number of our large student body are experiencing the rich physical, social, and character-building influences of competition in intramural sports and games. The chief obstacle presents itself in the form of lack of sufficient space for these play activities. A conservative estimate requires the following additional playing space: 25 additional tennis courts, 1 soccer field, 10 baseball diamonds, 25 horse-shoe pitching courts, 1 permanent skating rink, a boat and canoe house for aquatic sports, 1 large indoor field for intramural activities during the late fall, winter, and early spring.

Intercollegiate activities.—Our new football coach, W. H. Spaulding, with the assistance of Dr. Boles Rosenthal, '15 and '17; George Hauser, '18; Arnold Oss, '22; conducted about seven weeks of successful spring football. Over 130 men registered for this work and an average daily attendance of about half of this number was maintained throughout the season. The candidates were drilled daily in the fundamentals of this fighting type of game. A regular game attended by about 2,000 spectators, largely students and alumni, was one of the features of the work. Barring scholastic deficiencies the outlook for a good team is fair.

The next most notable event of the spring quarter was the resumption of intercollegiate baseball, after a lapse of eight years. Since the game had been abolished by Senate action, its reinstatement on trial for a three-year period was effected by this body.

Student interest was surprisingly good, as indicated by a season ticket sale of 1,472 tickets and a squad of about ninety men reporting for Varsity candidacy. Under the tutelage of Coach Russell Ford, Lawrence Lawler, '15, and Dr. Cooke, the Varsity and freshman teams have rounded into shape fairly rapidly in the brief season of two and one-half months. The team won a fair share of victories and showed gratifying playing strength in most of the games lost. Their greatest weakness lay in absence of veteran material and lack of seasoning due to the short playing season. The much needed indoor field would help this sport as well as track and basket-ball.

Intercollegiate golf was instituted for the first time this year. There was a fine student interest in this recreative game.

The new Senate Committee on Intercollegiate Athletics was recently organized and has been functioning in a very satisfactory manner. Its membership of two undergraduates, two alumni, and seven members of the faculty fully secures the conference requirement of the principle of faculty control, while still giving to the director of athletics the detailed administration of intercollegiate athletics. The personnel of the committee comprises an editor, a bank cashier, a lawyer, the director of the University Health Service, an engineer, an auditor, the University comptroller, the alumni secretary, two representative undergraduate leaders, and the director of athletics, constituting a body of all-around ability, well prepared to meet the difficult problems of intercollegiate athletics. The relations between the Senate Committee and the Department of Physical Education and Athletics have been coöperative and pleasant.

The committee has recently made plans to enlarge the seating capacity of Northrop Field somewhat, and to make it possible for the student body to be seated in the middle of the north stands. The present stands as enlarged, will accommodate about twenty-one thousand, and will probably be insufficient to take care of the large attendance expected at the Ohio, Wisconsin, and Michigan games next fall. The early need for a stadium with much larger seating capacity is pressing, because of increased attendance and the early necessity of rebuilding our present wooden stands.

The Department of Physical Education and Athletics hopes to establish during the coming year, in conjunction with the College of Education, a training school for teachers, coaches, and directors of physical education and athletics. The main responsibility, organization, and the supervision of this work will be given to Professor Metcalf, who takes up his duties this September. With several other members of the staff planning to give courses, a well-organized curriculum providing for a major and a minor in physical education and athletics seems possible of early realization.

Following is the report of Dr. L. J. Cooke:

DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

The chief tasks undertaken by the department were practically the same as in former years, as follows:

1. Physical examination of all new matriculants, and all those using the privileges of the department, and medical inspection of the same.
2. Administration of a special lecture on sex hygiene.
3. Lectures on personal hygiene for all freshmen in the University except those of the School of Mines.
4. Conducting organized classes in physical training for all freshmen in the College of Science, Literature, and the Arts, the School of Business, and the School of Chemistry.

5. Conducting special courses for physical defectives in all colleges of the University.

6. Promotion of intramural sports such as baseball, basket-ball, tennis, swimming, hockey, track and field athletics, boxing, wrestling, etc.

7. Promotion of miscellaneous sports and physical activities including gymnastics, track and field events, Sigma Delta Psi (honorary athletic fraternity), and basket-ball and volley ball.

Physical examinations.—A careful physical and medical examination was given all students entering the University for the first time. This examination was given in conjunction with the University Health Service, and included personal and family history of student, inspection of heart, lungs, nose, throat, teeth, eyes, ears, skin, and body in general, together with urine analysis and record of blood pressure. As a result of this examination corrective exercises were prescribed as indicated, and students, disqualified for military drill and the regular course in physical education, were allowed to substitute for same special and remedial exercises as explained in the paragraph on corrective gymnastics.

Medical inspection was required of all other students using the privileges of the department, such as shower baths, swimming pool, gymnasium, training quarters, athletic field, and towel exchange.

A second physical examination at the end of the school year was required of all students taking the regular physical education course. During the year a total of 3,285 examinations were made, divided as follows:

Original examination with measurements.....	1,901
Reëxamination with measurements.....	583
Medical inspection.....	801
Health consultations—referred to Students' Health Service	
First aid cases—referred to Students' Health Service.	

Special lecture.—A total of 1,411 students attended the special lecture on sex hygiene as required of all students entering the University for the first time. This lecture was given in the Armory by Dr. H. L. Williams.

Personal hygiene lectures.—There was a total enrolment of 1,520 students in the course, consisting of twelve lectures given twice a week. The course serves as a prerequisite to the regular course in physical education, and embraces the following subjects: the human body (briefly considered); nutrition; general and corrective exercises; bathing; hygienic hints, including suggestions on sleep, selection of student's sleeping and living rooms, care of the eyes, teeth, etc., infection and control of same; and first aid to the injured, including instruction in rescuing and restoring the apparently drowned. Themes were required during the course with a written examination at the close.

Gymnasium classes.—These included floor work in calisthenics and on apparatus, boxing, wrestling, swimming, etc. A total of 988 students took the required work, made up of 790 freshmen, 137 delinquents from the preceding year, 41 special boxing, and 20 wrestling. Of the 790 freshmen a few of the physically fit were allowed to elect certain special

courses in physical training. Of these 10 were enrolled in wrestling, 56 in boxing, 81 in advanced apparatus, and 7 in track. In addition to this number, 20 upper classmen were taking optional work in wrestling, and 41 took special work in boxing. Registration by quarters was as follows:

Fall quarter.....	624
Winter quarter.....	553
Spring quarter.....	562

All students taking the course, except defectives, were required to pass the usual efficiency tests for credit in physical education. Three of these tests were required in the first and second quarters, and five in the third quarter. The former were in swimming, bar-vaulting, and set exercises on apparatus; the latter in life-saving, running, jumping, and apparatus work. The standards required in all the exercises are such that the average student with the training given can meet them, and are the result of careful study by the department.

Tests in swimming for the first quarter: two lengths of pool, i.e., 120 feet, any stroke; bar-vaulting, to height of shoulder; life-saving, carrying a person simulating unconsciousness in the water 20 yards, and demonstration of Schafer method of artificial respiration; running 100 yards in 12 3/5 seconds; high jumping 4 feet; apparatus work: parallel bars, vaulting over buck and horse, requiring form, precision, and a moderate amount of coördination. Four hundred forty-three freshmen completed all trials.

At the beginning of the first quarter all students enrolled in the department were required to report to the pool for the test in swimming. One hundred sixty-six students were found unable to swim at all. Of this number all but three had qualified before the end of the term.

SWIMMING

Average monthly attendance during the school year....	3,809
Average daily attendance during the school year.....	147
Elementary classes in required work	
Attendance first quarter.....	162
Attendance second quarter.....	148
Attendance third quarter.....	70
Intermediate swimming	
Attendance first quarter.....	15
Attendance second quarter.....	68
Attendance third quarter.....	70
Advanced swimming	
Attendance first quarter.....	36
Attendance second quarter.....	55
Attendance third quarter.....	47
Special cases (physically unfit for military drill)	
Attendance first quarter.....	86
Attendance second quarter.....	65
Attendance third quarter.....	85

Corrective gymnastics.—The defectives were as far as possible grouped according to their condition, and placed under the direction of a medically trained instructor who supervised this work. These defectives were

excused from the tests required of other students but were required to report three times a week for exercises. A student when granted a petition for excuse from military drill or physical education on account of physical disability, was assigned to one of these groups.

Intramural sports.—Intramural athletics, as administered by the Department of Physical Education, consisted of contests in intercollege, interfraternity, and all-University basket-ball, baseball, handball, bowling, ice-hockey, swimming, golf, track and field events, tennis, boxing, and wrestling. The total participation in this class of sport was 2,166 (which included some duplications)—see report of Intramural Sports Committee.

MISCELLANEOUS PHYSICAL ACTIVITIES

1. The department encourages winter sports, and a ski club was organized with 21 active members. Sixteen were jumpers and 5 were cross-country skiers. The team was defeated by a narrow margin by Wisconsin at Madison. In the Northwestern annual contest members placed third, seventh, and tenth in a field of 63.

2. A faculty handball tournament was conducted with 16 entries.

3. Advanced gymnastic leaders working for credit numbered 5.

4. Sigma Delta Psi (honorary athletic fraternity) is still active at Minnesota, and during the year 11 trials were conducted in the following events: football punt; 100-yard dash; 220-yard low hurdles; pole vault; shotput; ten-mile walk; and tumbling. One hundred thirty-two students are enrolled as candidates for the fraternity.

The University entered a team in the Northwestern Gymnastic Meet and won first place in Class A (highest class), competing against teams representing the following institutions: University of Wisconsin, St. Olaf's College, Luther College at Decorah, Iowa, Augsburg Seminary, Socol Society of New Prague, St. Paul Y.M.C.A., Minneapolis Y.M.C.A., Turnverein of New Ulm, the Turnverein of St. Paul, Knights of Columbus of St. Paul, Stout Institute of Menomonic, Wisconsin, and several other minor institutions.

Respectfully submitted

L. J. COOKE, *Assistant Director*

Summary of needs.—A few of the greatest needs of the work in Physical Education and Athletics may be summarized as (1) a new gymnasium as a fit center for the general program for all men of the University, (2) an indoor field providing intramural and intercollegiate facilities for basket-ball, football, track, baseball, (3) added playing space for intramural athletics as above ordered, and (4) a new stadium.

The director of the department desires here to acknowledge his appreciation for the interest, sympathy, and help of the undergraduates, faculty, and alumni in general, and the president, Assistant Director Dr. Louis J. Cooke, and the Senate Committee on Intercollegiate Athletics, in particular.

Respectfully submitted,

F. W. LUEHRING, *Director*

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

To the President of the University:

SIR: I herewith submit my report on the work of the Department of Physical Education for Women for the year 1921-22:

Professional course.—With this year the organization of the course for preparing teachers and supervisors of physical education has been completed and the first senior class of six students has received degrees as graduates from the College of Education. The enrolment in the course is 64; seniors, 6; juniors, 11; sophomores, 20; freshmen, 27. In addition, 7 students are enrolled in the minor course for training teachers.

The number of states that have on their statute books laws requiring the teaching of physical education in their public schools has now risen to twenty-eight. This fact emphasizes the increasing need of properly organized courses for training teachers in this subject.

The coöperation of the supervisor of physical education in the public schools of Minneapolis and the director of recreation in the parks of the Twin Cities has made it possible for our students to use those facilities for practice teaching in addition to the opportunities which exist on the campus in college and University High School classes.

The students of the major and minor courses together have organized a professional society called the Physical Education Association of the University of Minnesota. This organization has proved an important center even during its first year for the development of professional consciousness. Among its purposes for next year is the "big sister" attitude toward newly entering students and a systematized effort to help them toward success. The organization should prove one of the important influences in their University life for this group of students.

ENROLMENT OF NON-PROFESSIONAL STUDENTS

Required exercise:	
Freshmen, general courses.....	786
Sophomores	
Physical training.....	92
Swimming	312
Interpretive dancing.....	89
Organized games and folk dancing.....	45
Major sports.....	69
Total	607
Required hygiene.....	708
Elective exercise (excluding swimming).....	82
Number of "swims" (general swimming).....	1,795
Elective hygiene.....	34
Summer Session.....	209
Extension Division.....	393

THE PRESIDENT'S REPORT

Physical examinations, total number.....	1,684
Entrance (fall).....	751
Entrance (winter).....	69
Entrance (spring).....	20
(Follow-up appointments on account of defects indicated at first examination, 194)	
Spring reëxamination of freshmen and sophomores....	809
Spring reëxamination of University High School.....	35
Upper class consultations for all juniors and seniors (except juniors of the College of Education).....	320

Coöperation between this department and the University Health Service in physical examinations and follow-up work has been close and fruitful of results.

The building.—The projected completion of the shower bath and dressing-room unit in the natatorium, to be begun in the summer of 1922, will bring marked relief in the administration of the classes in swimming, preventing exposure to cold on the part of students and diminishing the congestion of the general dressing-room.

The addition of 280 lockers to the equipment has removed to a large extent the necessity for assigning more than one student to a locker.

Intramural sports.—A full report on intramural sports, the need for more space for outdoor activities, and the coöperation of the Women's Athletic Association with this department during the current year is included in the report of the Senate Committee on Intramural Sports and Physical Education.

Respectfully submitted,

J. ANNA NORRIS, *Director*

COMMITTEE ON PHYSICAL EDUCATION AND INTRAMURAL SPORTS

To the President of the University:

SIR: The report of the Committee on Physical Education and Intramural Sports for the year 1921-22 is herewith respectfully submitted.

The Committee on Intramural Athletics functioned in its usual advisory capacity until by the action of the University Senate at its last meeting all intramural athletics for men were placed under the direction of the Department of Physical Education and Athletics.

The budget for intramural work for 1921-22 was \$1,192. This consisted of \$192, balance from last year; \$500, appropriated by the Board of Regents out of general University support funds; and \$500 voted by the Athletic Board of Control. Expenditures out of this budget were under control of the committee. A few special projects such as the building and maintenance of the skating rink and the supplying of bleachers for the finals of the women's basket-ball tournament were authorized, but most of the expenditures were for equipment, for basket-ball, hockey, and baseball.

The ice skating rink which was constructed in December on Northrop Field was one of the best in the Northwest and was used daily by large numbers of the students and faculty. After the authorization of an ice-hockey team the rink was used at times for team practice and one third of the expense was assumed by the Athletic Board of Control.

In the formulation and execution of the program for intramural athletics, the committee acted only in an advisory capacity, the departments of Physical Education doing the actual work. A summary of the accomplishments from September, 1921, to May, 1922, in this field of activity is as follows:

I. INTRAMURAL ACTIVITIES FOR WOMEN

The intramural sports have been carried on as heretofore by the cooperation of the Department of Physical Education for Women and the Women's Athletic Association. The faculty has given instruction in the team games (except ice-hockey) and has taken the leadership in selecting teams and arranging for tournaments. The Women's Athletic Association has provided the publicity and the awards.

Intramural sports have been badly hampered by lack of outdoor space within reasonable distance of lockers and showers baths. I would recommend a full consideration of the needs for more space for the intramural sports of the University women, and would urge that any large plan for the development of a new area, such as the riverbank park,

for athletic purposes include the provision of adequate facilities for the women. As one example of the inadequacy of the present facilities I would instance the two hockey fields, which measure approximately 75x120 feet each. A regulation hockey field measures 150x300 feet.

Under present conditions it seems necessary to utilize to their fullest extent the space behind the Library and Gymnasium buildings, as well as that bounded by the Library, Pathology, and Music buildings and the Workshop.

Facts concerning the year's sports follow:

Field hockey (Fall quarter).—One hundred five participated; two weekly practices. Class tournament was played off in the spring.

Basket-ball (Winter quarter).—One hundred twenty participated, two weekly practices. Class tournament, March 4 to March 15, won by the seniors. House tournament entered by 12 teams, won by Chi Omega. Color tournament between freshman and sophomore sections played February 1 to March 1.

Ice-hockey (Winter).—Fourteen participated.

Swimming (All quarters).—The Aquatic League (a branch of the Women's Athletic Association) gave an exhibition January 19 before a group of about 175 spectators, for the sake of stimulating interest in swimming among the University women. "Stunts" and fancy diving made up the program. Annual swimming meet arranged for May 25.

Gymnastics (All quarters).—A demonstration of the work done during fall and winter was held March 19, before a group of more than four hundred invited guests.

Baseball (Spring quarter).—One hundred fifteen participated. Class tournament played May 22. House tournament and color tournaments played.

Tennis (Spring quarter).—Registration for singles tournament, 26; tournament began May 8. Registration for doubles tournament, 14; tournament began May 15.

Golf (Spring quarter).—This is a sport which the Women's Athletic Association is organizing this year for the first time. There have been 15 entries for the tournament which began May 17. The Glenwood course was used.

Field Day was held in the East Riverside Park May 31. On that occasion the final games were played in field hockey, interclass baseball, house baseball, volley ball and archery.

II. INTRAMURAL ACTIVITIES FOR MEN

Intramural sports (embracing outdoor activities) were somewhat increased the last year, but owing to the lack of playing grounds and insufficient equipment many games were run below normal capacity. With the Military Department using the parade grounds three days a week it was next to impossible to find playing grounds for the vast number of men that would have been in the field if space permitted.

Baseball (Interfraternity).—Twenty-four academic fraternities entered the contest and a series of 120 games was started early in April and ended the first week in June. Counting all games played and allowing for forfeitures 110 games were played on the parade grounds and 225 students took active part. The final game was won by the Alpha Tau Omegas.

(Intercollege).—Eight teams were formed and a complete schedule was played off with no forfeitures; 75 men took part and the trophy was won by the College of Engineering and Architecture.

Tennis (Interfraternity) (Fall, 1921).—Matches between the 25 academic fraternities showed that tennis was the accepted summer sport with this group and 75 men participated. The final and deciding game was won by the Delta Tau Delta Fraternity.

(Spring, 1922).—Twenty-five academic fraternities and 15 professional fraternities arranged two leagues to play 160 games. The schedule continued until the first week in June.

(All-University).—An all-University tennis tournament was conducted and lasted until the first week in June; 75 men entered their names as contestants.

Football (Interfraternity).—A few games were played by different fraternities on the campus in the hope of stimulating sufficient interest to make it a fall sport with academic fraternities but due to the dearth of equipment the idea was abandoned for this year. Plans are under way to substitute soccer for football next fall in order that expensive equipment may not be necessary and the possibility of injuries may be reduced.

Basket-ball (Academic fraternities).—Twenty-four fraternities entered teams in this sport and a series of 63 games was played in the Armory, 200 students took part, and the final game was won by the Sigma Nu Fraternity.

(Professional fraternities).—Fifteen fraternities entered the league and a series of 65 games was played, the final and deciding game was won by the Alpha Rho Chi Fraternity.

Ice-hockey (Interfraternity).—Twenty fraternities entered this branch of winter sports, matches were played off on the University hockey rink, and the trophy was won by the Phi Sigma Kappa Fraternity.

Bowling (Interfraternity).—Teams from 24 academic and 15 professional fraternities entered a league. The season started early in October and ended in January with a total of 175 games being played. The Alpha Rho Chi Fraternity was the winner.

(Western intramural).—A contest was held between the various fraternities among the Big Ten schools and competition was carried on by means of telegraphic scores to Ohio State University, which acted as a clearing house for all scores. A total of 150 teams was entered in the tournament. Minnesota entered 20 teams and ranked third. One hundred men took part in this unique program and great interest is expected next year.

Swimming (Interfraternity).—Twelve fraternities entered teams for the interfraternity swimming relays and the meet was won by the Delta Kappa Epsilon Fraternity. Forty-eight men entered this meet.

(Intercollegiate).—Thirty men participated in the annual all-University swimming meet, and intramural "M's" were awarded to twelve men winners in single events. The meet was won by the College of Engineering and Architecture with 48 points. The College of Science, Literature, and the Arts was second with 46 points.

Boxing.—An all-University boxing tournament was staged at the Armory, April 26, and 16 men competed for first places in the eight classes. Forty-five men, most of them members of the regular boxing class of the Department of Physical Education, entered the elimination contests.

Wrestling.—An all-University wrestling tournament was held to select the Varsity wrestling team last fall and 25 men participated in the elimination contests.

Handball (Faculty).—A handball tournament open for all members of the faculty was started in December and 8 men entered. The final match was played in the spring.

Kitten-ball (Intercollegiate).—Eight colleges have entered teams in the kitten-ball league, and the opening game was held Wednesday, May 17. The success of this venture will mark the keeping or dropping of this game as an intercollegiate sport. Interclass games are being staged in the College of Engineering and Architecture.

Horseshoe-pitching (All-University).—For the first time in the history of Minnesota horseshoe-pitching has been accepted as an intramural sport. Plans for a spring tournament were made and courts were staked out on various plots of ground throughout the campus.

(Academic fraternities).—A schedule including all of the 25 academic fraternities was arranged and the elimination series began Wednesday, May 17.

(Professional fraternities).—Fifteen of the 20 professional fraternities signified their willingness to enter such a tournament and their schedule began Wednesday, May 17. About 200 men participated in this branch of sport.

Golf.—All that has been said above in relation to horseshoe-pitching can be repeated in respect to golf. The eliminations in each league began Saturday, May 13, on the Midland Hills golf course. Trophy cups for each league were ordered by local dealers in sporting goods. At least 200 men chose this favorite sport and it is anticipated that next year both a fall and spring tournament will meet with success.

Soccer football.—Many students have expressed the desire to see this sport introduced as an intramural sport, and with that in view a ball was purchased and evening practice begun. A campaign for soccer players among the student body was carried on.

Sigma Delta Psi (Honorary athletic fraternity).—(Fall trials).—Trials in all of the twelve events were held during the fall quarter, and

the indoor events were offered three times. Records show that during the fall the number participating in one or more events numbered above 150 men.

(Winter trials).—Six trials were offered during the winter quarter and 125 men passed one or more events as scheduled.

(Spring trials).—A series of trials was offered this spring. All events, both outdoor and indoor, were scheduled twice.

Track and field meets.—Both the professional fraternities and the academic fraternities planned a track meet which took place the first week in June. Two days were set aside in June for the intercollege track and field meet.

The recommendations for more fields and playing grounds need serious attention, for intramural sports are now at practically their highest point of expansion under present facilities. Indoor sports, as well, are seriously handicapped by the lack of basket-ball courts and general playing room.

Respectfully submitted,

H. S. DIEHL, *Chairman*

THE DEPARTMENT OF MILITARY SCIENCE AND TACTICS

To the President of the University:

SIR: I have the honor to submit the following report of the Department of Military Science and Tactics for the year 1921-22:

The training corps was organized during the first two days of the fall quarter and the systematic carrying out of the schedule of instruction was begun October 3, terminating June 3, 1922. Unfortunately, the year's supply of uniforms was not received until a late date so that their issue to students could not be made before October 19. The progress made during the year was generally satisfactory and is believed to be an improvement over the year before, due to an improved schedule and to an increased interest on the part of the student body. The special schedule of hours of attendance for the spring quarter which was inaugurated last year was repeated this year, and its continuance is recommended.

Special arrangement was made for the spring quarter whereby the use of ten classrooms in various colleges was obtained for emergency in case the inclemency of the weather prevented outdoor instruction. These facilities were valuable; but in general, the condition still obtains as to the two great needs of this department, namely, more classroom facilities throughout the year and proper housing facilities for certain essential material.

ENROLMENT 1921-22

University Proper (Senior unit)

Total number enrolled.....	1,923
Registration cancelled.....	467
Special gymnasium work substituted on account of physical disqualification	163
Discharged from R.O.T.C. for divers reasons.....	58
Completed course.....	1,235
Grade A	864
Grade B	191
Grade C	46
Grade D	2
Grade I	94
Grade F	38
Totals	1,235 1,923 1,923

Of the above number present at the close of the year, the distribution was as follows:

Basic Course.....	1,090
Advanced Course.....	145
Total	1,235

Report of individual rating of each student has been made to the office of the registrar.

School of Agriculture (Junior unit)

Total number enrolled.....261, all of whom made satisfactory progress

The junior unit at the School of Agriculture was supervised by Major Ben W. Feild, infantry, the same officer who had immediate charge of it the year before. The instruction was satisfactory as far as it went, but unfortunately, it was quite incomplete, as the course had to be terminated on February 24, 1922 on account of an epidemic of scarlet fever.

The total value of the equipment issued by the War Department for the use of the Reserve Officers' Training Corps was approximately \$223,870.87.

A list of the personnel detailed by the War Department and on duty at the University at the close of the college year is omitted as being already on record in the president's office.

The following named students were graduated from the University and satisfactorily completed the work contemplated for the two years' Basic Course and the two years' Advanced Course:

Dental unit.—Wesley R. Hiller, Myron H. Miller, George T. Olsen, Paul H. Peterson, Frank Rapacz, Benedict A. Shimck, Lloyd J. Straub, Harold N. Weickert, Anthony J. Weinert.

These students received degrees of doctors of dental surgery and were commissioned first lieutenants in the Dental Officers' Reserve Corps.

C. A. C. unit.—Dewey F. Mattson, B.S. (C.E.); Walter C. Peters, B.S. (M.E.); Walter F. Villaume.

Signal Corps unit (Bachelors of science in electrical engineering).—Bertin A. Bisbee, Earl S. Bjonerud, Orney E. Dunnum, J. Edward King, Arnim G. Olson, John E. Sorenson, Abner W. Wilson.

Infantry unit.—Paul E. Casserly, B.A.

In addition to the foregoing, the following students having completed the curriculum required by the Military Department were also issued commissions in the Officers' Reserve Corps:

(Infantry).—George D. Reed, John E. Rowell, Ralph M. Williams.

All of the students of the several categories mentioned received their commissions on Commencement Day and with the exception of the doctors of dental surgery, were commissioned as second lieutenants.

The following students completed the required curriculum as to military training necessary for them to be qualified as second lieutenants in the Officers' Reserve Corps; but on account of not having reached their majority, they were issued certificates of eligibility in lieu of commissions:

Infantry unit.—Robert J. Barry, B.A.; John M. Prins.

Commissions granted to students of the University from June 15, 1921 to June 14, 1922: Clement T. Gleason, second lieutenant, infantry, O.R.C. March 23, 1922.

In accordance with Special Regulations No. 44 of the War Department governing the Reserve Officers' Training Corps which permits the

designation of five per cent of those enrolled in the second year of the Advanced Course on March 1 as honor students, Mr. John M. Prins and Mr. Dewey F. Mattson were so designated among the graduates of the Department of Military Science and Tactics for the academic year ending June 14, 1922.

The following named students will, if their work continues to prove satisfactory, be entitled to commissions at the end of the coming summer camp:

Dental unit.—Griffith B. Salisbury, Henry W. Scheibe, Leland A. Schoenleben, Irving E. Seth.

C.A.C. unit.—Oscar W. Schey.

Infantry unit.—Russell J. Schunk.

In accordance with the recommendation of this department, on account of previous difficulty experienced in recovering property issued to students during the year for their use, all R.O.T.C. students were required by the University to make a deposit of \$10, and as a consequence, this difficulty has been practically removed.

On May 17, 1922, the Board of Regents approved the recommendation that for the next college year, students of the Advanced Course be placed on a commutation basis with reference to uniform, and the War Department has so authorized.

The annual inspection of the establishment by a special board of officers from the War Department to determine whether the University would continue to be rated as one of the distinguished colleges, took place May 12 to 16. Report of the recommendation of the board has not been received up to the present time.

Respectfully submitted,

G. STURTEVANT, *Colonel of Infantry, P.M.S.&T.*

THE GEOLOGICAL SURVEY

To the President of the University:

SIR: I submit herewith my report as director of the Geological Survey for the period from July 1, 1921 to June 30, 1922.

The survey was allotted \$16,500 for the biennial period begun July 1, 1920. The work of the survey was carried on according to the plan outlined in previous reports to the president of the University, and published in the annual reports of the president. At the end of the fiscal year, 1921-22, there were under way or completed the following investigations:

1. The mapping of the Vermilion Iron Range and the region lying north and west of it was continued by Professor F. F. Grout and assistants. Work in this region is slow and tedious on account of timber and brush and the difficulty of finding exposures. Detailed work was done on areas containing ore prospects, and on other areas that promised to yield data on the general structure of the area.

Mr. George A. Thiel, assisted by Mr. Victor T. Allen, and Mr. William Strunk, made a reconnaissance of about twenty-five townships. Professor Grout, assisted by Mr. Thomas S. Lovering, worked in the areas between the ore-bearing part of the Vermilion Range that has been mapped in detail, and the area in Canada which has been mapped by the Canadian Geological Survey. Detailed studies were made of areas of pegmatite particularly of those containing iron ore. Mr. Roger Gannett assisted in laboratory work in connection with this investigation.

2. Following the detailed survey of the eastern part of the Mesabi Iron Range, made by Professors F. F. Grout and T. M. Broderick, the survey has extended the work westward along the Mesabi Range. The early part of the work was conducted by Professor Broderick, under my supervision, but Mr. John W. Gruner assumed the burden of the work in the summer of 1920, and carried the study of the central part of the range to completion.

The active developments on the East Mesabi promise to make it profitable to mine deposits of low grade magnetite. Mr. Gruner, assisted by Mr. H. A. Schmitt, finished the work on the magnetites of the West Mesabi. The open pits and outcrops of the range were visited with the object of mapping certain horizon markers in the ore and noting the relation of the deposits to the joints and fracture systems in the iron ore formation and underlying quartzite. Microscopic study and laboratory experiments, supplementing the field work, have been undertaken. A preliminary paper, "Paragenesis of the martite ore bodies and magnetites of the Mesabi Range," was published in *Economic Geology*, in February, 1922, and another on the origin of the Biwabik formation is in press.

3. The program of highway construction approved by the legislature, requires a large amount of gravel and rock. The survey has undertaken to assist the Highway Commission in the location and development of

these materials. Mr. G. M. Schwartz and Mr. W. C. Werner were appointed to do the work required by the authorities of the Highway Commission. Mr. Schwartz began the work June 23 and Mr. Werner, July 1. It was carried on in coöperation with the Highway Commission under the direction of Mr. F. C. Lang, engineer of tests and inspection. Throughout the summer the commission furnished a crew of men adequately equipped for testing and sampling materials collected and locations recommended by the survey. The work was confined to the southern part of the state where gravel deposits are scarce and valuable. The areas selected were along roads to be improved in 1921 or 1922. The general practice was to cover all territory within five miles of the road to be improved and investigate deposits of gravel. Those with favorable geological setting were noted and tested by the commission crew. In all, fourteen projects were covered. These are in the following counties: Sibley, Le Sueur, Blue Earth, Dodge, Mower, Freeborn, Faribault, Martin, Watonwan, Cottonwood, Jackson, Nobles, Murray, Pipestone, Rock, Lincoln, and Swift.

About August 15, questions arose regarding some limestone quarries, and at Mr. Lang's request Mr. Werner spent the remainder of the season investigating and sampling quarries at Minneapolis, St. Paul, Kasota, Mankato, Hastings, Mantorville, and Rochester.

Detailed reports and maps have been completed covering all of the work for the season and those are on file in the survey office. Later this material may be incorporated in a report on road materials.

In addition to the more comprehensive investigations outlined above, many inquiries are received in the offices of the survey concerning the geological structure in various places, by those who contemplate drilling for water or ore. Many requests are received for information concerning deposits of peat, stone, clay, shale for artificial shingles, fluxes, refractories, etc. These inquiries are given careful attention, and when practicable samples of material are forwarded in order that it may be tried out. This service will be increased in the near future. Many samples of rocks and ores are forwarded from different localities in the state to be examined to determine their availability for various economic purposes.

Respectfully submitted,

W. H. EMMONS, *Director*

THE ZOOLOGICAL SURVEY AND MUSEUM

To the President of the University:

SIR: I have the honor to submit the following report of the condition and activities of the Zoological Survey and Museum for the year ending June 30, 1922.

There has been a gratifying increase during the past year in the interest shown by the general public and especially by the schools of Minneapolis and St. Paul in the museum exhibits and the illustrated lectures offered. The University also is awakening to the educational and cultural opportunities presented. At the beginning of each quarter the habitat groups receive much attention from the new students many of whom spend considerable time in careful study of the contents of the cases.

With the exception of the Sunday afternoon lectures, no regular schedule or course of lectures has been followed but, both at the museum and outside, lectures have been given by special arrangement. In the case of the public schools this plan has not been entirely satisfactory giving rise occasionally to confusion and conflict. An effort will be made to establish some systematic plan during the coming year. Toward spring the requests from the public schools became numerous and insistent and a large part of the time of the director and his assistant, Mr. William Kilgore, Jr., was devoted to this work. During some weeks nearly every afternoon, and occasionally morning hours also, found groups of grade and high school pupils, with attending teachers and parents, filling the lecture room and listening afterwards to talks before the various exhibits. Even kindergarten and first- and second-grade children were brought by their teachers and seemed to find pleasure and interest in what they saw and heard if the response and attention they showed indicated truly their reactions. However, the best results are attained of course with the older children. It has been a real pleasure and satisfaction to come into contact in this special field with all these bright and eager young folk. All do not profit equally but a considerable number receive enduring impressions and we feel that this is, perhaps, the most worth-while activity in which the museum is engaged at present. Cultivating a love of nature and stimulating powers of observation pave the way for much pleasure and profit in years to come and impressionable childhood is about the only period of life when this can be accomplished with anything like lasting effect. Most of the teachers are very earnest and self-sacrificing in this work and quick to cooperate with the museum. In some instances the classes came prepared in advance and were provided with paper and pencil to take notes. Essays, discussions, and letters followed at the schools and a number of the letters have been forwarded to the museum. In this way the teachers guard against these expeditions being mere pleasure parties.

An analysis of the detailed list of lectures included in this report shows that the number of school children who came to the museum during the past year reached an approximate total of 2,158. These children came from 23 Minneapolis schools and 5 St. Paul schools. The St. Paul schools sent 285 pupils. Lectures were given at the Hiawatha and Rosedale schools with an attendance of 800. Such lectures to large gatherings at schools are not as satisfactory as talks to smaller groups at the museum where the opportunity to view the exhibits is a valuable additional feature. Lectures were also given at the museum to classes from the Anoka High School, Edina School, and Crystal Bay School, and at St. Thomas Academy, St. Paul. Invitations to give talks and show motion pictures at several general rallies of both Boy and Girl Scouts and at a gathering of 700 boys belonging to the boys' clubs of the Young Men's Christian Association at the Blue Mouse Theatre on May 6, were accepted, the total attendance aggregating 1,615. A lecture was given at Stillwater under the auspices of the Primrose Club on May 5, and two lectures at Fairmont, Martin County, on May 12 under the auspices of the Martin County Game, Fish, and Bird Protective Association. The afternoon lecture at Fairmont was attended by 700 school children assembled in the principal theater. On December 17 the director gave an illustrated lecture at the Chicago Art Institute before an audience composed of the Illinois Audubon Society and affiliated organizations. A visit was made at that time to the Milwaukee Public Museum and much valuable information obtained in regard to the policies being pursued at that fine institution. In November the director attended the annual meeting of the American Ornithologists' Union in Philadelphia and presented two reels of motion pictures with accompanying lecture before an audience at the Philadelphia Academy of Natural Sciences. In July both the director and assistant curator attended the annual convention of the Minnesota Game Protective League at Gull Lake, near Brainerd, and gave an outdoor evening movie show to an audience composed in part of Indians. It was interesting to note that the response to the pictures of the considerable number of Indian children present was quite equal to that of the most enthusiastic of the Minneapolis school children. An illustrated lecture on Itasca Park and its wild life was given in the Mayo Clinic Building at Rochester on September 23 in response to an invitation from the Sigma Xi Chapter and the University Alumni Club. As may be seen by consulting the list a considerable number of lectures were given to churches, clubs, societies, and various groups of adults, chiefly in Minneapolis. A number of other invitations from places both in and out of the state were received but had to be declined as the work at the museum was pressing during the spring months.

The Sunday afternoon lecture course was given again this year during January, February, and March and attracted audiences beyond the seating capacity of the upper lecture room so that the basement room had to be used for the overflow nearly every afternoon. The total attendance was estimated at 2,950.

A summary of all the audiences reached by the lecture work of the museum for the year gives an aggregate attendance of 11,829, of which 6,272 were children of school age. This is a very great increase over last year and the outlook is for a steady growth along this line.

In the latter part of May, Mr. Jenness Richardson, the museum taxidermist, was sent to the Field Museum of Natural History in Chicago and the Milwaukee Public Museum to inspect the work being done there but more especially to acquaint himself with the methods of construction of the small portable exhibits which the Field Museum has been making in large numbers during the last few years under the N. W. Harris Public School Extension Fund. These groups are built in standard sizes and the contents so securely installed that they can be easily and safely transported to schools and libraries and even shipped a distance if desired, where they can be seen and studied at leisure by many who could not readily come to the museum. The Field Museum through the generous gift of Mr. Harris, who was the pioneer in this work and plan, has met with such success that other cities are now adopting the idea. It has long been the hope of the director that the University Museum might enter upon this line of work and recently a small beginning has been made. Mr. S. C. Simms, director of the Harris Extension, very kindly sent to us a sample case and with this as a model six of these small cases are under construction. By next winter we expect to have a sufficient number completed to demonstrate the practicability and value of the plan. The expense of the work thus far has been charged to the museum budget but as it grows it is hoped that financial assistance can be obtained from persons interested in this phase of school work. It is capable of indefinite expansion as industrial and historical, as well as strictly natural history, subjects can be thus graphically presented.

Exhibits.—The chief event of the year in this connection has been the completion of the large Heron Lake bird group which was opened to the public on December 15, 1921, just before the beginning of the Sunday afternoon lectures. It became at once the center of attraction in the museum and has received high praise from competent judges. It represents a section of a quill reed swamp at Heron Lake, Jackson County. This particular subject was selected in order to represent the common bird life of a typical marsh which, not being easily accessible, is comparatively little known even among bird students. The group contains some 80 birds belonging to 22 species. The time of year is June which permitted the introduction of many nests with eggs and young. The designing and execution of the foreground and the mounting of the birds is the work of the museum taxidermist, Mr. Jenness Richardson, while the very considerable amount of vegetation necessary to render the setting realistic was very skillfully and accurately reproduced in wax by Mrs. Richardson with the assistance and supervision of Mr. Richardson. The background was painted by Mr. H. W. Rubins of Minneapolis. Sixty birds in the background were painted by Mr. Louis Agassiz Fuytes, of Ithaca, New York, and add greatly to the beauty and effectiveness of the picture.

The dimensions of the group are: width 20 feet, 6 inches; depth 9 feet, 6 inches; height 9 feet. Lighting: direct inside electric, the lights being enclosed in a separate ventilated compartment to avoid heating the interior of the case.

The group is the gift of Mr. J. F. Bell, Mr. W. O. Winston, Mr. R. M. Bennett, Mr. and Mrs. C. D. Velie, and Mr. F. A. Chamberlain. A very good account of this group accompanied by a half-tone illustration from a photograph taken by Mr. Richardson appeared in the *Minnesota Alumni Weekly* for May 18, 1922 (Vol. 21, page 480).

Another smaller group showing the burrowing nesting habits of the kingfisher and bank swallow was completed during the winter and hung on the wall at the north end of the upper hall. This group measures 4 feet and 3 inches in width, 3 feet in height, and 15 inches in depth. The materials were collected and the group constructed by Mr. Richardson, the cost being charged to the museum budget.

A collection of water color paintings of wild flowers made by Mrs. Agnes Williams Palmer, of Bucks County, Pennsylvania, and Miss Mary Emma Roberts, of Minneapolis, has been installed in swinging wall frames in the upper hall and has received much attention.

Study collections.—The labeling and systematic arrangement of the study collection of bird skins, numbering nearly 7,000, has been completed. Mr. Burton W. Thayer, a senior student in the forestry school, has been employed on this work during his spare time for over a year. Considerable work in labeling the egg collection and certain mounted exhibits has also been done by another forestry student, Mr. Orcutt W. Frost. A medical student, Miss Agnes Williams, has been engaged in preparing a mounted collection of photographs from the negatives belonging to the museum which will serve as a card index to these negatives and the library of slides.

Bird skins to the number of 32, and 99 mammal skins have been added to the study collections during the year, chiefly by gifts from various persons as shown in the list of accessions.

These collections, chiefly the bird collection, continue to supply the opportunity for critical examination by students both in and out of the University, who are allowed free access to the cases. A card catalog index greatly facilitates the work of these students.

The expansion and proper arrangement of the collections necessitated more room and 12 new Cambridge metal cabinets were purchased during the year.

Accessions.—The list below shows the sources of the various additions to the museum's collections during the past year. In the case of donations due acknowledgment has been made in each instance.

Special mention should be made of the extensive and valuable collection of shells donated to the museum by Mrs. A. W. Abbott, of Minneapolis. This comprises some 10,000 specimens representing 1,118 species, 1,000 of which are named and systematically arranged on trays in metal cabinets provided for the purpose by the museum. The shells are all

in fine condition and some species are represented by considerable series of specimens. A large part of the collection consists of land shells. It represents fifteen years of work by Mrs. Abbott and has been assembled by personal collection, purchase, and exchange with well-known conchologists in this and other lands. The museum was fortunate in receiving such a gift and is very grateful to the donor. In recognition of her generosity and because of her offer to continue to care for and develop the collection, Mrs. Abbott was appointed honorary curator of shells by the Board of Regents.

ACCESSIONS BY GIFT

Mrs. A. W. Abbott, Minneapolis.....	A collection of 10,000 shells mostly land shells, representing 1,000 named species and 118 unnamed species
Mr. Bernard Bailey, Elk River.....	14 birds (skins) collected in Minnesota, 97 small mammals (skins), 26 skulls of small mammals
Mrs. Florence Merriam Bailey, Washington, D.C.....	1 photograph of downy red-breasted merganser, taken at Burntside Lake, Minnesota
Mr. Horace W. Bivins, Billings, Montana	1 sage grouse (skin)
Mr. C. C. Bovey, Minneapolis.....	8 photographs of wild life subjects from Rocky Mountain region
Mr. Harry Branigan, Itasca State Park..	1 young mink (in flesh)
Mr. J. W. Bryant, Minneapolis.....	1 barred owl (in flesh)
Mr. J. F. Bell, Mr. R. M. Bennett, Mr. W. O. Winston, Mr. and Mrs. C. D. Velie, Mr. F. A. Chamberlain, Minneapolis	Heron Lake bird group
Misses Virginia and Lumarie Cheyney, St. Paul	2 shed deer horns, partly eaten
Mr. George H. Childs, Minneapolis.....	1 hela monster (alive)
Mr. John Crosby, Minneapolis.....	1 barred owl (in flesh)
Mr. J. M. Eheim, Hutchinson.....	11 photographs of birds
Miss Florence Englund, Minneapolis.....	1 yellow rail
Mr. H. W. Gleason, Boston, Mass.....	3 photographs
Dr. H. M. Guilford, Minneapolis.....	1 Kirtland's warbler (skin) collected at Minneapolis May 13, 1892. Only record for state
Mr. and Mrs. E. W. D. Holway, Minneapolis	3 hummingbirds (skins) from Ecuador, S.A.
Mr. N. L. Huff, Minneapolis.....	9 photographs of birds
Mr. H. J. Jaeger, Owatonna.....	2 birds (in flesh)
Mr. E. S. Macgowan, Minneapolis.....	3 photographs of birds
Minnesota Game and Fish Commission. St. Paul	3 birds (in flesh), 1 young beaver (in flesh), 7 brown trout (alive)
Minnesota State Forestry Board, St. Paul	2 buffalo bones dug up in a marsh in western Minnesota
Mr. S. J. Monsos, Minneapolis.....	1 small alligator (alive)
Mr. Frank Nute, Minneapolis.....	2 rusty blackbirds, one albino (in flesh)
Mr. Alfred Peterson, Pipestone.....	1 rock wren (skin) collected in Minnesota, 1 ruddy turnstone (alive)

Mr. A. G. Ruggles, Farm School.....	1 nest and 4 eggs of brown thrasher
Mr. B. J. Shaver, St. Paul.....	1 Franklin's gull (in flesh)
Mr. Dan Smidt, Frazee.....	1 albino red-winged blackbird (skin)
Dr. Boyd Williams, Minneapolis.....	1 snapping turtle (alive)
Mr. Donald Winston, Minneapolis.....	18 colored illustrations of groups in Museum of California Academy of Science.

ACCESSIONS BY MUSEUM FIELD WORK

Several lots of fish and water insects, collected at Itasca State Park.
 1 Bell's vireo and nest. Bird made into skin for study collection.

ACCESSIONS BY PURCHASE

Museum Contribution Fund.....	1 albino sharp-tailed grouse (mounted)
.....	1 nine-banded armadillo (mounted)
University Museum Budget.....	Kingfisher and bank swallow group

Publications.—No new publication has been issued this year. Many copies of the *Check List of Minnesota Birds* and various bulletins and pamphlets obtained from the Department of Agriculture at Washington and the National Association of Audubon Societies have been sent out in answer to requests. As last year, 500 copies of the museum report to the president were issued separately with a title page and illustrations of four of the smaller groups in the museum. These have been widely distributed to those who received the last report.

There is a constant demand for a fuller and more comprehensive publication on the birds of the state than is available at present and it is hoped that time may be found during the coming year to prepare a bulletin that will in some measure meet this need. The cost of publication is a serious consideration, as it should be illustrated as fully as possible. Also the lecture work of the museum bids fair to develop to such an extent that it will consume about all the time and energy of the present staff to care for it properly.

Six articles based on the field work and correspondence of the museum have been published by the director during the past year in *Bird-Lore*, the official organ of the National Association of Audubon Societies.

Photography.—Very few negatives or lantern slides have been added to the collection during the year, as attention was directed chiefly to securing new motion picture films. During the spring and early summer considerable negative was made in the vicinity of Minneapolis and after August 1 the work was continued in Itasca Park until the middle of September.

Altho altogether 7,041 feet of negative were taken, only 2,583 feet have thus far been printed, the remainder being duplicates or subjects held in reserve until further supplemental material of a similar character can be obtained. Some especially interesting pictures were secured and these have been incorporated with our former reels or made the basis of new ones.

During the fall and early winter an arrangement was entered into with Dr. R. B. Harvey of the University Farm by which the museum assumed the expense of certain microphotographic motion picture work that Dr. Harvey was doing, dealing with the life histories and activities of various minute organisms. The result was an interesting and instructive, but highly scientific, reel that is the property of the museum and which is available for class work and general circulation where demonstrations of this kind are needed.

Coöperation.—By far the most important coöperative work of the museum at present is its contact with the public schools, which has been fully referred to elsewhere in this report.

The museum is indebted to the Department of Public Education of the American Museum of Natural History, New York City, for the loan of a set of slides used in connection with Dr. Stauffer's Sunday lecture; also to the director of the same institution, Dr. F. A. Lucas, for a set of full-sized working plans of their exhibition cases which were followed in making two similar cases for our museum. In return the American Museum was permitted to have between three and four hundred feet of positive made from portions of our recent motion picture negative.

Special thanks and appreciation are due to Mr. S. C. Simms, director of the Harris Extension at the Field Museum and to Dr. S. A. Barrett, director of the Milwaukee Public Museum, and to the taxidermists of the latter institution, Mr. Shrosbee and Mr. Stoddard, for the opportunity afforded Mr. Richardson for admission to the workrooms of those museums and for many courtesies shown during his recent visit.

The Massachusetts Audubon Society again requested the loan of two reels of bird pictures for their spring meetings in Symphony Hall, Boston, and they were sent. In return for which was sent to us a two-reel dramatization of Longfellow's *Birds of Killingworth*, which was used at the Sunday afternoon lecture on January 1.

The Minnesota Game and Fish Commission has had the use on a number of occasions of the "Big Game" motion pictures belonging to the museum and in return Mr. Avery, the commissioner, has granted numerous favors to us and in every way shown a sympathetic and helpful spirit toward our work. The "Big Game" pictures were also loaned to the Watonwan Game and Fish Club, St. James, Minnesota, for their annual meeting on February 17, and to several local clubs. These reels are of special interest to sportsmen and it was decided early in the year to accede to the numerous requests for them. A new set of positives will have to be made before long.

Sets of slides have been loaned to Mr. Frank Gillis, of Anoka, to Mr. L. F. Kruse, of Red Wing, and both slides and specimens to Miss Tillish, of Minneapolis, for use in lectures to school children and teachers.

Some assistance has been rendered the St. Paul Institute in naming its collection of birds.

The Minneapolis Mycological Society has continued to use the lower lecture room for its meetings as the projection apparatus furnishes opportunity to present illustrated papers. Mr. Kilgore has on numerous occasions put on motion pictures and slides for various departments of the University. The museum is always very glad to assist and use its equipment for such purposes. The identification of specimens of various kinds submitted by the residents of the state is a service gladly rendered by the museum. The course in ornithology continues to be given by the director and our collections are freely used and are indispensable in this connection.

The director was elected secretary and the assistant curator, Mr. Kilgore, was appointed executive secretary of the Hennepin County Sportsman's Club for the year 1922 and such assistance as can be rendered the organization, which has for its chief object the conservation of wild life, will be duly rendered.

Sunday lectures.—The museum was open to the public from 2 to 5 o'clock each Sunday afternoon during the months of January, February, and March and an illustrated lecture on some natural history subject was given each Sunday. Much interest was displayed by the large audiences and the repeated success of this second venture would seem to indicate that it will be worth while to make this lecture course an annual event. The program of the lectures is appended, as it seems proper that it should be made a matter of record.

PROGRAM OF SUNDAY LECTURES

- | | | |
|----------|-----|---|
| January | 1. | Our Birds as Winter Tourists, by Thomas S. Roberts, director, Zoological Museum, University of Minnesota. |
| January | 8. | Methods of Wild Life Conservation, by Carlos Avery, game and fish commissioner of Minnesota. |
| January | 15. | "Who's Who" in a Fresh Water Pond, by Royal N. Chapman, assistant professor of animal biology and assistant entomologist, Agricultural Experiment Station, University of Minnesota. |
| January | 22. | The Fight of the Plant against Disease, by R. B. Harvey, associate professor of plant pathology and botany, University of Minnesota. |
| January | 29. | How Insects Taste, Smell, Feel, and See, by D. E. Minnich, assistant professor of animal biology, University of Minnesota. |
| February | 5. | A Popular Talk on the Natural History of Blood. Illustrated by motion pictures showing the circulation of the blood. By Hal Downey, professor of histology, University of Minnesota. |
| February | 12. | Ancient Land and Fresh Water Animals of North America, by C. R. Stauffer, professor of geology, University of Minnesota. |
| February | 19. | Mysteries of the Bee World, by Francis Jager, professor of bee culture and chief of Division of Bee Culture, University of Minnesota. |
| February | 26. | How Insects Aid in the Fertilization of Flowers, by C. O. Rosendahl, professor of botany, University of Minnesota. |
| March | 5. | The Wild Peoples of the Philippines, by A. E. Jenks, professor of anthropology, chairman of the Department of Anthropology, and director of the Americanization Training Course, University of Minnesota. |
| March | 12. | Our Friends and Foes among the Mushrooms, by E. C. Stakman, professor of plant pathology and botany, University of Minnesota. |
| March | 19. | How Plants Travel, by N. L. Huff, assistant professor of botany, University of Minnesota. |
| March | 26. | The Feeding Habits of Some of Our Common Birds, by Thomas S. Roberts, director of the Zoological Museum, University of Minnesota. |

General lecture schedule.—A full list of all lectures presented under the auspices of the museum during the past year is offered as a part of this report as it shows more clearly than can be done in any other way the scope of this most important feature of the museum's work. Practically all of the lectures were illustrated with motion pictures of wild life as slides do not seem to meet the requirements of the present generation. However for actual teaching purposes slides are unquestionably superior to motion pictures but the demand is for something more realistic and appealing. Except where otherwise stated the lectures were given by the director of the museum.

LECTURES GIVEN UNDER AUSPICES OF ZOOLOGICAL MUSEUM DURING
YEAR ENDING JUNE 30, 1922

1921		No. present
July	15. Annual convention Minnesota Game Protective League; at Gull Lake.....	200
August	3. Scout Masters' School; at Itasca Park.....	125
August	5. Scout Masters' School; at Itasca Park.....	100
August	9. Scout Masters' School; at Itasca Park.....	75
August	27. Visitors at Douglas Lodge; at Itasca Park.....	75
September	11. Visitors at Douglas Lodge; at Itasca Park.....	30
September	23. Rochester Sigma XI and University of Minnesota Alumni Club; at Mayo Clinic Building, Rochester.....	125
October	12. Lions' Club; Hotel Radisson.....	75
November	3. Biology teachers of the Minnesota Educational Teachers' Association; at museum.....	30
November	9. American Ornithologists' Union; at Philadelphia Academy of Science, Philadelphia.....	200
November	19. Y.M.C.A. class; at museum.....	7
November	23. East High School class; at museum.....	35
December	2. Minneapolis Audubon Society; at the Walker Branch Library.....	45
December	5. Calhoun Commercial Club; at club rooms.....	250
December	9. St. Thomas College; at college.....	125
December	10. Y.M.C.A. class; at museum.....	25
December	17. Illinois Audubon Society; at Art Museum, Chicago.....	300
1922		
January	1. Sunday lecture, Dr. Roberts; at museum.....	125
January	4. Boy Scout rally; at North High School.....	60
January	5. Minnesota Garden Flower Club; at University Farm School.....	125
January	6. Minneapolis Audubon Society; at Walker Branch Library.....	40
January	8. Sunday lecture; Mr. Avery; at museum.....	200
January	10. McKinley School class; at museum.....	75
January	13. Anoka High School class; at museum.....	65
January	14. Girl Scouts; at Blue Mouse Theatre.....	275
January	15. Sunday lecture; Mr. Chapman; at museum.....	225
January	19. Crystal Bay School class; at museum.....	15
January	22. Sunday lecture; Mr. Harvey; at museum.....	125
January	24. Minneapolis Dental Society; at Hennepin County Medical Society clubrooms.....	75
January	26. Clara Barton School class (boys); at museum.....	75
January	27. Group of school teachers; at John Burroughs School....	40
January	28. South Branch Y.M.C.A.; at museum.....	26
January	29. Sunday lecture; Mr. Minnich; at museum.....	200

THE PRESIDENT'S REPORT

February	3.	Lincoln School class; at museum.....	35
February	5.	Sunday lecture; Mr. Downey; at museum.....	175
February	8.	Zoologia class, St. Paul School; at museum.....	15
February	12.	Sunday lecture; Mr. Stauffer; at museum.....	300
February	17.	Northrop Collegiate School; at museum.....	16
February	16.	Fathers and Sons meeting; at Church of the Redeemer	100
February	18.	Y.M.C.A. class of boys; at museum.....	14
February	19.	Sunday lecture; Father Jager; at museum.....	350
February	20.	St. Paul High School biology class; at museum.....	16
February	21.	West High School class; at museum.....	20
February	25.	South Side Branch Y.M.C.A. class of boys; at museum	12
February	26.	Sunday lecture; Mr. Rosenbald; at museum.....	150
February	27.	Boy Scout rally; at North High School.....	300
		St. Paul Central High School class; at museum.....	21
March	3.	Minneapolis Audubon Society; at Walker Branch Library	100
March	5.	Sunday lecture; Mr. Jenks; at museum.....	250
March	8.	The Journal Club; at museum.....	12
March	10.	Community night; at Hennepin Avenue Methodist Church	400
		Horticulturist short course; at University Farm School	20
March	11.	Hennepin County Sportmen's Club; at Main Y.M.C.A.	175
March	12.	Sunday lecture; Mr. Sulaman; at museum.....	200
March	14.	Baker School class of St. Paul; at museum.....	30
March	16.	State Florists Association; at museum.....	50
March	19.	Sunday lecture; Mr. Huff; at museum.....	200
March	21.	Argosy Club; at museum.....	92
March	24.	Boy Scout rally; at the Church of the Redeemer.....	100
March	26.	Sunday lecture; Dr. Roberts; at museum.....	250
March	27.	Hiawatha School class; at Hiawatha School.....	500
March	28.	Pathfinder Club; at museum.....	60
March	30.	Rosedale School class; at Rosedale School.....	300
March	31.	Irving School class, St. Paul; at museum.....	118
April	4.	S.E. Branch Y.M.C.A. boys class; at museum.....	22
April	7.	Community night; at Bryn Mawr Presbyterian Chapel. Summit School class of St. Paul; at museum.....	75
April	11.	S.E. Branch Y.M.C.A. class of boys; at museum..... Tuttle, Marcy, and Monroe schools classes; two lectures at museum.....	32
			175
April	12.	Edina School class; Mr. Kilgore; at museum..... Motley School kindergarten; Mr. Kilgore; at museum.. Girl Scouts, from Marcy School; Mr. Kilgore; at museum	25
			30
April	13.	North High School zoology class; at museum.....	35
April	21.	Clara Barton School class; at museum.....	75
April	22.	Boys' Club; at Richfield Methodist Church.....	45
April	23.	St. Anthony Falls Woman's Club; at museum.....	30
April	28.	William Penn School class; at museum..... Summit School of St. Paul class; at museum.....	71
			10
May	4.	Boy Scout rally; at Tuttle School.....	150
		Group of Minneapolis school teachers; at museum.....	50
		Central High School class; at museum.....	35
May	7.	Primrose Club; at Stillwater Presbyterian Church.....	250
May	5.	South Branch Y.M.C.A. Boys' Club rally; at Blue Mouse Theatre	700
May	9.	Franklin Junior High School class; at museum.....	32
		Pierce School class; at museum.....	32
		Irving School class; at museum.....	15

May	10.	Jenny Lind School class; at museum.....	82
May	12.	Gathering of public school children, under auspices of Martin County Game, Fish, and Bird Protection Associa- tion; in theater at Fairmont.....	700
		Martin County Game, Fish, and Bird Protection Associa- tion; in theater at Fairmont.....	350
May	15.	Irving School class; Mr. Kilgore; at museum.....	35
May	16.	Jenny Lind School class; at museum.....	50
May	18.	Lyndale School class; at museum.....	104
May	19.	Lyndale School class; at museum.....	100
		Margaret Fuller School class; at museum.....	36
		John Burroughs School class; at museum.....	90
		Group of Twin City biology teachers; at museum.....	16
May	22.	Jackson School deaf and dumb children's class; Mr. Kil- gore; at museum.....	54
May	31.	Johnson High School class of St. Paul; Mr. Kilgore; at museum.....	36
June	8.	George Bancroft School class; at museum.....	36
June	13.	St. Paul Audubon Club; at museum.....	35
June	19.	Capital City Sportsmen's Club; at St. Paul.....	35
June	21.	Summer Session; at Little Theater.....	75
June	22.	Summer Session; at museum.....	110
Total			11,829

Attendance.—The average daily attendance at the museum is not large owing to its situation at some distance from the main city but it is steadily increasing. A much larger number of visitors would undoubtedly be a serious interference with the lectures to students and laboratory work that is constantly going on in the building and which must of course receive first consideration. This is an argument in support of previous suggestions that Sunday and holiday afternoons are the best time for the public to be given admission to the building and indications are that such a plan would lead to greatly increased attendance. The museum has never received any special advertising in the general press and most of those who come simply drop in because they have happened to hear about it. Where such valuable exhibits have been provided through the generosity of citizens this is hardly fair recognition.

Correspondence.—Much information in regard to the natural history of the state has been received from the regular correspondents of the museum and has been added to our files for future reference and use in publications. Hundreds of letters have been written in answering the numerous inquiries received.

Aquarium.—It has been found impossible to continue the aquarium exhibit which has been of so much interest heretofore, as apparently most fish will not live for any length of time in our present city water. We are not entirely satisfied as to the exact cause but, without definite data, have thought that perhaps the amount of chlorine gas in the water varied at different times and occasionally reached the limit of fish tolerance, as the fish may live for a time and then all die at once. German carp survive. Of late the gold fish have been dying off. The aquarium was well stocked with native fish last year but in the fall there came a

day when all died within a few hours tho many of them had been in the tanks for months. Other places where chlorine treatment of the city water is in use have had the same trouble. It is a disappointment as the aquarium was a very popular feature of the museum but unless some other water supply can be had there is no use in restocking the tanks.

Live beaver.—The live beaver continues to thrive in the outside pool and still receives much attention.

FIELD WORK

Mr. Richardson of the museum is in Isanti County at present collecting specimens and materials for the small school groups which it is intended to construct during the coming year. He will spend a month in this field work.

Mr Eugene W. Surber, son of Mr. Thaddeus Surber of the State Game and Fish Commission, has been engaged to collect mammals and birds for the museum in the northeastern portion of the state and is at present at work along the north shore of Lake Superior in Cook County. He is expected to remain in the field through July and August. Mr. Thaddeus Surber is engaged in a survey of the streams of that region and, with the consent of Mr. Avery, is assisting his son in the work that he is doing for the museum. Information received indicates that they have already made some interesting discoveries.

The director and Mr. Kilgore were in the field much of the time last summer taking motion pictures both in the vicinity of Minneapolis and in Itasca Park. This work has been continued this spring.

The spring field trips of the class in ornithology made under the guidance of the director result in many records that are transferred to our museum files. The seventh year of this class work has just been completed.

FINANCES

University museum budget.—The principal items for which this fund has been expended during the past year are: motion picture negative and cost of developing and printing same (the largest item); 12 metal cabinets for study collections; two large exhibition cases for mounted collections; 1 twin exhibition case for medium sized groups; 6 small cases for school groups; 2 cabinet files and mounting board for photographic index to negatives and slides and printing photographs for same; 2 files for card index to study collections; wax work for Nashville warbler group; separate publication of museum report with half-tone illustrations.

This is mostly in the nature of permanent equipment.

Museum subscription fund.—Mr. James F. Bell has generously continued his monthly contribution of \$50 with permission, since the completion of the Heron Lake group, to use the money as the director may think

best. Lecture fees amounting to \$127.50 have been received during the year and this amount has been added to this fund.

Mr. James F. Bell's monthly contribution of \$50.....	\$600.00
From Hennepin Avenue Methodist Church.....	7.50
From Primrose Club of Stillwater.....	20.00
From Martin County Game, Fish, and Bird Protective Association	100.00
	<hr/>
	\$727.50

Balance in Minneapolis First National Bank, June 30, 1922, to credit of Thomas S. Roberts, trustee, \$438.68.

In addition to paying the cost of particular groups for which special amounts are contributed, this fund is expended in taking care of various expenses that are most conveniently and speedily settled in this manner. It permits the director an independence of action that is sometimes very desirable. The expenses of Mr. Richardson's trip to the museums in Chicago and Milwaukee were cared for in this way and a part of Mr. Surber's salary while working for the museum in the northern part of the state will be charged to this fund.

Respectfully submitted,

THOMAS S. ROBERTS, *Director*

THE UNIVERSITY LIBRARY

To the President of the University:

SIR: The report of the University of Minnesota Library for the year 1921-22 is herewith submitted:

The term of service of the present librarian began September 1, 1921. Miss Ina Ten Eyck Firkins, who was acting librarian from September, 1920 to September 1, 1921, accordingly was obliged to make many of the plans for the year's work and much of the credit for whatever progress has been made during the year is due her.

Perhaps the salient points of progress are the letting of the main plans for the new Library Building, the adoption of a bindery service for the library, and the approval of a course in the use of books and libraries in the College of Science, Literature, and the Arts for 1922-23. Other indications of progress are noted below. The statistics should be interpreted as of June 13, 1922, the date they were submitted to the librarian.

Pending the completion of the new Library Building (which will probably be some time during the academic year 1923-24) it seems inevitable that the congested conditions in reading rooms and stacks will not materially improve. The general stock of University publications, unused duplicates, and some other little-used material will be moved to the second floor of the Perine building. Some additional wood shelving will be provided on the first floor of the library and at the rear of the present stack, but the ultimate storage capacity will almost certainly be reached before the end of 1923. The only alternative—removal from the building of some of the instructional or administrative departments—would be unwise, in view of the anticipated completion of our new quarters.

Closer correlation of the central and departmental library service will probably have to wait also until new policies based on better quarters can be formulated.

In common with other universities, our library has failed to keep pace with the general development of the University. Mr. C. W. Reeder, of Ohio State University, has made, in *School and Society* for May 13, 1922, a statistical comparison of twenty-eight university libraries in 1915 and 1921. The findings in regard to the University of Minnesota library are shown in the table on page 262.

While these rankings are essentially correct, they do not show the reasons for loss in rank. The very rapid growth in enrolment made necessary relatively great increases in expenditure for faculty and equipment. In proportion to its population and taxable wealth the state of Minnesota has been generous to the library as well as to the University as a whole.

RELATIVE STANDING

	1915	1921
1. Number of regular students enrolled.....	10	5
2. Total enrolment.....	11	5
3. Volumes in library.....	6	11
4. Volumes added annually.....	9	13
5. Book expenditures.....	3	9
6. Book appropriations.....	2	13
7. Salary expenditures.....	7	8
8. Size of staff.....	9	9
9. Relative rank in general development.....	6	10

Nevertheless, with all extenuating conditions considered, it is certainly desirable that the University Library at least be restored to its former relative standing. It is a University, not a departmental, question. Increased undergraduate enrolment augments the need for books for required reading and a large staff to give needed service. Progress in research, both in the Graduate School and in faculty investigations, not only increases the need of books of all kinds, but it demands an order department large enough to place orders promptly, a cataloging staff adequate to catalog the books promptly and accurately, and a reference department numerous enough to have someone on duty at all times when the library is open to readers. Increased library support simply means better facilities for carrying out the instructional policies of the University and for developing research in the interests of the state which supports the University.

The congested condition of the present Library Building has made it the logical scapegoat for all deficiencies and has helped hide some of our real needs. The completion of the new building will bring disappointment unless the need for more books and service is also met.

There have been frequent inquiries during the year for training courses for prospective librarians. The Minnesota Library Association has asked for the establishment of four kinds of library training courses in the University: a course in the use of books and libraries for the personal benefit of undergraduates; a course for teacher librarians who have the school libraries of the state to administer; a summer course with University credit, for librarians and workers in public libraries; a full year of professional training equivalent to that offered by recognized library schools. The first of these, offering two credits for a quarter and open to freshmen and sophomores, will be offered in 1922-23. There is neither room nor money at present for the others, but they are being carefully considered in case suitable facilities develop and the demand persists.

Staff.—There have been only two resignations from the regular staff during the year; Miss Louise W. Katz, classifier, and Miss Beda Erickson,

assistant in the order department. The increases in salaries at the beginning of 1921-22 did much to encourage staff members to remain. During her term as acting librarian, Miss Firkins made a large number of appointments, major and minor. The large number of these who have remained on the staff justifies her choices for appointment.

Several members of the staff have done work which merits more salary than they are getting, but, on the whole, the salary scale is much nearer that of other universities of like rank than it has been for a number of years past. More opportunities for promotion within the staff should be offered to those doing superior work. A library assistant often receives an initial salary as large as that of an instructor, but there are few chances for promotion from grade to grade such as are open to nearly every instructor of even average ability.

A few more high grade assistants are urgently needed at once. Serious gaps exist in public document sets and other material easily obtained by gift or exchange. Many dollars worth of duplicates available for sale or exchange are non-productive. The research publications of the University can not be distributed to the best advantage. Conditions can not be improved until a well-trained person capable of putting the exchanges and gifts on a systematic basis can be added to the staff. The order department has done excellent work during the year in getting orders through more promptly and in clearing up a mass of unfilled and unfillable orders which had accumulated as a result of war conditions. The department can not, with its present force, undertake the additional work of organizing a satisfactory exchange service.

One or more high grade reference assistants are badly needed. The growing use of the periodical room has thrown the work of the general reading room on Miss Firkins, the reference librarian. She has had the services of Miss Marie Santes and Miss Avis Pillsbury, of the catalog department, for an aggregate of from forty to forty-five hours a month. Even with this help, there are of necessity long periods when no one is on duty in the reading room. This is true every evening—the only time at which many of the students in the professional schools can advantageously come to the General Library. This lack of service is unfair to the library, for its reputation for professional efficiency unavoidably suffers in spite of the quality of work done when the staff is on duty. It is still more unfair to the faculty and students who can get no assistance when they need it.

Circulation.—Comparative statistics of the number of books issued by the General Library the past three years follows:

YEAR	HOME	OVER-NIGHT	READING ROOM	EXTENSION	TOTAL
1919-20	56,426	11,302	224,702	783	293,213
1920-21	48,801	19,627	301,360	310	369,788
1921-22	46,260	11,622	271,190	410	329,482

In addition to this there were 39,663 books issued during the summer school in July and August as against about 6,000 in 1920-21. Five college and departmental libraries (Animal Biology and Botany, Chemistry, Engineering, Medicine, and Mines) report a circulation of 30,398, exclusive of books used in the reading rooms. The total circulation in the General Library is thus 369,145 as against 375,788 in 1920-21, a loss of less than 2 per cent. The loss in circulation in the General Library during the three regular quarters was 40,306, or a little over 12 per cent. It is impossible, without exhaustive investigation, to fix accurately the cause of this loss. It is probably due in large part to an increasing tendency to stabilize the work and to reduce the amount of reading required in several large basic courses. This is evidenced by the fact that the greatest losses occur in reading room and overnight use, both of which are directly dependent on the classroom policies of the faculty.

Under the able direction of Miss Helen Smith, head of the department, the service in the loan department has been kept at a high average of efficiency in spite of very unfavorable working conditions. Special attention is being put on more accurate methods of inventory by which missing books can be more readily located.

College and departmental libraries.—Complete statistics for the college and departmental libraries are not obtainable. The Engineering Library reports an attendance of 80,378. Several gifts of importance were received and new equipment added. An additional study and conversation room was turned over for the use of the library. The departmental collections in Animal Biology were consolidated by placing them in adjacent rooms. In this way both collections are made accessible a greater amount of time. The Department of Agriculture Library added 1,306 volumes by purchase in addition to 689 which were bound.

Many of the college and departmental libraries are limited in their usefulness by lack of attendants to keep them open a reasonable amount of time. Several of them (for example the Chemistry and Pharmacy libraries) have asked for help for this purpose. The requests are eminently reasonable, but no library funds are available. A general survey of the whole departmental library situation should be made with a view to improving the service.

Accessions.—The total expenditure for books, periodicals, and binding for the year has been \$55,326.03.

This was distributed as follows:

	BOOKS	PERIODICALS	BINDING
General Library	\$33,075.10	\$6,856.47	\$7,985.16
Law Library	6,473.65	.....	118.59
Agricultural Library	2,268.21	2,024.61	1,082.13
Crookston Library	589.59	.....	61.16
Morris Library	265.01	.....	.....

Corresponding total expenditures since 1914 have been as follows:

1914-15	\$45,777.16
1915-16	40,076.83
1916-17	33,567.29
1917-18	28,993.04
1918-19	31,126.71
1919-20	38,886.42
1920-21	48,288.79
1921-22	55,326.03

The total expenditure for 1921-22 includes \$12,916.73 received from cancellation of unfilled orders and accrued credits due mostly in variations of exchange. Mr. Harold G. Russell, head of the order section, deserves special commendation for his skill in handling foreign bills subject to sudden fluctuations in value.

A rather large number of important sets of periodicals and transactions have been secured and some gaps in sets previously purchased have been filled. The library was fortunate in obtaining an almost complete set of the *Monumenta Germanica Historica*, an important addition the library had been trying for several years to obtain.

About 16,000 volumes were added to the accession register during the year. Nearly 3,000 others were received, but could not be recorded because of lack of space in which to handle them. During the year evidence was presented which makes it probable that the library contains about 375,000 volumes instead of 320,000, which was the previous estimate. Until they can be assembled and until a thorough inventory can be made, an accurate statement of the library's resources is out of the question.

Binding.—The report for 1920-21 spoke of the almost intolerable delay in getting back books from the binder who had had the contract for several years. This contract was cancelled in August, 1921, and the work given to another firm. This change improved the service so much that 5,120 volumes were bound in 1921-22 as against 2,441 in 1920-21. There have been, however, rather serious limitations, due to the prolonged absence of much needed books and to the necessity of making outgoing shipments balance those received.

After careful consideration it was decided, with the approval of the president and the comptroller of the University, to establish a bindery service for the library. Most of the necessary equipment has been ordered and a small staff of experienced binders engaged. It is hoped that actual work will begin on July 1, 1922, or as soon after as all the essential equipment is on hand.

It seems fairly certain that the work can be done as cheaply as by a commercial concern and perhaps a little cheaper. In addition there will be the great advantage of not having needed material absent at a bindery for weeks at a time and the further advantage of being able to bind promptly the books most needed. It should also be possible to save something by judicious mending instead of complete rebinding.

The binding expenditures for 1921-22 are as follows:

	CLOTH AND REPAIRS		COWHIDE AND SHEEP		MOROCCO		PAMPHLETS	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
General Library	3,891	\$5,268.27	441	\$896.15	608	\$1,390.63	180	\$50.90
Agricultural Library								

Sale of publications.—By the rules of the University Senate the research publications of the University are distributed and sold through the library. During the past year sales of the various series have been as follows:

	NUMBER	AMOUNT
Bibliographical Series	19	\$ 77.09
Botanical Series	25	28.68
Current Problems	125	37.63
Geology	377	162.87
Language and Literature	25	22.23
Social Sciences	106	157.44
Engineering	20	5.06
Biology	10	3.38
Zoology	5	5.16
Plant Studies	106	22.53
Total	818	\$522.07

Gifts.—Many gifts of one or more volumes have been received by the library. A "gift bookplate," which will indicate plainly the source of all gifts, has been printed and will be used regularly after July 1, 1922.

The largest individual gifts have been as follows:

Academia de Buenas Letras de Barcelona, 67 volumes of Catalanian literature (secured through the influence of Mr. Antonio Heras).

Mr. Horace Winchell, 95 volumes of the *Final Report of the Minnesota Natural History and Geological Survey*.

Mr. W. O. Gould, a collection of approximately 100 volumes on engineering.

Mr. Burt L. Newkirk, about 30 volumes of *Engineering News*.

Mr. G. L. Wilson, 18 bound volumes of *Engineering News*.

Mr. L. F. Boon, a collection of 115 books and pamphlets on various aspects of engineering.

Estate of O. E. Merriman, 327 volumes of law reports.

Mr. William J. Reno, 16 volumes of seventeenth century, and other old imprints.

Mr. G. L. van Roosbroeck, 10 volumes and pamphlets on French literature.

Mr. F. L. Searing, 9 volumes on comparative philology.

The Minnesota Academy of Social Sciences, on its dissolution, instructed its secretary to offer the University Library as a gift, the surplus stock of its publications. These have been officially accepted by the regents and are in the possession of the library.

Catalog.—The work of the catalog department is well summarized in the following extracts from a report submitted by Miss Edna L. Goss, head of the department:

"The work of the department has been mainly limited to current accessions (tho for various reasons it has not been possible to get these completed up to date) besides a small amount of arrears.

"The output is conditioned principally by (1) the character of the books handled and (2) the number, training, and experience of the cataloging staff. As to the character of the books, among elements affecting the work of classifying and cataloging are: (a) the large percentage of books in foreign languages, (b) the number of books published before 1800, e.g., seventeenth century French literature or English history, most of which present bibliographical difficulties, and (c) books on obscure or unfamiliar subjects. Since a large university library, such as this, receives so many volumes for research work, we can not yet get more than between 50 and 60 per cent of the cards for the catalog from the Library of Congress and with a collection like the Monod, for example, the proportion was not over 30.

"Changes in the cataloging staff again this year seriously affected the work, not only because of vacancies, but also because of the time expended in training new assistants. The loss of Miss Katz's scholarly work as classifier, and previously as a reviser, was keenly felt, and the position was vacant from October 1 to January 1, when Miss Jessie Arms, formerly head cataloger at the University of Iowa, was made classifier. No one else of sufficient training and experience was found to take the position of reviser, made vacant last year, and consequently while some revision has been done by two of the more experienced catalogers, the greatest difficulty has been to get that necessary part of the work done. In our statistics of cataloging, work is not counted until revised and ready for the catalog, and at the end of the year there is still considerable work not revised and sent out, and consequently not recorded in the statistics.

"There have been two temporary appointees in the department during the year, one for about eight months, and one for one month, working mostly on the arrears, including 200 Monod books, some theses, German and Latin books, a set of eighteenth century English plays, etc. Each year a little work is done on the Monod collection, but it is not yet all classified and cataloged.

"The catalog department has furnished assistance in the reference department during the late afternoon hours. It seems a good arrangement for the library and adds interest to the work of the cataloger if

she can have a little contact with some of the public for whom she is working.

"Crowded conditions have prevailed in the catalog department all the year and the lack of storage space for books in process is a handicap at present. The return of so many volumes from the bindery during the year has almost swamped us at times, as all these volumes must go through this department, some, previously cataloged, to have bookplates and pockets inserted, and others, mainly periodicals, to be added to the catalog."

The catalog statistics for the year 1920-21 are as follows:

	CENTRAL CATALOG	DEPART- MENTAL CATALOGS	TOTALS
Titles cataloged	5,644	1,028	5,644
Printed cards added to catalog.....	14,618	3,220	....
Typewritten cards added to catalog.....	6,449	601	....
Total cards added to catalog (incl. 482 cards from Agric. Lib.).....	21,549	3,801	25,350
Printed cards added to shelf list.....	2,912	658	....
Typewritten cards added to shelf list.....	1,819	319	....
Volumes new cataloging.....	7,310	2,632	....
Volumes added (serials, continuations, etc.)....	4,424	1,253	....
Total volumes cataloged.....	11,734	3,890	11,734

Outside service.—The interlibrary loan service has increased during the year. Two hundred thirty-seven volumes were borrowed from other libraries as against 196 in 1920-21. The number lent other libraries has increased from 45 in 1920-21 to 166 in 1921-22. The increase in volumes lent is indicative of the even greater amount of service the library could be throughout the state if the size of its collection permitted. It also indicates the practical certainty that the interlibrary loan service, from which we have received so much benefit, will increase our obligations, as our facilities increase, to lend as well as to borrow.

The possibilities of coöperating with the Extension Department of the University in outside loans are great, but any plans in this direction will require careful consideration to make them practicable.

Respectfully submitted,

FRANK K. WALTER, *Librarian*

THE INTERFRATERNITY COUNCIL

To the President of the University:

SIR: I herewith submit my report as president of the Interfraternity Council for the year ending June 30, 1922.

Meetings.—The council held eleven business meetings during the year, and two special meetings. The first special meeting was a dinner for fraternity men held October 27 in the Minnesota Union, at which Mr. A. J. Elliott, better known as Dad Elliott, talked. About two hundred men attended this meeting. The second special meeting was the interfraternity banquet held March 6 in the Minnesota Union. President Coffman was the principal speaker at this dinner, which was attended by about four hundred men.

Membership.—There are twenty-five national academic fraternities represented on the council, Theta Xi having been admitted since the last report of the president.

Members.—During the past year 892 men were members—active or pledges—of the fraternities represented on the council. Of this number 231 were initiated during the year and 85 were pledgemen. The large number of pledgemen does not mean that they were not eligible for initiation, for several of the fraternities are making it a point to pledge men late in the spring after they have proven their ability as students. This practice should be heartily encouraged.

Scholarship.—The following table, compiled by the dean of student affairs, gives the relative scholastic standing of the fraternities for the year 1920-21:

Alpha Sigma Phi	1.379	Delta Kappa Epsilon .....	.961
Tau Kappa Epsilon	1.292	Zeta Psi .....	.953
Beta Theta Pi	1.278	Sigma Nu .....	.932
Sigma Chi	1.124	Alpha Tau Omega .....	.9306
Phi Delta Theta	1.093	Phi Sigma Kappa .....	.9302
Delta Chi	1.057	Phi Kappa Psi .....	.917
Sigma Phi Epsilon	1.039	Kappa Sigma .....	.891
Acacia	1.034	Chi Psi .....	.888
Alpha Delta Phi .....	.976	Theta Delta Chi .....	.841
Delta Upsilon .....	.9669	Delta Tau Delta .....	.783
Sigma Alpha Epsilon .....	.9662	Psi Upsilon .....	.736
Phi Kappa Sigma .....	.9660	Phi Gamma Delta .....	.610

The average scholastic standing of the fraternity men was 0.999. The average scholastic standing of the non-fraternity men was 0.937.

At the close of the fall quarter the president of the council made a detailed study of the grades of all the men who were at that time pledged to the fraternities. These grades were then compared with the grades made by all the men who were registered as freshmen in the College of Science, Literature, and the Arts. The fraternities then decided that their pledgemen ought to be better students and consequently changed the by-laws of the council so as to aid in bringing this about.

Change in the by-laws.—Section I, Article II of the by-laws was changed to read as follows:

No fraternity shall initiate any man who has not completed one quarter's work in residence at the University of Minnesota and then only if at the time of his initiation he shall have obtained a grade of passing in all of the work for which he was registered in the next preceding quarter, exclusive of gymnasium, hygiene, and drill. Any man who has not obtained a grade of passing in all of his work for the next preceding quarter may be initiated at the close of the mid-quarter period if he be at that time above grade in all the work for which he has registered. No man can be initiated who is carrying less than 13 credit hours of work (exclusive of gymnasium, hygiene, and drill) unless the regular course of the college in which he is registered requires less than 13 hours.

Section II of Article VII of the constitution was divided into two parts as follows:

Part A. A three-fourths majority of the membership of the council exclusive of the president shall constitute a quorum. *Part B.* There being a quorum present, a three-fourths majority of those present shall be required to pass by-laws and all other measures except amendments to the constitution.

The above changes go into effect in September, 1922.

Coöperation with University authorities.—There has been a growing tendency among the fraternities to work at all times for the best interests of the University as a whole. The latest evidence of this occurred at a meeting of the council held early in May when a letter from the dean of women to the dean of student affairs regarding chaperons at fraternity parties was presented. It was unanimously voted that the social chairman of each fraternity should report to the dean of women the names of the chaperons who are to be present at their parties, a few days prior to such parties.

Problems.—The chief problems confronting the fraternities at present are scholarship and reduction of expense. The problem of scholastic requirements for initiation has been very well solved. The problem of bringing the men who have been initiated up to high scholastic attainment remains to be solved.

Respectfully submitted,

W. F. HOLMAN, *President*

THE FIELD SECRETARY AND GENERAL ALUMNI ASSOCIATION

To the President of the University:

SIR: I submit herewith the report of the field secretary of the University and that of the secretary of the General Alumni Association for the year ending June 30, 1922. The work of the two offices overlaps to a considerable degree, hence this single report on the work of the year in their combined relationships.

Alumni units.—The sense of financial depression during the past year has mitigated against activities of every kind, including those of a social character. Club secretaries have said that the attendance at functions has been less than the preceding year by at least thirty per cent. This situation undoubtedly accounts for the lessening of activity in the organization of alumni units.

However, our list of associations now numbers 39. Of these, 16 are outside the state and 23 within. The list is as follows:

Outside of Minnesota.—Chicago, Cleveland, Detroit, Fargo,¹ Great Falls, Jamestown,¹ Los Angeles, Milwaukee,¹ New York City, Portland, San Francisco (Northern California), Schenectady, Spokane, Washington, D.C., and Watertown.

In Minnesota.—Albert Lea,¹ Austin, Bemidji, Brainerd, Crookston, Dawson (Lac qui Parle County), Detroit,¹ Duluth, Faribault, Fergus Falls, Hibbing, Marshall (Lyon County), Minneapolis (men), Minneapolis (women), Moorhead,¹ Rochester, St. Paul (men), St. Paul (women), Stillwater, University campus, Virginia,¹ Waseca, and Winona.

These units, or clubs, plan to hold at least one meeting a year. The local secretary sends in news items from time to time concerning the individual members. Some of the organizations in the larger centers assign a luncheon place where the members may get together on a certain day of the week or month.

Alumni Weekly.—This year marks an improvement in the mechanical composition of the *Weekly* and is chiefly characterized editorially by (1) an increasing emphasis on personal news; (2) the publication of considerable material in the form of special articles, editorials, and alumni letters on the subject of dormitories for men; (3) its stand on the inter-collegiate athletic situation, for the determination of which a special investigation was made by the athletic committee of the General Alumni Association. The committee's report formed the basis of the recent abdication by the Board of Athletic Control and the unification of its functions with those of the Department of Physical Education.

The *Weekly* has suffered as much as any branch of alumni activity from overcrowded quarters. The fact that the office of field secretary is now housed in the same room as the General Alumni Association has not only doubled the staff to be accommodated, but has also increased to a very marked extent the number of persons visiting the office. It

¹ Alumni units established since July 1, 1921.

seems improper to suggest that the *Weekly* be given offices in another building, as its success depends largely on the closeness of contact with the Alumni Association's other work; yet a reasonable degree of editorial efficiency demands most urgently more secluded space than is now available.

Association memberships.—Five hundred members of the graduating class this year have become life members of the General Alumni Association and life subscribers to the *Alumni Weekly* at a cost of \$40, payable in installments of \$10 a year for four years. This is a generous response and augurs well for the future solidarity and loyal support of this group.

Alumni Directory.—Work on the compilation of the *Alumni Directory* has been going on steadily. Information cards have been sent in by 10,600 graduates during the past year. There are still 4,500 to be heard from. However, the work on the printing of the directory will not be delayed too long. We hope to be able to see the publication in print early in the fall.

Approximately 3,000 alumni have asked to have copies of the directory. The edition should be considerably larger than the number of orders now placed, as doubtless others will decide to have the book when it has been completed.

Alumni meetings.—The individual college and school associations hold their meetings at various times and places, the largest of these being the academic alumni meeting held each year at homecoming time.

The General Alumni Association held its annual dinner and meeting on February 17 at the Minnesota Union. Mr. Luehring, Mr. Spaulding, and Mr. Metcalf were introduced on this occasion. The attendance was 290.

The spring meeting, held on Alumni Day, is largely under the direction of the class which is celebrating the tenth anniversary of its graduation at that time. This spring the class of 1912 was in charge. The meeting was held on June 13 and 315 were present. Hereafter the annual meeting will be held during Commencement Week.

The Folwell portrait.—The Chicago alumni unit, realizing that the University had portraits of Presidents Northrop and Vincent, felt that one of Dr. Folwell should be provided and accordingly undertook the project. Letters were sent to all alumni who were at Minnesota prior to 1907, when Dr. Folwell retired, asking for contributions toward the enterprise. The replies justified the purchase of the portrait from Miss Emily McMillan, '82, who achieved splendid results in the likeness which her brush produced. The portrait was presented on June 13, Alumni Day, in the Little Theater, by W. F. Webster, '89, and accepted by the president of the University. The cost of securing the portrait and making color reproductions will approximate \$2,000.

"Gophers" in the high schools.—The University of Minnesota distributes no illustrative material which might interest the average high school boy or girl. Consequently a number of alumni felt that it would be desirable to place a copy of the *Gopher* in each of the larger high

schools of the state, so that students might get some idea of college life and activities at Minnesota.

The suggestion was passed on to the alumni units in Minnesota with practically a unanimous response; then the project was presented to individual graduates at other places where no association had been formed. The result is that the 1923 *Gopher* is placed this year in 114 high schools in this state. The books cost \$4 apiece. It is hoped that the plan will become a permanent one and that each year a *Gopher* will be placed in every high school in Minnesota.

University functions.—The field secretary is also chairman of the Committee on University Functions and therefore the University marshal. During the past year twenty-one convocations were held. This work involves the preparation and printing of programs, providing music, bands, orchestras, numerous consultations, publicity, press notices, etc. The functions this year calling for special preparation were Commencement exercises at the close of the fall quarter, Cap and Gown Day, Northrop Memorial service, and Commencement exercises on June 14.

Every one has known for years that the Armory is utterly inadequate for convocations enlisting the attendance of one third or more of the students. It is needless to point out that four hundred persons stood throughout the Commencement exercises, which lasted over two hours. How many stayed away because they felt it would be hopeless to attempt to secure a seat, no one can say.

Athletics.—On May 18 the field secretary was appointed chairman of the Senate Committee on Intercollegiate Athletics. This appointment ought to strengthen the spirit of friendly cooperation between the alumni and the University.

Respectfully submitted,

E. B. PIERCE, *Field Secretary of the University and
Secretary of the General Alumni Association*

THE REPORT OF THE REGISTRAR

To the President of the University:

SIR: I submit herewith a report of the work of the registrar's office for the year 1921-22.

ADMISSION AND ADVANCED STANDING

Entrance requirements.—No modification of the entrance requirements for students entering the University from high schools has been made during the year covered by this report.

High school subjects accepted for admission.—On recommendation of the Committee on the Relation of the University to Other Institutions of Learning, the University Senate voted to accept two units of unified mathematics as an entrance subject in Group D, Mathematics.

Accrediting of schools and colleges.—On recommendation of the Committee on the Relation of the University to Other Institutions of Learning, the University Senate added the following schools to the accredited lists as indicated:

1. Private secondary schools
 - Parker College, Winnebago
 - Cretin High School, St. Paul. Accredited for one year only.
 - St. John's High School, Rochester.
2. Junior colleges
 - Concordia College, St. Paul. Accredited for two years.
 - Virginia Junior College, Virginia. Accredited for one year.
3. Institutions of full collegiate grade
 - Concordia College, Moorhead. Accredited for three years of undergraduate work with the understanding that graduates of the college will be accepted in the Graduate School provided that their preparation in their major field is sufficient to admit to graduate courses in that field.

Admission to freshman classes and with advanced standing.—Complete data, giving the number and source of students admitted to the freshman classes of those colleges which accept students direct from high school will be found on pages 57 to 69 of this report. Similar data for students entering with advanced standing are given on pages 69 to 72 of this report.

BULLETINS AND STATISTICS

The University Address Book.—The University Senate, on May 19, 1921, ratified the action of the Administrative Committee which authorized "discontinuing the publication of the *University Address Book* and substituting a directory or information bureau in the Registrar's office." It was apparent, however, before the college year opened in September, that the absence of this publication would seriously handicap the work of many of the University offices, and at the meeting of the Administrative Committee of the Senate, September 13, 1921, it was "voted to publish

the Address Book for the year 1921-22 with the understanding that such economies in composition and form as are practicable are to be effected."

With the advice and assistance of the superintendent of the Printing Plant, the style of the publication was so modified as to result in a net saving of sixteen hundred dollars in the printing cost alone. This made it possible to cover all printing costs by receipts from sales to students.

The fall quarter *Address Book* was issued about November 1, fully two months earlier than the usual date of distribution. Credit for this prompt publication is due to Miss Helen Draper, who is in charge of bulletins and statistics in this office, and to the generous response of students and members of the faculties in supplying the necessary information.

Annual Register.—During the year just closed the work on the *Annual Register* has been brought up to date. The last *Register* published prior to this year was that for 1917-18. The publications of the *Registers* for 1918-19 and 1919-20 presented an unusually difficult task on account of their having been delayed until all records had been interfiled with those of previous years. These two publications, however, have now been issued, and the *Annual Register for 1920-21* will appear at an early date.

College announcements.—The question of greater economy in the printing and distributing of college announcements has been given careful attention during the year, both by this office and by the Senate Committee on Printing. The permanent mailing lists have been revised in an attempt to eliminate duplication so far as possible.

The size of the edition of several of the bulletins has been materially reduced. Beginning with the announcements for 1922-23, the Senate approved a recommendation from this office that all alterations in proof be charged to departments instead of to the bulletin budget. This has resulted in more complete and correct original copy with a corresponding decrease in cost of publication.

In order to eliminate so far as possible, discrepancies between statements appearing in the various college announcements and the general information bulletin, arrangements were made through the Printing Committee to have all copy for pages of general information dealing with admission, registration, fees, degrees, etc., pass through this office for approval, before requisitions for printing are drawn.

The following bulletins were authorized for publication for the first time this year:

(a) The plant science bulletin, the first of a new series authorized by the University Senate "in which may be printed assembled announcements from various schools and colleges of the University offering work in a common field. Such bulletin in order to be included in this series must have the approval of the Dean of the Graduate School."

(b) Announcement of the course for medical technicians.

(c) Special announcements of the Americanization training courses and public health courses were authorized to be printed from the bulletin budget for this year only, with the understanding that future editions, if published, will be paid for from department funds.

UNIT	TOTAL REGISTRATION FOR THE YEAR EXCLUSIVE OF SUMMER SESSION	WEEKLY ACTUAL ATTENDANCE*		
		Maximum	Minimum	Average for Number of Weeks Indicated in Each Case
COLLEGIATE				
Science, Literature, and the Arts	4,340	3,336 (2)	2,665 (33)	3,009 (33)
Engineering and Architecture Agriculture, Forestry, and Home Economics	1,096	985 (3)	832 (24)	924 (33)
Law	852	749 (14)	634 (32)	708 (33)
Medical	301	293 (3)	258 (31)	278 (33)
Nurses	429	432 (6)	372 (24)	403 (33)
Medical Technicians	137	112 (25)	96 (1)	104 (33)
Dentistry	3	3 (24)	3 (24)	3 (10)†
Dental Hygienists	404	391 (2)	371 (24)	380 (33)
Mines	29	28 (19)	22 (4)	25 (33)
Chemistry	171	164 (4)	142 (24)	154 (33)
Pharmacy	112	110 (2)	93 (31)	101 (33)
Education	134	128 (2)	117 (24)	121 (33)
Business	879	697 (15)	622 (1)	666 (33)
Graduate	200	162 (15)	144 (12)	153 (33)
War Specials	795	658 (22)	135 (1)	560 (33)
	219	206 (25)	194 (31)	199 (10)†
Total collegiate	10,101	7,970 (8)	7,031 (24)	7,643 (33)
Net total (duplicates excluded)	8,979	7,734 (8)	6,785 (24)	7,403 (33)
SUBCOLLEGIATE				
University High School.....	224	217 (1)	211 (24)	214 (33)
Central School of Agriculture Northwest School of Agri- culture	779	685 (17)	520 (2)	605 (21)
West Central School of Agri- culture	217	191 (16)	146 (3)	176 (21)
	204	175 (14)	128 (2)	170 (21)
Total, subcollegiate (ex- cluding Vestibule School)	1,424	1,263 (16)	211 (24)	848 (33)
EXTENSION AND SHORT COURSES				
Evening extension	4,760	4,151 (16)	115 (17)	2,170 (32)
Correspondence	701	528 (34)	64 (2)	344 (52)
Short courses (Extension)...	251	105 (23)	70 (1)	86 (32)
Short courses (Agriculture)...	451	130 (22)	2 (19)	33 (32)
Total extension and short courses	6,163	4,602 (16)	506 (2)	2,538 (32)
Grand total‡	16,566	13,349 (16)	7,486 (1)	10,658 (33)
Net grand total.....	15,447	13,046 (16)	7,486 (1)	10,401 (33)

* Figures in parentheses indicate the number of weeks.

† Recorded as a separate unit during the spring quarter only.

‡ These totals do not include the 1921 Summer Session or the Vestibule School at University Farm.

Registration statistics.—With the growth of the University, the problem of presenting registration statistics in such a form as in some measure to indicate the student load has become increasingly difficult. It has been customary to include in the registration count, all students who complete their registration and pay fees at some time during the college year. With so large a body of students, however, there is an ever increasing number of students who transfer from one unit of the University to another; others who attend for only a portion of the year varying from a few days to one or two quarters or more; and still others who carry only partial programs. Consequently the total registration figures are becoming less and less indicative of the actual student load, and their reliability for purposes of comparison with those of previous years and with those of other institutions is open to serious question.

During the year 1921-22, detailed weekly reports have been prepared for each unit of the University, showing by class and sex (a) the total registration to date, (b) the actual attendance for the week of the report, (c) the number of new registrants for the week of the report distributed according to the source from which they come, and (d) the loss of students during the week distributed according to the reasons given for cancellation of registration.

From these reports a combined summarized report has been assembled each week which gives the totals for each unit of the University.

These reports have proved to be of value and have more than justified the expense incident to their preparation in the time saved in furnishing statistical data based upon the information which they contain.

The student load curve as indicated by the number in actual attendance each week, presents, in itself, no special significance in view of the lack of corresponding data for previous years.

A comparison of the range in actual attendance with the figures for the total registration for the year, however, gives some interesting information.

The preceding table shows for each unit of the University (a) the total registration for the year—the figure which has always been used for comparing the attendance with that of previous years, (b) the maximum actual attendance for any week of the year, (c) the minimum actual attendance, and (d) the average weekly attendance. These figures are exclusive of those for the 1921 Summer Session. The figures in parentheses following the maxima and minima attendance indicate the week of the recorded registration. For example: the College of Science, Literature, and the Arts reached its maximum registration of 3,336 during the second week of the college year, and its minimum registration during the thirty-third week, the last week of the spring quarter.

Two facts stand out clearly in a comparison of these data:

First: it is apparent that the total registration figures in no way represent either the maximum or the average student load and that their use as the basis for making provision for instructional facilities is misleading and unjustifiable.

Second: it is equally apparent that there is a large loss of students during the year: a larger loss than can be accounted for by transfer from one college to another, completion of curricula, and cancellations for delinquent scholarship. A study of the detailed reports shows that these losses occur in larger proportion among the students of the freshman and sophomore classes, and from those colleges that accept students direct from high school.

The Administrative Committee of the Senate, recognizing the importance of this problem, authorized a special committee, consisting of the registrar and the deans of those colleges which accept students direct from high school, to investigate the matter further during the coming year.

Enrolment and degrees conferred.—For statistics of enrolment and degrees conferred during 1921-22 see pages 48 to 56.

FEES AND DEPOSITS

Military deposit.—The military deposit of ten dollars authorized by the Board of Regents for 1921-22 to be made by each student registered for military drill has been administered in this office in accordance with the existing procedure for the breakage deposit.

The fee register.—The practice of keeping a duplicate fee register in the offices of the registrar and the bursar was abandoned during the year. This was made possible by the installation of a billing machine in this office by means of which the fee receipts are distributed and totalled, the necessary check with the bursar being obtained with the cash register in the bursar's office.

Breakage deposit refunds.—The refunding of balances on the breakage deposits has presented a serious problem. It has been found to be impracticable to make refunds in person at the close of the college year and afford sufficient protection to the University against losses from charges submitted by departments after refunds are made. Refunds by mail, after the close of the year, in order to meet the requirements of the office of the state public examiner, have involved both this office and that of the bursar in an expensive procedure.

For the current year the plan has been revised to permit of a single refund order and invoice for each college at the close of the year. This will be accompanied by a schedule of names of students, amounts of refunds due, and a distribution of the charges made against the original deposit. The work involved in procedure is greatly facilitated by the use of the special billing machine with a material saving in expense over any previous plan for mail refunds. This plan has the approval of the state public examiner's office.

Reduction of unclosed deposit accounts.—The present breakage deposit system was instituted in 1911-12 and there has accumulated a large number of unclosed accounts varying from one cent to fifteen dollars or more. Considerable expense is involved in carrying these individual accounts. No claims for refunds have been presented against any of these

accounts of five years or more standing and on recommendation of the registrar, the Board of Regents recently authorized the transfer of all balances prior to, and including, the year 1916-17 to general receipts. It is understood that in the event that any claim against one of these accounts should be presented and approved, such claims will be paid from current expense funds. This policy will enable the registrar's office to keep the balance on unclosed accounts at a minimum and, in addition to simplifying the keeping of these records, render the funds so transferred available for University use.

TRANSCRIPTS AND CERTIFICATES

Transcripts of record.—The work of this bureau has increased enormously during the last two years. Whereas in 1918-19 the partial time of one clerk was sufficient for all transcript work, it now requires the full time of one clerk throughout the year with the addition of two temporary assistants at periods of maximum load.

During the year ending June 1, 1919, a total of 445 transcripts of record were issued. For the corresponding period ending June 1, 1922, the number issued was 1,595, an increase of 258 per cent. There has been a corresponding increase in the number of affidavits as to attendance, graduation, etc., of which no permanent record of issue is made.

It is apparent that if this work continues to increase, an additional full-time clerk will be necessary.

UNIVERSITY SCHEDULE

Class hour schedule.—During the fall and spring quarters of 1921-22, the class hour schedule was modified to begin the morning sessions at eight o'clock on the Minneapolis campus and at 7:45 at the University Farm. This plan did not prove wholly satisfactory so the University Senate recommended to the president a return to the 8:30 schedule for the first hour for all quarters of the coming year.

On recommendation of the University Schedule Committee, provision has been made for scheduling classes during the noon hour in those colleges in which the present congestion in use of rooms makes such extension of the program desirable.

Condition examination schedule.—Since the adoption of the quarter system in 1918-19 the question of a common condition examination schedule for all colleges of the University, has been under consideration and a number of experiments have been tried. The period set aside for this purpose immediately preceding the opening of the fall quarter has been generally accepted as satisfactory. It has been difficult, however, to arrange for a similar period during the winter and spring quarters which would adequately meet the need of the various colleges.

This question was finally settled by the University Senate, May 18, 1922, by the adoption of the following all-University regulation :

Condition examinations will be held by all colleges during the week preceding the opening of the fall quarter, and by those colleges which offer condition examination more than once a year, during the first thirty days of the winter and spring quarters.

This action makes the periods for the removal of conditions incurred during the fall and winter quarters coincident with the periods for the removal of incompletes received in corresponding quarters and simplifies the problem materially both from the educational and administrative viewpoints.

Time limit for registration.—The University Senate, May 4, 1916, took the following action:

To promote uniformity of practice throughout the University in the registration of students the following directory regulation is adopted for the convenience of the Registrar and the admission committees of the several colleges: No student shall be allowed to register in the University after ten days from the beginning of the semester, excepting in those unusual cases wherein special and peculiar circumstances shall justify the appropriate committee of the college concerned permitting registration at a later date.

This regulation remained unmodified after the adoption of the quarter system until February 16, of the current year, when the time limit was reduced by the Senate from ten days to one week. In the light of this regulation it is interesting to note the number of special cases in the

COLLEGE	TOTAL REGISTRATION AT CLOSE OF FIRST WEEK			ADDITIONAL REGISTRATION TO CLOSE OF QUARTER			PER CENT OF ADDITIONAL REGISTRATIONS		
	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
Science, Literature, and Arts..	3,353	3,116	2,742	83	87	42	2.5	2.8	1.5
Engineering and Architecture ...	958	907	832	53	64	12	5.5	7.1	1.4
Agriculture, Forestry, and Home Economics	739	747	640	9	13	10	1.2	1.7	1.6
Law	288	281	260	9	4	2	3.1	1.4	0.8
Medicine	318	271	270	14	34	10	4.4	12.5	3.7
Nurses	96	104	111	5	2	1	5.2	1.9	0.9
Medical Technicians .....	..	..	3	..	..	..	..	..	..
Dentistry	384	370	371	15	8	5	3.9	2.2	1.3
Dental Hygienists ...	22	25	27	1	2	..	4.5	8.0	..
Mines	163	158	142	4	1	1	2.5	0.6	0.7
Chemistry	108	100	94	5	2	..	4.6	2.0	..
Pharmacy	126	123	117	5	4	1	4.0	3.3	0.9
Education	627	648	626	32	65	62	5.1	10.0	9.9
Business	145	160	149	3	9	7	2.1	5.6	4.7
War Specials ....	..	..	200	..	..	15	..	..	7.5
Graduate	135	338	345	501	331	301	371.1	97.9	87.2
Total collegiate	7,462	7,348	6,929	739	626	469	9.9	8.5	6.6

several colleges. The preceding table shows by colleges, for each quarter of 1921-22 (a) the total registration at the close of the first week of the quarter, (b) the additional registrations during the quarter, and (c) the per cent of increase in total registration after the first week of the quarter.

REGISTRATION AND RECORDS

Joint registration.--In order to carry out the spirit of the agreement between the College of Agriculture, Forestry, and Home Economics and the College of Education with reference to the registration in both colleges of those who desire to obtain the University state teachers' certificate, a plan was devised this year for including this group of students in the registration of both colleges subject to the joint administration of the two units. The actual point of contact with the students, however, remains at the University Farm office since the major portion of the work of this group of students is on the University Farm campus.

Class cards.--The *Laws and Regulations Governing the University* specify that

It shall be the duty of the Registrar to . . . 4. Supervise the registration of all students and submit to the instructors the only evidence of the students' right to attend class.

With the growth of the University it had become difficult with the old method of procedure to accomplish this notification expeditiously. As a result, some years ago, various substitutes for the registrar's card of admission were introduced in a number of the colleges. This situation led to a certain amount of decentralization and to an increasing number of instances in which students have been permitted to continue in classes in which they were not properly registered.

Several experiments were tried during 1920-21, and as a result, the plan used throughout the year just closed was adopted and has proved signally satisfactory. Through the employment of a special night shift of student assistants to provide for the peak load of registration, it has been possible to deliver to each instructor by special messenger before the first hour of the opening day of each quarter, a complete list of the authorized registrants in his classes. These lists are in the form of individual cards for the larger colleges and alphabetical lists for the smaller professional schools.

The colleges and schools now operating on this plan are:

- The College of Science, Literature, and the Arts, (class cards)
- The College of Agriculture, Forestry, and Home Economics (class cards)
- The Law School (class lists)
- The Medical School (class lists)
 - The School of Nursing (class cards)
- The College of Dentistry (class cards)
 - The School for Dental Hygienists (class cards)
- The College of Education (class cards)
- The School of Business (class cards)
- The Graduate School (class cards)
- The War Specials (class cards)

In addition, registrations in the following non-collegiate units are authorized through a similar procedure.

- The Central School of Agriculture (class cards)
- The Agricultural short courses (class lists)
- The General Extension Division (class cards)

In the College of Engineering and Architecture, the School of Mines, the School of Chemistry, and the College of Pharmacy, duplicate records are maintained separate from those of the registrar's office and registrants are admitted to classes without the authorization, provided in the *Laws and Regulations of the University*.

In the interest of economy of operation, and to insure proper payment of fees and accurate records in the registrar's office it is strongly recommended that the registration process for this last group of colleges be modified as soon as practicable, to conform with the general University plan.

Final grades.—At the close of the fall quarter a plan of procedure was adopted which made it possible to report all delinquencies to students before the opening of the following quarter, to record all grades received on the permanent records, and to issue complete reports to students of all colleges at the close of the first week of the following quarter.

The brief recess at the close of the winter quarter prevented a repetition of the experiment, but the calendar for 1922-23 will afford ample opportunity between quarters to enable the plan followed at the close of the fall quarter to become the regular plan of procedure.

Pending complete records of the quarter's work, requests for information from students work committees, offices of the dean of student affairs and the dean of women, the Eligibility Committee, and parents of students can be supplied only by reference to instructors' reports which is time-consuming and expensive. This change, therefore, represents one of the most important steps of the year toward increased office efficiency and economy.

The response from the teaching staff to our request for coöperation in making prompt reports was in general gratifying. It appears difficult, however, to convince some individual instructors and some departments that final reports should receive their first consideration at the close of the quarter. A complete record of the receipt of final reports is now a part of the office routine and statistics and recommendations on this point will be made during the coming year.

Conferring of degrees.—Following the experience of 1920-21 during which degrees were conferred at the close of the fall and spring quarters, it seemed desirable to have a more definite understanding with reference to (a) the dating of degrees (b) conferring of degrees upon candidates who fail to attend commencement exercises without the approval of the dean and president for receiving degrees in absentia, and (c) the registrar's responsibility for checking all faculty recommendations of candidates for degrees. This whole question was referred to a special committee

of the Administrative Committee of the Senate, of which the registrar was chairman and the following procedure was recommended and adopted by the Senate on February 16, 1922:

The University will continue to confer degrees at the close of each University session (fall quarter, winter quarter, spring quarter, Summer Session, summer quarter).

Students who complete the work for their degrees during any University session may be recommended for their degree as of the close of that session. In special cases, where a student's legal status is affected by the date of his diploma, as in Medicine, Dentistry, and Law, the candidate may be recommended for his degree as of the close of the preceding session.

Attendance at commencement exercises will be required, provided the candidate's work is completed at the end of a quarter when commencement exercises are held, except when excused as provided under the present regulations.

A student who fails to attend commencement exercises as prescribed in the above paragraph, shall not receive his degree until after the expiration of one year, unless in the meantime he attend commencement exercises.

All students who expect to be candidates for a degree at the close of any University session, will be required to register for their degrees at the opening of the session.

The last paragraph, in particular, makes it possible for the registrar's office to function in accordance with the provision of the *Laws and Regulations Governing the University* which specify that

It shall be the duty of the Registrar to . . . 6. Ascertain and report whether the records of candidates for degrees show them to be entitled to graduation.

War service tuition.—A statement of the tuition status under chapter 338 *Session Laws of Minnesota* for 1919 as it affects the University, can be given best by a comparison of the number of applicants for war service tuition and the amount of tuition involved during the winter quarter of 1918-19 when the act first became effective, the fall quarter of 1919-20 when the maximum number of applications was reached, and the spring quarter of 1921-22. The significance of such a comparison is obvious from the following:

	TOTAL NO. OF APPLICANTS	AMOUNT OF TUITION
Winter quarter 1918-19	1,300	\$39,945.14
Fall quarter 1919-20	2,451	62,437.47
Spring quarter 1921-22	308	5,954.82

It should be noted that the number of applications for this tuition is very rapidly decreasing, owing to the fact that students are exhausting their accounts allotted under the law. The number of applications will be still further decreased during the coming year, but there will doubtless be new applications until the law becomes inoperative on July 1, 1924.

In the General Extension Division, the decrease in the number of applicants and the amount of tuition involved, has been much less rapid, because fees are smaller and payable less frequently. The maximum

number of applications was received during the year 1919-20. The number and the amount of tuition involved may be compared with the situation during the year 1921-22 as follows:

	TOTAL NO. OF APPLICANTS	AMOUNT OF TUITION
First and second semesters 1919-20	423	\$4,714.20
First and second semesters 1921-22	270	3,233.90

Payments are now being received promptly. A year ago there was due the University \$75,000, all of which has been paid. At the present time there is no tuition outstanding except the tuition for the quarter just closed.

Veterans' Bureau.—The number of trainees under the Veterans' Bureau has gradually increased each quarter. It is probable that the maximum number was reached during the winter quarter when 530 trainees were registered in collegiate classes involving tuition fees amounting to \$17,499.35. Of the total number registered, about two hundred were classed as "War Specials."

The Veterans' Bureau and the University are coming to a much better understanding of each others' problems, and fees are being collected strictly in accordance with the regulations of the Board of Regents, with considerable less difficulty than in the past. While the number of trainees registered probably will not greatly increase in the future, it is also probable that the number will not greatly decrease for some time to come.

Respectfully submitted,

R. M. WEST, Registrar

THE UNIVERSITY HEALTH SERVICE

To the President of the University:

SIR: I have the honor to submit herewith a summary of the activities of the Students' Health Service for the year 1921-22.

Education.—The inclusion in the Health Service budget for 1921-22 of \$6,500 from general support for health education made it possible for the several members of the staff to carry out a certain necessary amount of class instruction in hygiene and preventive medicine without utilizing the health fees of students for educational purposes. Thus, formal instruction has been made independent. Education accomplished by means of personal conferences with students and by the practice of hygiene and preventive medicine, will always be one of the foremost functions of the Health Service, and the one which over a period of years will probably be productive of the greatest advancement toward the better health of the commonwealth as a whole. Further education by means of special bulletins, newspaper articles, and lectures is carried on at such times as one or other of the communicable diseases becomes prevalent in the University.

Staff.—During the year the policy of having as much of the work as possible done by full-time physicians has been inaugurated. In a few instances, notably the most highly developed specialties, this will be impossible, but experience this year has already demonstrated the soundness of the plan. The full-time physician who becomes known to the student body, gains its confidence, and is retained on the staff for several years at least, will contribute infinitely more to the building up of the institution and to the success of the work than the part-time man who has his primary interests elsewhere and is retained for only one or two years; his other qualifications notwithstanding. Some time will be necessary to get this policy into operation in its entirety but we are working in that direction. The administration of the Health Service wishes to express its appreciation of the most efficient coöperation and assistance which was rendered during the year by the Medical School and the University Hospital, both in the diagnosis and in the treatment of various serious cases.

The physical examinations which are required of all freshmen before admission to the University were performed during the fall quarter by the departments of Physical Education, the Health Service supplying one half of the funds necessary to hire the doctors and clerks for conducting the examinations. Beginning with the winter quarter the examinations for men were entirely taken over by the Students' Health Service; the medical staff itself carrying on the examinations. This practice has decided advantages and will be continued in the future. All the findings of these examinations are indexed and all students who are in any way defective or subnormal are kept under close supervision, any necessary treatment, hygienic measures, or corrective exercises being carried out.

Medical service.—Medical service in addition to the physical examinations is rendered by the staff at its dispensaries and hospitals which are maintained exclusively for students. To these institutions any student may come for advice or care. The staff also stands ready to make calls on students at their rooms when necessary. Table I shows the services rendered to students at the four stations of the University.

TABLE I

LOCATION	PHYSICAL EXAMINATIONS	DISPENSARY VISITS	OUTSIDE CALLS	HOSPITAL CASES	TOTAL SERVICES	HOSPITAL DAYS' CARE
Main campus	2,581	29,785	967	684	34,017	3,263
Farm campus	648	20,951*	21	277	21,897	2,394
Morris	143	875	16	68	1,102	169
Crookston ..	172	926	67	65	1,230	686
Total	3,544	52,137	1,071	1,094	58,246	6,985

* Includes 13,718 throat examinations during the scarlet fever epidemic.

This table shows that a total of 58,246 services was rendered. The increase over the previous years is shown by the following comparison:

	1918-19	1919-20	1920-21	1921-22
Total number of services rendered by the Health Service.....	17,347	32,637	43,205	58,246

This gradual growth of the activities of the Health Service is encouraging as well as significant. During the first two years after its organization the epidemics of influenza brought enormous numbers of students to call upon its facilities; during the year 1920-21 paratyphoid fever assumed epidemic proportions; and during 1921-22 there was scarlet fever among the boys in the Agricultural School. Experience teaches that during most years one must expect the prevalence of some disease or other; so, until public health work reaches such a point that epidemics are a thing of the past, years like the ones which the Health Service has gone through must be considered rather as normal than unusual.

Disregarding the epidemics, the gradual increase in the number of calls which are made upon the Health Service is indicative of an increasing confidence on the part of the student body. The primary purpose even of our dispensary and hospital work is the prevention of disease. In order to accomplish this it is necessary that students come to us on the appearance of first symptoms and we can not expect them to do this

THE PRESIDENT'S REPORT

unless we hold their confidence. We are attempting to gain their confidence by giving them interested and efficient service and by encouraging them to consult us early in all matters pertaining to health and disease.

Per capita service.—The total enrolment of students who paid the regular health fee of two dollars per quarter and the number who received some care at the Health Service are as follows:

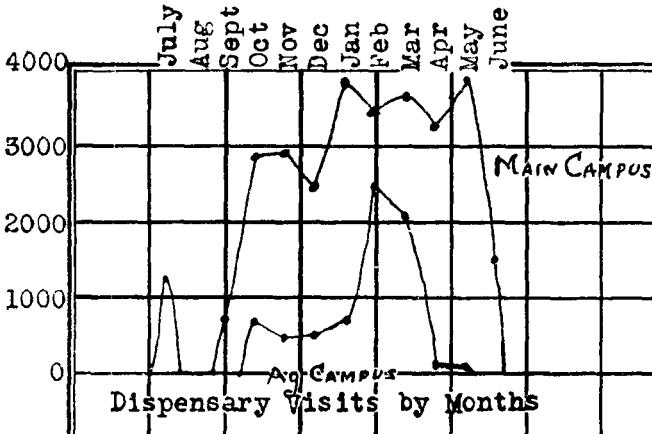
TABLE II

LOCATION	ENROLMENT	TOTAL SERVICE	PER CENT
Main campus	8,943*	6,570	73.7
Farm campus	795	795	100
Morris	204	204	100
Crookston	215	215	100
Total	10,157	7,784	76.6

* Approximated; exact figures not yet available.

This table shows that 7,784 individual students received treatment at the Health Service, making 76.6 per cent of the entire student body. An average of six visits was made by every student enrolled in the University. In view of the fact that many of the students live in the Twin Cities and would naturally choose to go to their family doctors, these figures are particularly encouraging.

CHART I
1921-1922



Dispensaries.—The various dispensaries are made as homelike as possible and the medical and nursing staffs attempt to take a personal interest in each and every case. The dispensary on the main campus has one or more physicians in attendance at all hours of the day. At the University Farm a physician is in attendance several hours every day, while at Crookston and Morris a nurse is in attendance at all times and a doctor is called when necessary. The monthly visits to the two main dispensaries are shown by Chart I.

This chart shows for the main campus a peak in October and November when the winter respiratory infections first began to make their appearance. A second peak in January is to be expected, following the return of the students from their Christmas vacations. The large number of cases in February and March were due primarily to the mild form of influenza which was prevalent at that time. The peak in May is surprising, but is accounted for in part by the special examinations, inoculations, etc. of students who were applying for summer R.O.T.C. camps, by the reexaminations of students in whom some defect had been discovered during the year, and by the fact that many students came complaining of being "just tired out."

The high point reached on the agricultural campus was due primarily to the scarlet fever, secondarily to influenza.

Hospital cases.—Hospitals for students are maintained in close connection with the dispensaries. This is absolutely essential for the efficient administration of a students health service. When a patient is seen in the dispensary who should go to bed, it is necessary that it be easy to put him there. Early hospitalization minimizes the danger of infectious diseases spreading throughout the University community and it frequently prevents the development of serious complications from a relatively insignificant primary infection. In order that this may always be practiced, a standing rule of the Health Service is that any student who has a temperature of 100° F. or more shall be hospitalized. During the year the number of bed cases in the various hospitals was as follows:

TABLE III

	MALE	FEMALE	TOTAL
Main campus	518	166	684
Farm campus	262	75	277
Crookston	47	21	68
Morris	41	24	65
Total	868	286	1,094

THE PRESIDENT'S REPORT

The total number of hospital cases and hospital days may be seen from the following charts:

CHART II

1921-1922

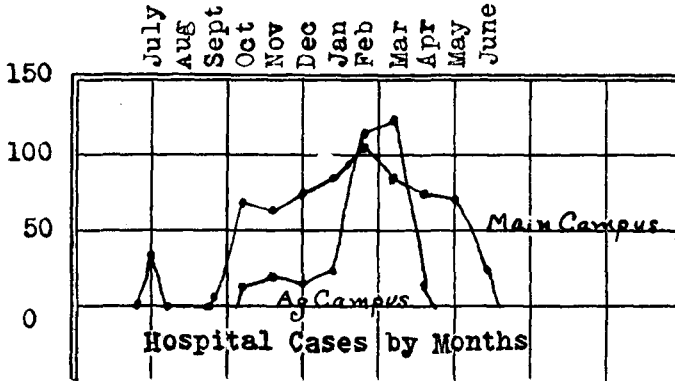
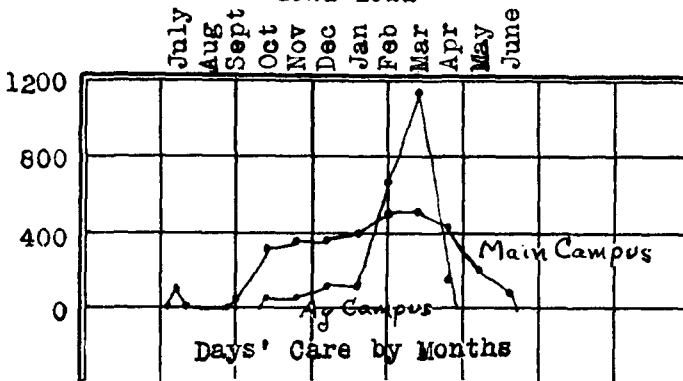


CHART III

1921-1922



The highest point reached on both of these charts shows that the greatest hospital load came on the agricultural campus and occurred during the scarlet fever epidemic. The total number of patients in all students' hospitals was 1,094 and the total number of days' care given was 6,958. This gives an average stay in the hospital of 6.3 days per patient.

The hospital facilities of the Health Service are very unsatisfactory, both as to size and as to plant. On the main campus a building to house the dispensary and hospital is very acutely needed. The ground floor of Pillsbury Hall which is still being occupied presents conditions far from what one would recommend for a hospital and we are looking forward anxiously to the time when the students may have a hospital at least as good as the one which is provided for the indigent citizens of the state.

On the agricultural campus parts of the boys' and girls' dormitories have been utilized as hospitals. This has been unsatisfactory for many reasons, but the plans which have recently been approved to remodel the Home Building for a students' hospital and dispensary will provide quite satisfactory conditions on that campus.

Conditions treated.—The diagnoses made during the year in the various dispensaries and hospitals include a very large variety of conditions but by far the greatest number were acute infections—mostly respiratory. Second in number are the defects and degenerative diseases discovered by means of complete physical examinations. During the year there were two deaths; one from tuberculous meningitis, the other from staphylococcic septicemia, secondary to a maltreated furuncle. Some of the other more serious conditions treated were as follows:

TABLE IV

DISEASES TREATED IN HOSPITALS ON MAIN AND AGRICULTURAL CAMPUSES

Appendicitis, acute, with appendectomy	16	Influenza	124
Appendicitis, acute, ruptured, with appendectomy	4	Mastoid, radical	1
Appendicitis, chronic	7	Tonsillectomies	105
Diphtheria	7	Nephritis, acute	5
Pneumonia	11	Tuberculosis, active, pulmonary....	7
Empyema, secondary to pneumonia	5	Meningitis, tuberculous	1
Septicemia, streptococcic, following mastoiditis and scarlet fever.....	2	Submucous resections	48
		Scarlet fever	61

Cost of service.—The total and per capita costs of services in the two largest divisions of the Health Service were as shown by the following table:

TABLE V

	SALARIES	OTHER EXPENSES	TOTAL	COST PER HOSPITAL DAY	COST PER DAY WITHOUT SALARIES
HOSPITALS					
University	\$ 8,371.00	\$ 8,096.49	\$16,467.49	\$4.92	\$2.41
Farm	3,250.00	2,924.93	6,174.93	2.58	1.22
				Average	Average
				\$3.26	\$1.67
DISPENSARIES					
University	16,665.00	4,619.19	21,284.19	\$0.71	\$0.15
Farm	2,860.00	657.51	3,517.51	0.17	0.03
				Average	Average
				\$0.44	\$0.09
Total	\$31,146.00	\$16,298.12	\$47,444.12		

The determination of the per capita and per diem cost of service makes possible some interesting comparisons. The most important of these is that the student who is hospitalized on the main campus costs the Health Service almost twice as much as the student who is hospitalized on the agricultural campus—a difference that is certainly not justifiable. The reason is that students who are hospitalized on the agricultural campus pay for their own board, while on the main campus board has been furnished them. The proposal, which it is hoped will be adopted, to charge all students for their board, will eliminate this inequality. The higher per capita cost in the dispensary on the main campus is due to the larger staff and the greater equipment. The fact that many students from the agricultural campus are referred to the main dispensary for diagnosis and treatment make the figure inaccurate as a basis for making a comparison of the services rendered to the various groups of students.

Contagious diseases.—Apart from the epidemic of scarlet fever which occurred in the Agricultural School, the total number of cases of contagious diseases among the students during the school year was limited to twenty-seven.

This number was made up of three cases of chicken pox, seven cases of diphtheria, two cases of measles, seven cases of mumps, and eight cases of scarlet fever. The cases of scarlet fever included in this report occurred with no apparent relation to the epidemic at the Agricultural School.

With the exception of two cases of mumps, in no instance was the source of infection traceable to a previous case occurring among the student body. In the two cases of mumps, the students affected did not report to the Health Service until after they had been ill for two to three days and thus had exposed other students before coming under observation.

No cases of smallpox occurred during this year. In the winter quarter, however, a campaign urging vaccination against smallpox was carried out, and as a result 279 students presented themselves for vaccination.

Of the twenty-seven cases of contagious disease eighteen were isolated and cared for at the Health Service. Three of the remaining nine cases, whose homes were in Minneapolis or St. Paul, were quarantined at home and placed in care of private physicians. The other six cases were sent to the municipal hospitals. The Minneapolis General Hospital, since November, 1921, has refused to admit as a patient any student who is registered in the University. This attitude will make it necessary for the University to provide isolation facilities and hospital care for all cases of contagious disease which will occur among the student body.

The control of communicable disease was carried out on the following general plan:

1. Education of the student body as to the necessity of reporting immediately any illness.
2. Isolation of the student affected. Cases whose symptoms were suspicious, but on whom a definite diagnosis could not be made when first seen, were isolated and kept under observation until a positive diagnosis could be reached.

3. Either quarantine or daily inspection of all persons exposed to the disease, depending on the type of disease and on the city and state health regulations. Through the cooperation of the dean of student affairs and the faculty, any student failing to comply with the quarantine or inspection regulations of the Health Service was excluded from classes.

Influenza.—During the months of February and March there occurred among the University students, as well as over the entire Northwest, a small epidemic of influenza. The incidence in this epidemic was less and the cases much less severe than in 1918-20. The Health Service cared for 374 cases of influenza among the students. Of this number, 202 cases were seen in the dispensary and sent to their homes for care; 100 calls were made at the students' rooms; and 74 cases were admitted to the Students' Hospital. Four of the cases in the hospital developed pneumonia but all recovered. No other serious complications were encountered.

Scarlet fever epidemic at University School of Agriculture.—On January 24, 1922, one case of scarlet fever developed in the girls' dormitory, the source of infection of which was doubtless from outside the campus. This case was promptly isolated on the date of her first symptoms, even before the diagnosis could be made. Another case appeared in the boys' dormitory on January 31, but was believed not to be associated with the first case. Five more cases developed within the next three days and on February 7 there was a total of 11 cases, all among the boys of two dormitories.

Preventive measures put into effect on February 8 by the Health Service were as follows:

1. *Reduction of direct contact* by (a) prompt isolation of all cases and suspected cases developing; (b) daily throat inspections, the throats of all school students being examined daily over a period of 38 days; (c) isolation for 7 days of every student directly exposed to a scarlet fever case before his isolation; (d) isolation commencing February 28 of all suspicious locking throats even in absence of other symptoms; (e) prohibiting all gatherings of large groups of students such as assembly, parties, etc., and closing of the gymnasium and swimming pool; (f) separation in the dining hall of boys and girls.

2. *Reduction of indirect contact* by (a) supervision of dishwashing process and directing live steam to be turned on the dishes before leaving the machine; (b) paper napkins used and burned, table cloths changed every alternate day; (c) collection and sterilization by the Health Service of all clothing and bedclothes from the rooms of all cases of scarlet fever immediately after diagnosis.

3. *Precautions against return cases* by (a) quarantine in the hospital of all cases for a minimum of 28 days; (b) exclusion of all cases from classes and dormitories for a minimum of 35 days.

In spite of these measures there developed an epidemic of rather peculiar aspects, being apparently one which was under partial, tho not complete, control. Fifty-nine cases occurred among the school students at the rate of one, two, or three a day over a period of 55 days, an incidence of 6.5 per cent in 900 students. Incidence among girls was 3.9 per cent, while among the boys it was 6.7 per cent. Mortality was zero, there being no deaths in spite of several very severe cases. Morbidity was high due to the difficulty of control. The 59 cases spent 1,936 days

in hospital and lost 1,954 days of school. Direct contacts and suspected cases, 293 in number, lost 1,643 days of school.

Between February 13 and March 21, superimposed on the scarlet fever epidemic there occurred 58 cases of a mild form of influenza, so that the Health Service resources on the agricultural campus were taxed to the utmost. In addition to utilizing every available space for beds in the Health Service section of the Boys' New Dormitory, 100 cots were placed in the Gymnasium, 20 beds on the third floor of the Dining Hall and 30 beds in the basement of the Girls' Dormitory.

Laboratory work.—The laboratory work consisted of the chemical and bacteriological tests required for diagnosis and treatment, such as urinalyses, blood counts, gastric analyses, examination of sputum, feces, etc. A total of 5,041 examinations were performed during the school year. Following is a detailed report of the examinations made:

Urinalyses	1,904
Nose and throat cultures (for diphtheria).....	1,471
Blood counts	674
Hemoglobins	327
Widals	117
Sputum examinations	101
Urethral smears	74
Wassermanns	60
Direct throat smears	59
Feces (direct or cultural)	48
Blood cultures	21
Gastric contents	20
Blood chemistries	17
P-S-P tests	14
Mosenthal tests	7
Vaccines (autogenous made)	9
Miscellaneous	118
Total	5,041

SANITATION

1. *Swimming pools.*—The swimming pools have been examined regularly as to their bacterial content. At first, while getting the chlorine treatment regulated, this was done twice a week, later, once a week. Their condition has been good on the whole, except when the chlorine machines have been out of order and chloride of lime used instead. The latter treatment gives irregular results. The examinations have shown that a mechanical cleansing of the pools most markedly brings down the bacterial count. The results have been reported to the superintendent of grounds, who has regulated the chlorine and cleansing of the pools accordingly.

2. *Food handlers.*—Physical examinations were made at the beginning of the school year of all employees who handled food in any way at the Men's Union, Shevlin Hall, Sanford Hall, and the Farm Cafeteria—98 in all. These examinations were the same as those required of milk handlers by the State Board of Health, and included a nose and throat

culture for diphtheria carriers and a Widal blood test for typhoid carriers. When the Widal indicated the necessity (in three cases) special bacteriological examinations of feces and urine were made. Three negative specimens were obtained from each of these employees, and they were put at work where there was no danger of contamination of food. During the year, when a new maid was employed, she was sent to the Health Service for examination.

3. *Voluntary health officers.*—Last year a system of voluntary health officers was introduced by the sanitarian. After examining the reports turned in last year, and after a consultation with Dean Johnston and Dr. Diehl, the system was abandoned as being of no practical value.

Conclusions.—The Health Service has been making steady progress toward its goal of preventing sickness and death among the student body. Much, however, is still to be desired and will be made possible by better hospital and dispensary facilities and by regulations which will make unnecessary the diversion of considerable sums for services that are strictly personal in character.

Respectfully submitted,

H. S. DIEHL, *Director*

THE BUREAU FOR RESEARCH IN GOVERNMENT

To the President of the University:

SIR: The last annual report of the Bureau for Research in Government was printed *in extenso* in the *President's Report* for the year 1920-21, pages 256 to 259. The description of the work in the aforementioned report gives an adequate idea of the work for this year. It will not, therefore, be necessary to make such a long report at this time. No final statement as to budget for the year can be made at present but it is possible to say that the bureau has kept well within its appropriation and has not been required to ask for an increase of funds for the coming year.

THE CITY CHARTER PROBLEM

The year 1921-22 has been unique in the amount of interest shown by the cities of this state in charter revision. Since 1846 the cities of this state have been empowered to frame, adopt, and amend the charters under which they are governed. To-day sixty-five out of ninety-one cities in the state have so-called home rule charters. Due to the great increase in the cost of government everywhere and to the general feeling that the cost could be much reduced by a more efficient government organization, there is a widespread and spontaneous demand for the overhauling of the machinery of local governments. During the year which is just closing, official and unofficial organizations in most of the larger cities of the state, including Minneapolis, St. Paul, Duluth, Winona, Hibbing, Virginia, Albert Lea, Austin, and Faribault, and in many smaller places, have been taking up the work of charter revision. The director has given a considerable portion of his time to the Minneapolis and St. Paul problems, and has been in correspondence with interested persons in all of the other places here mentioned. It has been evident for some time that the chief difficulty confronting charter commissions in this state has been the lack of information as to the problems of charter-making. The director undertook, therefore, the preparation of a handbook upon this subject and also of several articles dealing with special phases of this problem. These undertakings were completed and published during the year and have been put into the hands of a considerable number of interested persons. The publications are listed separately below. The book on *City Charter Making in Minnesota* has already been made the textbook of the charter commissions in two cities and also of a large citizens' organization in St. Paul. This book is the only publication of its kind in the United States at the present time and it seems to be filling a need which has been long felt.

PUBLICATIONS

1. *City Charter Making in Minnesota*, by William Anderson. 1922. ix, 198 pages. Published by the Bureau for Research in Government, as the first of its regular series of publications.
2. Is the city manager plan constitutional in Minnesota? *Minnesota Municipalities* 6:163-69. December, 1921.
3. Proportional representation in Minnesota *Minnesota Municipalities* 7:81-85. June, 1922.

OTHER ACTIVITIES

The bureau has continued to render assistance to the students doing work in the Department of Political Science, to certain members of debating teams, faculty members, and others; it has continued with the collection of materials on county, state, and national government; and has given miscellaneous assistance to various officers, members, and committees of the League of Women Voters, the General Federation of Women's Clubs, and other organizations.

PROJECTS FOR THE COMING YEAR

During the coming year the bureau plans to prepare and publish a complete annotation and discussion of the state constitution. This work coupled with the *History of the Constitution* previously published will furnish the officials, teachers, lawyers, and people of the state of Minnesota with complete and accurate information upon all state constitutional questions. The work upon this publication will be done in the main by Mr. Harold F. Kumm, B.A., LL.B., instructor in the Department of Political Science, under the direction of a committee of University faculty men headed by Dean Fraser of the Law School. In addition to this important undertaking the bureau will collect and have ready for the use of members of the state legislature in the coming session, a considerable amount of material relating to the important problems which are likely to come up for decision.

Respectfully submitted,

WILLIAM ANDERSON, *Director*

FINANCIAL REPORT

To the President of the University:

SIR: I submit herewith a summary of the financial operations of the University of Minnesota covering the period from July 1, 1921, to June 30, 1922. Full detailed statistics covering this period are included in the *Report of the Comptroller*.

Respectfully submitted,

ALBERT J. LOBB, *Comptroller*.

INCOME SUMMARY

	1920-1921		Per Cent	1921-1922		Per Cent
FROM INTEREST						
Swamp Land Interest.....	\$ 51,119.65			\$ 36,876.27		
Land Grant—Contracts.....	8,552.49					
Land Grant—Bonds.....	7,090.00					
Land Grant—Invested Funds.....	47,957.65			91,966.83		
	\$ 114,719.79		2.6	\$ 128,843.10		2.5
FROM FEDERAL FUNDS						
Morrill Fund.....	25,000.00			25,000.00		
Nelson Fund.....	25,000.00			25,000.00		
Adams Fund.....	15,000.00			15,000.00		
Hatch Fund.....	15,000.00			15,000.00		
Smith-Lever Fund.....	124,225.55			142,523.81		
Smith Hughes Fund.....	17,716.69			18,226.97		
	221,942.24		5.1	240,750.78		4.6
FROM STATE						
23/100 Mill Tax.....	401,524.06			461,074.57		
Maintenance Appropriation.....	1,865,000.00			3,000,000.00		
Emergency Appropriation.....	547,179.00					
County Agents.....	86,000.00			84,000.00		
Investigations—						
Peat Soil.....	6,000.00			5,000.00		
Sandy Land.....				5,000.00		
Low Lime.....	1,000.00			2,000.00		
Marl.....				5,000.00		
Drainage Tile.....				5,000.00		
Manganiferous Ores.....				5,000.00		
Peat Fuel.....				10,000.00		
Cornstalk Syrup.....				5,000.00		
State Entomologist.....				5,000.00		
Agriculture Extension.....	30,000.00			40,000.00		
	2,936,703.06		67.5	3,632,674.57		69.6
Building Fund not included (see below)	(554,302.61)			(581,169.70)		

FROM STUDENT FEES (Net)

University Regular.....	503,251.78			594,861.86		
Summer Session.....	58,414.67			80,602.44		
Agriculture.....	47,213.04			55,728.63		
Crookston	2,113.00			1,848.18		
Morris	2,767.60			2,608.85		
Federal Board Agriculture.....	9,251.10			15,546.15		
Extension Division.....	57,744.10			74,722.67		
Breakage	51,811.57			36,564.78		
	<hr/>			<hr/>		
		732,566.86	16.9		862,483.56	16.5

FROM SALES

Dental Infirmary.....	52,041.67			61,291.74		
Elliot Hospital and Free Dispensary..	33,273.91			27,449.28		
Agricultural Products.....	102,952.23			76,619.42		
Lyceum Lectures.....	45,627.65			46,823.16		
Advance Registry Testing.....	36,870.40			31,136.96		
Campus Rents and Sales.....	5,363.15			5,299.72		
Sundry Income.....	66,874.88			104,504.80		
	<hr/>			<hr/>		
		343,003.98	7.9		353,125.08	6.8

	<hr/>	<hr/>		<hr/>	<hr/>	
		4,348,935.93	100.0		5,217,877.09	100.0

FROM STATE

Building Fund.....	554,302.61			581,169.70		
Service Enterprises.....	735,951.99			805,512.12		
Trust Funds.....	63,961.26			62,435.09		
Mayo Foundation.....	119,912.22			130,849.97		
Mayo Donation.....	277,742.21			291,050.20		
	<hr/>			<hr/>		
		\$6,100,806.22			\$7,088,894.17	

DISBURSEMENT SUMMARY†

	Salaries and Wages	Supplies and Expense	Plant* Maintenance	Capital Outlay	Totals	Per Cent
Administration	\$ 130,907.90	\$ 16,269.97		\$ 4,260.05	\$ 151,437.92	3.2
University General.....	160,979.27	58,721.29		46,156.11	265,856.67	5.6
Science, Literature, and the Arts..	575,475.14	19,766.93		19,018.94	614,261.01	13.0
Engineering	231,970.71	13,925.74		34,599.03	280,495.48	5.9
Agriculture	805,719.44	168,624.09		61,661.64	1,036,005.17	21.9
Medical School.....	210,215.95	19,237.31		9,151.35	238,604.61	5.1
Hospital	86,285.96	76,103.35	\$ 30,545.11	6,500.55	199,434.97	4.2
Chemistry.....	100,833.35	27,306.50		74,167.67	202,307.52	4.3
Mines	72,155.96	11,611.15		7,831.97	91,599.08	1.9
Dentistry.....	104,878.34	44,253.14		4,605.19	153,736.67	3.3
Law School.....	51,805.00	1,225.58		6,667.64	59,698.22	1.3
Pharmacy	29,775.18	6,509.10		2,402.94	38,687.22	.8
Education.....	134,719.28	8,767.06		2,176.58	145,662.92	3.1
Summer Session.....	54,278.43	6,612.60		247.96	61,138.99	1.3
University Extension.....	149,353.13	19,747.63		1,877.09	170,977.85	3.6
Graduate School.....	11,167.63	6,274.18		1,494.21	18,936.02	.4
School of Business.....	89,936.50	1,487.56		1,482.67	92,906.73	2.0

Physical Plant—							
University.....	94,976.43	18,065.94	272,357.53	36,591.14	421,991.04	8.9	
Agriculture.....	49,701.61	1,998.56	125,360.13	5,594.63	182,654.93	3.9	
Crookston	63,930.13	17,464.55	11,397.61	9,542.36	102,334.65	2.2	
Morris	56,363.68	13,311.32	24,206.08	10,779.41	104,660.49	2.2	
Grand Rapids.....	17,701.34	9,745.24	4,833.13	3,026.72	35,306.43	.7	
Duluth	11,012.23	3,396.73	1,559.76	5,717.75	21,686.47	.5	
Waseca	8,370.88	3,067.24	1,464.37	5,306.60	18,209.09	.4	
Zumbra	10,205.02	1,244.66	1,506.07	3,261.13	16,216.88	.3	
<hr/>							
Totals	\$3,312,718.49	\$ 574,737.42	\$473,229.79	\$ 364,121.33	\$4,724,807.03	100.0	
Building Funds.....				557,564.30	557,564.30		
Service Enterprises.....	188,983.03	435,435.06	77,391.74	33,910.45	735,720.28		
Trust Funds.....				57,052.48	57,052.48		
Mayo Donation.....	230,865.03	60,185.17			291,050.20		
Mayo Foundation.....				128,286.32	128,286.32		
<hr/>							
	\$3,732,566.55	\$1,070,357.65	\$550,621.53	\$1,140,934.88	\$6,494,480.61		

* Includes Gas, Electricity, Water, Ice, Building Repairs, Janitors' Supplies, Laundry, Telephones and Fuel.

† Note: Funds allotted but unexpended June 30, 1922, total \$620,259.78.

GENERAL UNIVERSITY ADMINISTRATION

WILLIAM WATTS FOLWELL, LL.D., President Emeritus

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FRANK K. WALTER, M.A., M.L.S., Librarian

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CHAUNCEY A. MCKINLAY, B.A., M.D., Assistant Professor of Medicine

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THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

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and the Arts and Professor of Neurology

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HAL DOWNEY, Ph.D., Professor of Histology

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THOMAS SADLER ROBERTS, M.D., Professor of Ornithology and Director
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MARSHALL HERTIG, Ph.D., Instructor in Animal Biology

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DWIGHT E. MINNICH, Ph.D., Assistant Professor of Animal Biology

The chemical sensitivity of the tarsi of the Red Admiral butterfly, *Pyramis atalanta* Linn. *Journal of Experimental Zoology* 35:57-81. January, 1922.

ADOLPH R. RINGOON, Ph.D., Instructor in Animal Biology

The origin of the eosinophil leucocytes of mammals. *Folia Haematologica* 27:10-68. 1921.

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FRANCIS P. LEAVENWORTH, M.A., Professor of Astronomy and Head of the Department of Astronomy

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ELIAS J. DURAND, B.A., D.Sc., Professor of Botany

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OSCAR W. FIRKINS, M.A., Professor of Comparative Literature

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- FREDERICK KLAEBER, Ph.D., Professor of Comparative and English Philology and Head of the Department of Comparative Philology
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 KEMP MALONE, Ph.D., Professorial Lecturer in English
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 MARY ELLEN CHASE, Ph.D., Instructor in English
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LOIS WHITNEY, Ph.D., Instructor in English

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WILLIAM HARVEY EMMONS, Ph.D., Professor of Geology, Head of the Department of Geology, and Director of State Geological Survey

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CLARENCE W. ALVORD, Ph.D., Professor of History

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JOSEPH BROWN PIKE, M.A., Professor of Latin and Head of the Department of Latin

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WILLIAM L. HART, Ph.D., Associate Professor of Mathematics

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NORMAN WILDE, Ph.D., Professor of Philosophy and Head of the Department of Philosophy

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- GEORGE P. CONGER, B.A., B.D., Assistant Professor of Philosophy
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- HENRY A. ERIKSON, Ph.D., Professor of Physics and Chairman of the
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- CEPHAS DANIEL ALLEN, M.A., LL.B., Professor of Political Science and
 Chairman of the Department of Political Science
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JEREMIAH SIMEON YOUNG, Ph.D., Professor of Political Science

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