

# BULLETIN

OF THE

# UNIVERSITY OF MISSOURI

VOL. V.

NOVEMBER, 1904.

NO. 11.

## WHAT THE UNIVERSITY HAS DONE FOR MISSOURI.

The Legislative Act establishing the public school system was approved 9 February, 1839, and that establishing the University was approved 11 February, 1839. The University was located at Columbia, 24 June, 1839. The cornerstone of the Main Building was laid 4 July, 1840. Courses of instruction in Academic work were begun on 14 April, 1841. A Department of Education was established in 1867, and work began in September, 1868. In 1869 women were admitted first to this Department, in 1870 to the College, and soon after to all Departments. The College of Agriculture and Mechanic Arts and the School of Mines and Metallurgy were made Departments of the University in 1870—the School of Mines being located at Rolla. The Law Department was opened in 1872; the Medical Department in 1873; the Engineering Department in 1877. The Experiment Station was established, under act of Congress, 1888. The Missouri State Military School was created a Department of the University in 1890. In 1896 the Graduate Department was established.

In the spring of 1904 the Department of Education was completely re-organized and a Teachers College created in its stead.

In 1868 the state gave the University aid for the first time—\$10,000 for two years. On 9 January, 1892, the Main Building, an immense structure containing the Library, Museum, and other collections, was burned,—the Hall of Agriculture and the Observatory being the only buildings for instruction left on the campus in Columbia. We have had to supply since that date new buildings, books, and laboratory equipment.

**Enrollment.** The number of students enrolled in the University (in 63 years), to August, 1904, adding those in one session to those in another, and deducting names counted more than once, is 28,600. There are more than 30,000, including the students of this session.

**Degrees.** The number of degrees conferred for work done, is 3,243. The number of persons on whom these degrees have been conferred (2 or more sometimes on the same person) is 2,758. Of honorary degrees 169 have been conferred.

**Raising Standards.** Not the least contribution of the University to the state has been in the raising of standards in education. We have held aloft the idea that no college or university ought to maintain on its campus a preparatory department. The mixture of a college and an academy in one institution is most unwholesome. By abolishing its preparatory department and by raising the standards of admission so that a student must have a good high school education to enter any department at Columbia or at Rolla, the University has set in higher education an example that, sooner or later, will be substantially followed by every real college in the state.

The University requires a high school education as a preparation for Law, or Medicine. All sound thinkers on education are agreed that it is unfortunate for these professions to admit to them men who have not had proper academic training. After a student has entered the University, we require three years of study for the law diploma and four years of nine months each for a medical diploma. This raising of standards has been of great benefit to other schools of law and medicine.

The University has introduced into the state the idea that medical laboratories of anatomy, histology, physiology, physiological chemistry, pharmacology, hygiene, bacteriology, and pathology should be filled by men supported by salaries who give their whole time to reading, writing, teaching, and research, and who do not practice at all. This idea is being adopted gradually by other medical schools of the state.

## THE UNIVERSITY AND THE PUBLIC SCHOOLS.

**High Schools.** Thirteen years ago there were not in all the state more than six high schools that were preparing students to meet the present requirements of the Uni-

versity. Now there are 117. The total number of accredited schools, public and private, on our list is now 132. Probably 50 more are seeking places on our list. This is astounding growth in 13 years. While there have been other causes for this progress, by far the greatest single cause has been the far-reaching influence of the University. As the number of good high schools has increased, the enrollment in them has naturally become far greater. In 1891 there were not more than 5,000 pupils in good high schools in all Missouri. There are probably 25,000 now.

Besides maintaining summer schools for the better training of teachers, we have kept in the field an Inspector who has spent his time visiting high schools and teachers' institutes. Guided by his reports, the officers of the University advise and encourage the schools to equip their laboratories and libraries, to increase the staff of teachers, to lengthen the course of study to four years, and to make the work in every respect first-class. A large portion of the time of the Dean of the Teachers College is given to correspondence with officers of high schools. Through a Board for the recommendation of teachers at the University, high school officials are placed in touch with our best graduates to mutual advantage.

But the improvement of the high schools means the improvement of the district schools below them. The attempt to build up good district schools without good high schools above them has been tried far and wide and always disastrously. New York City tried it for a number of years but finally established high schools because dry-rot was striking the seventh and eighth grades of the district schools. St. Louis has just established two more high schools that there may be a stronger pull upward upon her ward schools. When, therefore, in 13 years the number of really good high schools in Missouri has increased from 6 to 117, who can estimate the resulting improvement in the district schools? If the University has been the most potent factor in the improvement of the high schools should she not be credited, in large measure, with such improvement of the district schools as has come from that of the high schools?

We wish heartily that the state would give aid to the establishment of rural high schools in which should be taught agriculture, horticulture, entomology, botany, manual training, and domestic economy, as well as languages, mathematics, sciences, history, and English. In our opinion the greatest educational problem before Missouri to-day is how to develop, through state aid and local aid and county aid, a great system of rural high schools—literary, scientific, and industrial.

## **Summer Schools.**

The summer schools of the University have conferred great benefit upon the teachers of Missouri, and through the teachers upon the public schools. The Summer Session at Columbia was organized primarily for teachers who were teaching during the

winter months.

The enrollment in the Summer Session has increased in a few years from thirty students to several hundreds, representing three-fourths of the counties of the state, and including teachers of all grades,—superintendents, principals, teachers in the high schools, and those in the grades. In ten years 2497 students have been enrolled in our Summer Sessions. After spending one or more summers here they have gone back to their schools with new ideas, new methods, and with increased inspiration for teaching.

During this biennial period 900 students have been enrolled in our summer schools. It is fair to suppose that each one of these 900 teachers taught about 50 pupils during one of the succeeding winters. Thus it will be seen that at least 45,000 children have received better instruction owing to the attendance of these teachers in our Summer Sessions. Through the thousands of teachers that have been enrolled both summer and winter, the University is providing better instruction for a vast number of children in the public schools throughout the state. The University is indeed at the head of the public school system in law, in fact, and in the recognition of the teachers.

## **TEACHERS COLLEGE.**

In this connection it is well to explain the functions of the new Teachers College which the University organized in the spring of 1904. In 1867 the Legislature of Missouri created in the University a chair of Theory and Practice of Teaching. It was the first chair of Education established in any university in America. Of this fact our state may be justly proud. During the past year the Department of Education has been abolished and the Teachers College created in its stead. A Dean has been appointed and a special faculty has been selected to offer the best advantages to those persons who desire to fit themselves to become teachers. The faculty consists of Professors of Psychology, History and Principles of Education, Theory and Practice of Teaching, and School Organization and Management, in addition to a number of specialists who deal with the methods of teaching their particular subjects. There is scarcely a phase of school work in which the

Teachers College does not afford opportunity for specialization. Not only may one specialize in English, Foreign Languages, Mathematics, Science and other standard subjects, but excellent facilities are provided for training in Drawing, Manual Training, and Music. The course is four years in length, leading to the degree of Bachelor of Science in Education.

The purpose of the Teachers College is to train efficient teachers for all grades of school work, but it is especially well equipped for the training of city superintendents, high school teachers, principals, and persons wishing to prepare themselves for supervisors in Drawing, Manual Training, and Music.

For more than a year the Teachers College has co-operated with the State Superintendent of Public Schools, sending members of its faculty to deliver addresses before County Teachers Associations, thus creating a lively interest in the foremost educational topics of the day.

### **COLLEGE OF AGRICULTURE.**

**Cattle Feeding.** During the past 9 years the Agricultural Experiment Station has studied the problems of cattle feeding, and especially such questions as the cheapest and best methods of wintering cattle; the comparative feeding values of clover, alfalfa, cowpeas, millet, sorghum, corn fodder, and timothy, for wintering cattle and for full feeding; the values of cottonseed meal, linseed meal, and bran, in combination with corn, for fattening cattle in winter and in summer; a comparison of the profits of winter and summer feeding; the value of shelter in winter for full-fed and for half-fed cattle; and the profit of baby beef as compared with that of older cattle.

The Station has collected statistics from over 1,000 of the leading cattle feeders of Missouri, Illinois, Iowa, and Nebraska, concerning the practical details of beef and pork production. This represents a sum total of mature judgment of feeders, based upon about twenty years of experience, and upon an aggregate of 2,500,000 steers fed and marketed.

On account of the work this Station has done along these lines, the United States Department of Agriculture requested us to prepare a special report to Congress on this subject.

**Federal Co-operation.** The United States Department of Agriculture is co-operating with the Missouri Experiment Station in a large feeding experiment in which 80 head of cattle are fed continuously throughout the year. This is

one of the largest cattle feeding experiments ever attempted. It has already attracted considerable attention and is destined to yield results of great value. The Department at Washington is also co-operating with us in a preliminary soil survey to determine what parts of Missouri are best adapted to alfalfa. The investigations have already brought out the fact that large crops of alfalfa can be grown in Missouri if certain conditions are fulfilled. The Government has also been co-operating with this Station in an extensive experiment in irrigation.

In connection with our Department of Botany the United States Department of Agriculture has been conducting a number of notable experiments. A new method of growing mushroom spawn has been discovered here, as a result of which the mushroom growers of the United States will be saved thousands of dollars every year formerly spent in importing spawn.

### **Veterinary Surgery.**

The disease commonly known as Texas Fever affects cattle all over the world below a certain line of temperature. More than a third of the United States is included in this infected area. The line is usually about the southern boundary of Missouri, although in some seasons the infection spreads through one or two tiers of our counties, and every year, through the transportation of cattle from the South, it is scattered more or less throughout Missouri. The disease is a constant menace to our herds, and it is only by the most rigid quarantine and diligent inspection that serious outbreaks and severe losses are prevented.

The Missouri Experiment Station was the first to demonstrate by rigorous experiments that this disease was transmitted by ticks. The results of these investigations suggest simple and efficient means of ridding the farms of South Missouri of this infection when by chance it becomes established there.

Of importance to all of the state and the country was the discovery by our Experiment Station that Northern cattle may be rendered proof against this disease. Formerly when thoroughbred bulls from Missouri were shipped South, from 80 to 90 per cent of them died of Texas Fever. When they have been inoculated at our Station, the loss is less than 6 per cent. Hence the breeders in the South who formerly feared to buy thoroughbred animals from Missouri are now buying them, when inoculated, in large quantities.

A magazine writer recently in summing up the most important scientific discoveries of the Nineteenth Century, mentioned three in

Veterinary Medicine, one of which was the discovery of a method of immunizing cattle against Texas Fever made by the Missouri Experiment Station.

Our bulletins reporting the results of these investigations have been translated into many foreign languages, and have been called for by the veterinarians, government officials, and cattlemen of India, Italy, Spain, Germany, France, Australia, New Zealand, Cuba, Porto Rico, Mexico, and South America. Tens of thousands of dollars worth of Missouri-bred cattle have found a good market in the South, as a result of these discoveries.

The Experiment Station is now trying to discover a preventive for Hog Cholera, and a means of treating a new disease among hogs which causes annually a loss to our farmers of many thousands of dollars.

**Entomology.** Conservative estimates place the average annual loss to the farmers, stockmen, and fruit and vegetable growers of Missouri, from the ravages of insects, at twelve million dollars, while between two and three millions of this annual loss could be easily prevented by a proper knowledge of the methods of controlling these pests.

Many insects which formerly fed upon wild or worthless plants, subsist now upon farm and garden crops—partly because of the disappearance of their natural food, and especially on account of the increased area of cultivated food. Therefore, injurious insects are increasing, not only in numbers, but also in the number of species. Thus new problems about insects are constantly arising which need careful scientific investigation.

For example, the Woolly Aphis of the apple had baffled the efforts of all entomologists and of all fruit growers. The Station at Columbia carried on for three years, in South Missouri, a series of experiments which resulted in our finding cheap and effective means of completely controlling this pest. It is estimated by careful commercial fruit growers that this discovery alone is saving the orchards of South Missouri from \$75,000 to \$100,000 annually.

An insect known as the Fruit Tree Bark Beetle is now causing great damage to the orchards of Missouri and Arkansas. Recent investigations made at Columbia show that a new spray mixture, when properly applied, will hold this insect completely in check.

The Fruit Tree Leaf Roller, which appeared only recently in sufficient quantities to cause serious loss, has destroyed practically all

the fruit in a number of the leading commercial orchards of the state. After some experiments, the Station has been able to suggest a system of spraying which will entirely prevent injury from this insect.

The Curculio, which stings the apple, has developed in such numbers recently as to reduce the grade of apples in nearly all the Ozark region from No. 1 to No. 2, causing an enormous annual loss. A cheap and successful method of controlling this pest has been worked out here.

We have been studying the insects especially injurious to the strawberry in a leading strawberry growing section of South Missouri. One grower reports that the work of the Station along this line saved him eight car-loads of berries in a single season.

The San Jose Scale, an insect that has caused millions of dollars of damage to the fruit interests of California and the Atlantic States, has gained a foothold in a number of places in Missouri. The Station has used its best endeavors to locate these infected districts, and, so far as possible, to stamp out the pest. We have not yet succeeded in doing this, but we have prevented it from spreading.

**Horticulture.** Horticulture has made giant strides in Missouri during the past 8 years. From third or fourth rank in importance as a fruit state, we now hold first place in the number of growing apple trees. Peach growing, also, has kept pace with this advance, and many other fruits are grown more largely every year within the State. In great measure this is due to the work of our Department of Horticulture at Columbia.

The growth of the fruit industry has not been free from obstacles. In 1897, by prompt action the fruit growers were warned that peach Yellows and Rosette, two deadly diseases of the peach, had probably found a footing in the state, and by co-operating with the orchardists, the Horticulturist of the Station kept a close watch on the suspected localities and had the satisfaction of seeing these menaces to peach growing, which have devastated so many orchards in the East, stamped out before they barely had a beginning in Missouri.

Experiments conducted at Columbia show that, by spraying peach trees with a whitewash in late winter, a cheap and effective protection is furnished which prevents the buds from starting into growth during warm days in winter, only to be killed by a subsequent freeze. By this simple discovery, large yields of fruit have been secured where otherwise there would have been little or none.

Experiments are now in progress with a view to originating hardy varieties of peaches which shall better withstand our winter.

In a test of many scores of new varieties of grapes, which no grower could afford the time, trouble, and expense to test for himself, not only were several valuable new sorts added to the list to be grown in the West, but nearly half of the varieties experimented with were found to be incapable of forming fruit unless grown adjacent to other sorts from which to receive pollen. This knowledge has been used by a large number of farmers who thenceforth have been successful in their grape growing.

It was demonstrated conclusively at our Station at Columbia that asparagus could be successfully grown in the open field in the depth of winter, with great profit to the market gardener. The gardeners adjacent to the cities were quick to adopt our plans and the five years that have elapsed have not diminished the popularity of the discovery among these practical men.

For some time the horticultural department here stood almost alone in advocating certain methods of orchard management. Chief among these was cultivation, which is now observed by all successful commercial orchardists. Judicious spraying, as advocated by this Station, combined with cultivation, has repeatedly changed failure into success in the apple growing districts. Our new methods have stood well the test of experience.

A careful test made here of the value of watering strawberries in a dry season showed that the yield of fruit could be increased five or six times, and at the same time an abundance of new plants could be formed from runners which otherwise would not have been formed at all. This has attracted attention throughout the state.

The best work the Department of Horticulture at Columbia has done in recent years has been to get into touch with the people themselves, to work with them, and to help them.

**Dairy Husbandry.** The Department of Dairy Husbandry has rendered valuable aid to this growing industry of the state. Hundreds of inquiries are answered annually. By means of lectures at Farmers Institutes and bulletins, various items of interest and profit, discovered by the Department, have been brought to the attention of the dairymen of Missouri.

**Agricultural Chemistry.** For years the Laboratory of Agricultural Chemistry has tested the purity of all fertilizers sold in this state. Under the new Fertilizer Law, enacted by the last General Assembly, all the fertilizers sold in this state have been registered in the office of the Director of the Experiment Station, and

samples of these fertilizers have been collected in the open market and analyzed by the Station in order to determine their composition. Each package of fertilizer offered for sale is required to be marked with its guaranteed chemical composition and a tag furnished by the Director must be affixed indicating that the brand in question has been duly registered according to law. This law has proved highly satisfactory to the farmers and to the manufacturers of the state.

Missouri should have a Pure Food and Drug Law the tests under which should be conducted in this same laboratory which has rendered in the past so great public service.

A discovery of great value has been made by the agricultural chemist in the course of the past year. A formula for compounding a Bordeaux Mixture which may be used in powdered form for spraying fruit trees has been discovered. Perhaps this is the most valuable discovery in spraying made in this country in 1904.

#### **Drinking and Industrial Waters.**

During the present year the waters of the incorporated cities and towns of the state have been analyzed by the Department of Chemistry to determine their hygienic character and their adaptation to industrial usage. The results have been published in the form of a bulletin which will be furnished upon application to the University. In the laboratory of Agricultural Chemistry all the mineral waters of Missouri have been carefully analyzed. The book published on this subject some time ago has become the authority for the state.

#### **Cement Rock.**

In the last few years the departments of Geology and Agricultural Chemistry have been trying to determine whether certain deposits in Missouri can be converted into cement. The work has proved that Kansas City contains large quantities of rock capable of producing cement that seems to be of excellent quality and that deposits of cement-rock of good quality are found at other places in the state. When deposits are found that seem to contain cement-rock it is necessary to prove by process of manufacture that cement of good quality can be made out of the material. The stone has to be ground, mixed, burned, ground again, set, and then tested under the crushing machines. If the first experiments are not successful they must be repeated with various modifications until it is finally proved that good cement can or cannot be made out of the material. Our experiments have proved that Missouri contains at various places immense deposits of rock that can be converted into Portland cement.

**Co-operation  
With Farmers.**

Several means are employed to bring the results of our experiments to the farmers of the state. Bulletins and circulars of information are printed from time to time and distributed free of charge to all who apply for them. Every year the Station staff delivers hundreds of lectures before Farmers Institutes in all parts of Missouri. The important discoveries of the Experiment Station are also demonstrated by co-operative experiments with farmers themselves.

During the past year, co-operative experiments with corn fertilizers on various soils widely separated have shown that phosphoric acid is more often efficient in increasing the yield of corn than any other fertilizing material. The losses of cattle from Blackleg in the state amount to thousands of dollars annually. The Station has completed arrangements with the United States Department of Agriculture for sending out Blackleg Vaccine, a sure preventive of this disease, to the stockmen of Missouri. The Veterinary Department has continued its work inoculating cattle against Texas Fever. The Department of Entomology has continued distributing chinch bug infection which has been helpful. Inoculated alfalfa seed with directions for sowing has been distributed to about 100 farmers representing all large sections of the state. Commercial fertilizers sent in by farmers have been analyzed by the Department of Agricultural Chemistry. Thousands of letters have been written by the members of the Station staff in answers to inquiries.

**Agriculture  
in the Public  
Schools.**

Circulars of information regarding the teaching of Agriculture and Horticulture in the public schools have been published from time to time by teachers in the College of Agriculture. For these publications there has been a great demand from the teachers of Missouri, with the result that these subjects are being introduced into the elementary schools in several places in the state.

## **ENGINEERING DEPARTMENT.**

**Water  
Power.**

In the summer of 1900, the University at its own expense made a complete survey of the water power in South Missouri, publishing the results in a bulletin which was circulated widely among manufacturers. We showed where there was water power and how electric power produced by it could be carried over wires to the nearest industrial center. This work was done at Columbia.

## **Missouri Coal.**

In 1901, the University sent an officer to every important coal mine in Missouri to take samples—neither the best nor the worst—for analysis in our laboratories. The geological surveys had shown where the coal beds were and the thickness of the veins, but nobody had yet tested the steam-producing power of Missouri coals in comparison with those of other states. This work, done thoroughly by the University, was published in a bulletin which was scattered widely among manufacturers.

## **Good Roads.**

The Departments of Engineering and Agriculture at Columbia have made the most careful and elaborate tests that have ever been made on the effect of wide tires upon roads and upon teams. To test the matter thoroughly the experiments had to be conducted on roads of different compositions, and in every sort of weather. Everybody knows that in some kinds of weather wide tires decrease the draft. We found that in some unusual conditions of the roads they increase the draft, but in nine cases out of ten, they represent a decided saving to the team and a benefit to the roadbed. The pamphlet embodying the results of this experiment has been called for by engineers all over the country. It has become a standard authority on the subject.

## **THE SCHOOL OF MINES.**

In one biennial period our School of Mines at Rolla examined for miners, prospectors, and capitalists 8,000 specimens of Missouri rock and soil supposed to contain minerals. The value of Missouri's annual mineral production is about \$25,000,000. The School of Mines and Metallurgy is training young men to manage, conserve, and develop these vast interests. It is interesting to note the following instances in which work of great value has been done by men trained in this school: the improved cyanide process used in the largest gold plant in the Rocky Mountains; the method of handling and treating the mine water in the large copper mines of Butte, Montana; the method of coking coal for the smelters of Anaconda, Montana; the building of the New York Central Railway Suspension Bridge over the Harlem River. The graduates of this school and of all departments of the University, an army of well educated men and women, are exercising constantly an unseen and immeasurable influence upon the communities in which they live.

## ACADEMIC DEPARTMENT.

### **Sociology.**

The Department of Sociology has carefully investigated the condition of the county almshouses of Missouri. The results of these investigations together with practical suggestions for the improvement of conditions in our almshouses was published by the University in a pamphlet of thirty pages last May. It was shown that the principal evils connected with our almshouse system are four: (1) the presence in the almshouses of a large number of mentally defective, especially insane persons who should be in state institutions; (2) the presence of a number of children, both healthy and diseased who should be provided for elsewhere; (3) the general prevalence of the "lease system," by which in about two-thirds of the counties the care of the almshouse and its inmates is let out to the lowest bidder; (4) the general absence of adequate classification among the inmates of the almshouses, both sexes, the two races, and all ages and conditions being frequently found mingled together. It was also shown that the remedy for these evils lies partly in increasing the power of the State Board of Charities over county institutions and partly in mandatory and prohibitive legislation.

The Department has also conducted a similar investigation into the condition of the county jails of Missouri, the results of which were published by the University in a pamphlet issued last June. It was shown that the chief evil in our jail system is the absence of adequate classification and separation of prisoners, allowing the intermingling of prisoners of all ages, and all degrees of criminality. A majority of the jails were found to be without adequate provision against jail-breaking and only one-fourth of the jails were found to be fire-proof.

The Department has also issued a study of the system of public charity in England. This study of one of the most fully developed systems of state charity in the world affords many practical suggestions to those who are actively interested in the development of our system of public relief and eleemosynary institutions in Missouri.

### **History.**

The Department of History is making strenuous and successful efforts to develop an interest among the students and in the state generally in the history of Missouri. Courses of both an elementary and advanced character are offered and research work is encouraged on the part of advanced students. The presence of the State Historical Society with its excellent library of 25,000 volumes is an impetus to thorough work in

this field. It is hoped and expected that in the near future the investigations conducted by teachers and students will find expression in publications throwing new light on the history of the state. There is certainly room for such work. The great World's Fair volume on Missouri was written and edited chiefly by men connected with our University.

**English.** The Department of English has been investigating for some time the folklore and songs of the people of Missouri. A publication regarding these matters will no doubt be issued in a short time which cannot fail to prove of interest to all natives of Missouri.

**Economics.** The Department of Economics offers advantages, not only for the study of the science as a means of culture and training, but also for the investigation of those practical problems, such as Banking, Co-operative Enterprises, Currency Reform, Insurance, Immigration, Monopoly, Markets, Transportation, Taxation, Tariff Legislation, Trusts, etc., which affect immediately the prosperity and general welfare of the people. It is the purpose in the next few years to give special attention to the industrial affairs of Missouri, noting the natural resources and following the industrial development. Special attention will also be given to the development of the financial system of the state and the possibilities of further development. The possibility of accomplishment along these lines is great at this time on account of the fact that the Department is in co-operation with the Carnegie Institution which is giving particular attention to such work in all the states of the Union, working through the leading universities of the several states. The results of the investigations will be published from time to time, and it is expected ultimately to cover the entire field of the industrial history of Missouri. Two monographs, one on Transportation, and one on Money and Banking will appear during the coming year.

### **LAW DEPARTMENT.**

The Law Department not satisfied with preparing young men for practice alone, felt that it ought to extend its influence in the state in the direction of assisting the profession generally. To this end it has taken active charge of the canvass for a bill to be introduced at the next session of the Legislature to provide for uniform examinations of candidates for admission to the bar under the immediate di-

rection of the Supreme Court. This law, if enacted, will do much toward raising the standard of the bar and the bench of Missouri. This movement has met with a cordial reception from the profession in Missouri.

**Medical Department.** Our Medical Department is standing firmly for the following things: (1) a good high school education for admission; (2) a course of study four years long—36 months; (3) well equipped laboratories of Anatomy, Histology, Embryology, Physiology, Physiological Chemistry, Pharmacology, Pathology, Bacteriology, Surgery, Internal Medicine, Physics, Chemistry—all in charge of men who, supported on salaries, are not engaged in the practice of medicine but give their whole time to teaching, writing and investigation; (4) the postponement of clinical instruction to the beginning of the junior year, and an accurate study of each case that the student examines; and (5) finally the forcing of all candidates for practice in the State to show their fitness. This struggle for standards has had much influence upon medical education in St. Louis and will finally reach all Missouri.

The Parker Memorial Hospital, with a capacity of 45 beds, is situated on the campus and is owned and controlled by the University. It is, indeed, the only state hospital which Missouri possesses. The organization, equipment and management of this hospital give the State no cause to blush.

**Scientific Collections.** Our Museum at Columbia should abound in fossils and in Indian remains which are plentiful in this commonwealth. The museums of some other universities contain case after case filled with such specimens from Missouri. We ought to have here skeletons and mounted specimens of all the wild animals, fishes, insects, and birds that now live in Missouri, or that have lived here in the past. The College of Agriculture is eager to make a Soil Survey of the state and also a Botanical Survey. Our Herbarium should contain well mounted specimens of every plant that grows in Missouri. The Department of History should be adorned with facsimiles of important documents illustrating the history of Missouri, and with portraits, busts, or photographs of all her greatest men and women.

The University is eager to make these collections if only the means were supplied by the Legislature or by private beneficence. This, too, is a form of Public Service.

**Public  
Service.**

Every chair in a state university should endeavor, so far as possible, to maintain four lines of work; 1. Teaching; 2. Influence for good on students and institution; 3. Research and Publication; 4. Public

Service. The Public Service should aid interests of the state outside of the university and such interests only as can be reached by scientific skill. Such service should not be divorced from the purposes for which a university is maintained.

**Caring for  
Missouri.**

The state is spending annually a small sum of money for her University. What we are asking out of the General Revenue Fund for maintenance in the next biennial period amounts to less than one and a half

cents a year on every \$100 of property in the state. A man whose assessment is \$1000 would pay 15 cents a year for maintaining the University. Many times what our maintenance costs is saved every year to citizens of Missouri through the applications and the results of our scientific work in feeding live stock, in destroying insect pests, in increasing the yield of fruits, vegetables and crops, in discovering deposits of cement-rock and other minerals, and in other ways. But the greatest return that the state receives from the University is in the vast improvement of the public schools and in the raising of standards in professional education. In addition to these achievements abroad, 1860 young men and young women will receive instruction this year—intellectual, moral, social, and civic—at Columbia and at Rolla. This is repeated annually on an ever increasing scale. Does not the University take care of Missouri? It is at least aiming to do so, and the aim is laudable.

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Editing software	Adobe Photoshop
Resolution	600 dpi
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File types	Tiffs converted to pdf
Notes	Grayscale pages cropped and canvassed. Noise removed from background and text darkened.