

THE
UNIVERSITY OF MISSOURI
BULLETIN

VOLUME 16 NUMBER 18

GENERAL SERIES

1915, No. 9

ANNOUNCEMENT
OF THE
SCHOOL OF MEDICINE
1915-16



UNIVERSITY OF MISSOURI
COLUMBIA, MISSOURI
June, 1915

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UNIVERSITY CALENDAR

AT COLUMBIA

1915
Summer Session
June 10Thursday, registration
June 11Friday, organization of classes
August 6Friday, examinations
August 7Saturday, entrance examinations

First Semester

September 13, 14, 15.....Monday, Tuesday, and Wednesday, entrance examinations and registration
September 16.....Thursday, 8 a. m., class work in all divisions begins
September 16.....Thursday, 10 a. m., opening convocation
November 1 to December 17..First term, short course in agriculture
November 25Thursday, Thanksgiving, holiday
December 17Friday, 4 p. m., to }
1916 } Christmas holidays
January 4.....Tuesday, 8 a. m. }
January 10 to February 26..Second term, short course in agriculture }
January 22.....Saturday, to } Mid-year examinations
January 29.....Saturday }
January 27, 28, 29.....Thursday, Friday, and Saturday, entrance examinations }

Second Semester

January 31, February 1....Monday and Tuesday, registration, second semester
February 2.....Wednesday, 8 a. m., class work in all divisions begins
February 3.....Thursday, 10 a. m., opening convocation
February 22.....Tuesday, Washington's Birthday, holiday
April 19.....Wednesday, 4 p. m., to }
April 25.....Tuesday, 8 a. m. } Easter holidays
May 28.....Sunday, baccalaureate address
June 1Thursday, commencement day
June 2.....Friday, to }
June 9.....Friday } Final examinations }

The Profession of Medicine

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

ADVANTAGES AND DISADVANTAGES OF MEDICINE AS A PROFESSION

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the necessary skill and education. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thoro training, the financial rewards are great. Every really well-qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in spite of hardships and difficulties. Moreover, even in this materialistic age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunity for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong demand, which is likely to continue, for well-trained men who will

devote themselves to anatomy, physiology, pathology, and other branches of medical science. While not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession is overcrowded, but it is *overcrowded with incompetents*. It is true that our leading physicians rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thoro collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well-qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

PREMEDICAL EDUCATION

For success in any applied science, two things are necessary: first, to master the science; and second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thoro preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essential points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that a *high-school education alone is insufficient*, especially in science, to prepare a student for the difficult medical curriculum of today. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in ten states, including Minnesota, Iowa, North and South Dakota, Kansas, Indiana, Connecticut, Colorado, Utah, and Vermont.

In these states, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other states.

Students should therefore beware of entering medicine without preliminary collegiate work.

While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is an unnecessary expense of time and money, and postpones unduly the age at which practice begins.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted, is approximately equivalent to the entrance requirement for medicine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined curriculum" in arts and medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six years.

As to the character of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal collegiate course, classical or otherwise, which prepares for any vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work.

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thoro training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life is derived from careful study and experimentation upon lower forms of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thoro knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry, and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology, and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since a large proportion of the most important biological and medical work is published in that language.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from the Journal of the American Medical Association, May 27, 1911): "As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology, and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sciences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and becomes acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of today the ability of the student to think, to observe and to do research work is very essential. Experience has shown that the needed qualifications are best developed by thoro courses, under expert teachers, in physics, chemistry, biology, and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

MEDICAL EDUCATION

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

Fundamental Medical Education:

The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the normal form and structure of the human body. These include gross anatomy (dissection, osteology, neurology, topographic anatomy, etc.), microscopic anatomy (histology) and developmental anatomy (embryology). The second, or physiological group, includes those studies which concern primarily the normal functions of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (including bacteriology) deals with the abnormal conditions of structure and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites for thoro instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled *A Model Medical Curriculum*, a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active investigators whose enthusiasm will be an inspiration to their students. The second factor includes the facilities, buildings, equipment, and materials for thoro work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroly-trained teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thoro laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include

several thousand well-chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

Clinical Medical Education:

When the student has completed the first two years of the curriculum and has mastered the fundamental medical sciences, he is familiar with the structure and functions of the human body, both normal and abnormal, and is ready to learn how to apply these principles at the bedside for the alleviation and cure of disease. This final period of medical education is designated clinical medicine. It includes two broad groups, internal medicine and surgery, each with numerous subdivisions. Here also lack of space prevents a discussion of each of the numerous special branches, for a full consideration of which the reader may consult the work *A Model Medical Curriculum* previously referred to. In passing, however, it may be remarked that for successful clinical teaching the essentials are very similar to those already stated for the laboratory sciences. The teachers should be skilled and experienced, each a recognized authority in his particular line. Here also it is highly desirable that salaries should be paid so that the teacher's whole time may be devoted to instruction and investigation, tho very few schools are financially able to carry out this policy. The laboratory of the clinical work is the hospital, and it is essential for successful clinical work that each school should own or absolutely control the clinical facilities in a large hospital with a sufficient number of beds in each of the various clinical branches. Certain clinical laboratories must also be provided.

On account of the heavy expenses involved in providing salaried teachers, laboratory and hospital facilities, it is axiomatic that no school can depend solely upon students' fees for support. Private endowment or state support on a liberal scale is essential to provide medical education fully up to modern standards.

The minimum facilities considered absolutely necessary in order that a medical college may be able to give a satisfactory training up to modern standards in both fundamental and clinical subjects are, according to the Council on Medical Education of the American Medical Association, as follows:

Essentials of An Acceptable Medical College:

1. Strict enforcement of all standards and requirements, the college itself to be held responsible for any instances where they are not enforced.

2. A requirement for admission of at least a 4-year high school education superimposed on eight years of grammar school work, as defined by the College Entrance Examination Board.

3. Beginning January 1, 1914, the minimum requirement for admission should be enlarged to include at least one year's college work each in physics, chemistry, and biology and a reading knowledge of at least one modern language, preferably German or French.

4. A requirement that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. That actual attendance at classes be insisted on except for good cause, such as for sickness, and that no credit be given under any circumstances for less than 80 per cent of attendance on each course.

6. That advanced standing be granted only to students of other acceptable colleges and that in granting advanced standing there shall be no discrimination against the college's full-course students.

7. Careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as interpreted by modern demands.

8. A good system of records showing conveniently the credentials, attendance, grades, and accounts of the students.

9. A fully-graded course covering four years of at least 32 weeks each, exclusive of holidays, and at least 30 hours a week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

10. Two years of work consisting largely of laboratory work in thoroly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics, and clinical diagnosis.

11. Two years of clinical work largely in hospitals and dispensaries, with thoro courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene, and medical jurisprudence.

12. As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an interne in an approved hospital.

13. At least six expert, thoroly trained professors in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be in the training

of the medical students. There should also be a sufficient number of assistants in each department to look after the less important details. A suggested assignment of these instructors is (a) professor of anatomy, (b) professor of physiology, (c) professor of pathology and bacteriology, and (d) professor of physiologic chemistry and pharmacology. The other two might be associate or assistant professors and assigned one to the laboratory course in histology and embryology under the professor of anatomy and the other to the department of pathology and bacteriology.

14. The medical teaching should be of at least the same degree of excellence as obtains in our recognized liberal art colleges and technical schools.

15. The faculty should be thoroly organized and, with a few allowable exceptions, should be made up of graduates of institutions recognized as medical colleges and should have had a training in all departments of medicine. They should be appointed because of their ability as teachers and not because they happen to be on the attending staff of some hospital or for other like reasons.

16. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. The hospital should have a sufficiently large number of patients to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties.

17. The college should have easily accessible hospital facilities of not less than 200 patients which can be utilized for clinical teaching (for senior classes of 100 students or less), these patients to represent in fair proportion all departments of medicine.

18. The college should have additional hospital facilities for children's diseases, contagious diseases, and nervous and mental diseases.

19. Facilities for at least six maternity cases for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

20. Facilities for at least thirty autopsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students or less).

21. A dispensary, or out-patient department, under the control of the college, the attendance to be a daily average of 60 cases (for senior classes of 100 students or less), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used.

22. The college should have a working medical library to include the more modern text and reference books with the Index Medicus and thirty or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible

to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

23. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled, and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post-mortems there also be kept the record of the post-mortem, the clinical history of the patient on whom the autopsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

24. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thoro course for each senior in operative surgery on the cadaver.

25. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray, and other apparatus now so generally used in medical teaching.

26. The college should show evidences of thoro organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are being intelligently used in the training of medical students.

27. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogs or announcements.

CRITERIA FOR JUDGING SCHOOLS

Having in mind the essential elements involved in a thoro pre-medical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made thru lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose a college well equipped for teaching the fundamental sciences of biology, physics, and chemistry. In general, these are best taught in the stronger universities, such as those in the Association of American Universities.*

*This association includes the following universities: California, Catholic University of America, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Kansas, Leland Stanford, Jr., Michigan, Minnesota, Missouri, Nebraska, Pennsylvania, Princeton, Virginia, Wisconsin, and Yale.

In choosing a school for the medical curriculum proper, the problem is much more complicated. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?
2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?
3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library?
4. What is the character of the faculty? Are the teachers full-time salaried experts, or are they allowed to engage in the private practice of medicine? To what extent are they contributing to the advancement of medical science by original research?
5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?
6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc.?
7. Are the classes large, or are they small, allowing individual attention to each student?
8. What are the tuition fees and expenses?
9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various state licensing boards?

WHERE TO FIND INFORMATION

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogs of the various schools, but in many cases it must be confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau of Education, Department of the Interior, Washington, D. C. A reprint of this chapter is obtainable and is useful for reference.

Similar information, which is more complete in some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago).

The Council on Medical Education of the A. M. A. has made a thoro personal inspection and investigation of the various medical schools of the country, and has rated them in four classes: Class "A plus" colleges are those which are acceptable (24 colleges); class "A," those which need improvement in certain respects, but which are otherwise acceptable (42 colleges); class "B," those which, under their present organization, might be made acceptable by general improvements (24 colleges); and class "C," those which require a complete reorganization to make them acceptable (29 colleges).

Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.

The School of Medicine

In the foregoing pages the profession of medicine has been considered with especial reference to the principles underlying sound medical education, and the facilities necessary according to modern standards. Attention is now called to the School of Medicine of the University of Missouri, and to the advantages which it offers in providing facilities for obtaining at low cost both premedical and medical education measuring up to the high standards previously outlined.

Aim of the School of Medicine:

The aim of the School of Medicine is threefold:

(1) To give a thoro laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.

(2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the state.

HISTORICAL STATEMENT

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued; but was reestablished in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities available at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general state hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of reestablishment in 1872. A few years later laboratory work in pathol-

ogy and in physiology was added, and in 1891 the laboratories of histology and bacteriology were established. The School of Medicine of the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

Organization and Support:

As has been previously emphasized, the nature of the organization and support of a medical school is a matter of primary importance. The medical school of the University of Missouri is an integral part of the University, whose total income from all sources is about \$1,125,000 a year. The medical school is supported from this income, about \$50,000 being expended annually for this purpose (including hospital), while less than \$3,000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The course of study is carefully planned, modern laboratory methods being used thruout. The high standards of admission result in small classes (not more than twenty-five in each) prepared for the highest type of work. Women are admitted on equal terms with men.

HIGH STANDING OF THE SCHOOL OF MEDICINE

The School of Medicine of the University is rated in the highest class by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation published in 1910, the facilities of the School of Medicine of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well-equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideals. A university hospital of forty-five beds gives the department the advantage of clinical material and connection, even tho the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

Low Cost of Medical Education:

Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have been collected from both premedical and medical students of the University

of Missouri, showing the total expenses for the school year. The approximate average cost per student is indicated for each item.

Average cost for	Premedical (1st and 2d yrs. of combined course)	Medical (3rd and 4th yrs. of combined course)
Board.....	\$112	\$112
Room.....	48	48
Library, hospital and incidental fees..	24	24
Laboratory fees.....	30	40
Books and stationery.....	20	30
Clothing.....	50	50
Incidentals.....	65	75
Average total.....	\$349	\$379

Tuition at the University of Missouri is free, but students who are nonresidents of Missouri pay a tuition fee of \$10 a semester.

From the above table it is evident that the average total cost for the school year is about \$349 in the premedical, and \$379 in the medical years. The average is, of course, considerably higher than necessary, due to those who are able to afford many luxuries. The minimum figures, however, show that by economy the cost may easily be reduced \$100 below the total average given above. Thus the total cost for the four years is less than for two years of medicine alone in many of the prominent schools.

Opportunity for Self-Support:

In the case of students working their way thru (about half of the class) the net cost is even reduced considerably lower. It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to pay his entire way thru the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau, Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and The Commons for about \$3.25 a week, but applications for rooms must be filed early, as the space is limited.

Rollins Scholarship:

The Rollins Scholarship in the School of Medicine is a prize of \$50 which is awarded by vote of the medical faculty to that member

of the first year class (third year of combined curriculum) who has made the best record during the course.

Medical Society:

For many years the medical students have regularly conducted a medical society which has been very successful. At the monthly meetings the program consists of papers by students, supplemented by talks from faculty members or other visiting guests. Premedical students are eligible to membership.

Register of Students:

At commencement in June, 1915, the Medical Certificate was awarded to fifteen students. During the session 1914-15 there were enrolled 39 in the first year class, 26 in the second year class, 17 special students of which 14 were in the School for Nurses, a total of 82. The names of these students are published in the general catalog of the University.

BUILDINGS AND EQUIPMENT

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with other divisions of the University. Of the various buildings on the campus, a group of three—the Medical Laboratory Building, the Parker Memorial Hospital and the animal house—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings are also utilized in part for medical instruction.

Medical Laboratory Building:

The Medical Laboratory Building is a stone and brick building, 48x150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of anatomy and histology occupies a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models; an advanced anatomical laboratory, specially equipped for the study of topographic anatomy, including serial sections thru formalin hardened bodies; histological laboratory, with preparation and store-room in connection, thoroly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts; museum and study room; with adjacent preparation room, containing a large number of models and specimens in human anatomy; research laboratory; embalming and

storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: a large laboratory with adjoining store-room, equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; a blood-pressure room, particularly for mammalian experiments; a research laboratory, thoroly equipped, for advanced students in physiology and pharmacology; research laboratory in physiological chemistry; large students' laboratory with adjacent store-room, thoroly equipped for work in physiological chemistry; animal room; mechanic's shop; lecture room (in common with pathology).

The departments of pathology and bacteriology, occupy a large students' laboratory for bacteriology and pathological histology, well-equipped with lockers, microscopes with oil immersion lenses; a preparation room for bacteriology, with sterilizers, incubators; private laboratory, well-equipped for research work in pathology; room for autopsies and work in gross pathology, including a collection of pathological specimens in glass cases; an animal room and storeroom; office and research laboratory for bacteriology; lecture room (in common with physiology); laboratory room for work of preventive medicine.

Medical Library:

No medical school of today can be considered well equipped without a good library. The medical library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains 5,752 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and 100 leading medical periodicals of the world are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalog of the books and periodicals in the medical library will be furnished free by the University Librarian upon request. The journals and books in the library will be lent free to any reputable physician of the state. The borrower is required to pay the transportation charges both ways.

Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or Dean of the Faculty of Medicine, University of Missouri, Columbia, Mo.

Animal House:

The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated, and ventilated. This

building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology, and bacteriology.

Other Buildings:

In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined curriculum in medicine and in arts and science. The gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

ENTRANCE REQUIREMENTS

The requirements for admission to the School of Medicine include:

(1) Fifteen units of secondary school work, including at least 3 units of English, 1 of algebra, 1 of plane geometry, 2 of Latin, the remaining being elective. For further details, see general catalog of the University.

(2) Two years (60 hours' credit) of college work, including French or German, 8 hours; general zoology, 8 hours; general physics, 8 hours; inorganic chemistry, 8 hours; general bacteriology, 3 hours; elective, 25 hours.

All correspondence regarding admission should be addressed to the Dean of the University Faculty, University of Missouri, Columbia, Missouri.

Special Students:

Students may be admitted to the School of Medicine without passing the regular examinations required for entrance, under the following conditions: (1) They must be at least 21 years old; (2) they must show good reason for not taking a regular course; (3) they must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory, their connection with the University shall be severed by the dean of the school. They are not considered as candidates for the degree, and cannot be registered as regular students, unless they subsequently fulfill the regular entrance requirements. All correspondence regarding admission should be addressed to the Dean of the University Faculty, Columbia, Missouri.

Advanced Standing:

Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the dean of the School of Medicine.

COMBINED WORK IN ARTS AND MEDICINE

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirements for the combined curriculum outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the two years' work in medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of premedical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the dean of the faculty of medicine.

**Curriculum Leading to the Degrees of A. B. and M. D. Recommended by
the Medical Faculty:**

FIRST YEAR	First Semester Hours Credit	Second Semester Hours Credit
English.....	3	3
*German 1a and 2b, or French 1a and 2b.....	5	5
Physics 1a and 5b.....	5	3
*Logic 1b, or Mathematics 8b.....	3	0
*History 1b, or Greek 1b.....	0	5
Physical training, or Military Science.....	1	1
	17	17
SECOND YEAR		
*Zoology 1a and 4b.....	5	5
*Chemistry 4a and 25b.....	5	5
General Bacteriology 3b.....	0	3
*Greek 1a, or History 1a.....	5	0
Elective.....	1	3
	16	16
THIRD YEAR		
Same as first year of regular medical curriculum, with electives replacing embryology and organic chemistry.		
FOURTH YEAR		
Same as second year of regular medical curriculum.		

The subjects marked with * fulfill the underclassmen requirements for the College of Arts and Science. When a student presents acceptable advanced credits taking the place of such subjects, electives may be substituted. The subjects required of all pre-medical students are:

German or French.....	8 hours
Physics.....	8 hours
Zoology.....	8 hours
Chemistry.....	8 hours
General Bacteriology.....	3 hours

See *Entrance Requirements*, page 19.

Pre-medical students should keep in mind the desirability of observing certain sequences when planning the work of the first two years of the combined curriculum. The proper sequences are the following:

The Physical Group.

- (1) Elementary Physics, 1a or b.
- (2) Elementary Physics, 4b.

The Chemical Group.

- (1) Elementary Inorganic Chemistry, 1b.
- (2) Analytical Chemistry, 25a or b.

- (3) Organic Chemistry, 111.
 (4) Physiological Chemistry, 101a, offered the first semester of the senior medical year.

The Biological Group.

- (1) General Zoology, 1a or b.
 (2) Comparative Anatomy of Vertebrates, 4b.
 (3) Embryology of Vertebrates, 100a.
 (4) Gross Anatomy, 102a.
 (5) Normal Histology, 103b.
 (6) Neurology, 104b.
 (7) Experimental Physiology, 103a, offered the first semester of the senior medical year.

The Bacteriological-Pathological Group.

- (1) General Bacteriology 3a or 3b.
 (2) Medical Bacteriology 102b, offered the second semester of the junior medical year.

MEDICAL CURRICULUM

FIRST YEAR	Semester credits		Total hours		
	1st Sem.	2nd Sem.	Lecture	Laboratory	Total
Organic chemistry.....	3	3	68	85	153
Embryology.....	3	..	17	68	85
Gross Anatomy.....	10	..	34	348	382
Histology.....	..	6	17	170	187
Neurology.....	..	3	17	68	85
Bacteriology.....	..	4	34	85	119
Totals.....	16	16	187	824	1011
SECOND YEAR					
Physiological chemistry.....	4	..	34	85	119
Physiology, 102a.....	2	..	17	42	59
Physiology, 103a.....	6	..	51	127	178
Pharmacology.....	..	4	34	85	119
Pathology.....	3	5	51	238	289
Hygiene.....	..	2	34	..	34
Physical diagnosis.....	..	3	34	42	76
Minor surgery.....	..	2	17	42	59
Totals.....	15	16	272	661	933

The work above outlined in the regular medical curriculum provides a thoro training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges, of which this school is a member, and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

STATEMENT OF COURSES

Courses preceded by a number with the letter *a* attached, thus, 100a, are given the first semester only. Those preceded by a number with the letter *b* attached, thus, 100b, are given the second semester only. Those preceded merely by a number are continuous courses and are given both semesters. The number of hours' credit given for a course for each semester is indicated by the Arabic numerals following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

Schedule of days, hours, and rooms follows the description of courses. Where no schedule is given the hours are to be arranged later by the teacher. All classes in the School of Medicine meet in the Medical Building unless otherwise indicated.

ANATOMY

102a. **Gross Anatomy.** The study of the gross anatomy of the human body, excepting the central nervous system and the sense organs. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. 11 W in 37; 8-12 M F, 8-10 T W Th, 1-4 M W F in 33. (10) Mr. CLARK; Mr. WHEELDON.

103b. **Normal Histology.** The study of microscopic anatomy of the tissues and organs of the human body, and also instruction and practice in the making of histological sections. 10-12 D in 36, 3 M in 37. (6) Mr. JOHNSON.

104b. **Neurology.** A study of the gross and microscopic anatomy of the central nervous system and sense organs. 8-10 M W in 36, 9 F in 37. (3) Mr. JOHNSON; Mr. WHEELDON.

105a. **Topographic Anatomy.** Elective. Open only to students who have completed the courses in gross anatomy, histology and neurology. 1-4 T Th in 34. (2) Mr. JOHNSON.

206. **Advanced Anatomy.** Elective. Prerequisites, courses 102a, 103b, or 104b laboratory. Advanced work will be given in any of the special fields of anatomy, the amount and character of which will be varied

to suit individual needs. Mr. CLARK; Mr. JOHNSON.

207. **Research.** Problems for original investigation will be assigned in anatomy, histology, or embryology. A reading knowledge of French and German is required. Hours to be arranged. Mr. CLARK; Mr. JOHNSON.

BACTERIOLOGY AND PREVENTIVE MEDICINE.

102b. **Medical Bacteriology.** Prerequisite, botany, course 3a or b. Subjects studied include relation of bacteria to disease; the fundamental principles of immunity, serum diagnosis, serum and vaccine therapy. The different diseases are discussed, and the micro-organisms causing them are studied in the laboratory, with animal inoculations and demonstrations. The course includes also the study of the best known diseases caused by protozoa. 8 F in 22, 1-4 T Th in 23. (4) Mr. RAVENEL; Mr. DUPRAY.

103b. **General Hygiene.** Prerequisite, course 102b. Deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health. 3 T Th in 22. (2) Mr. RAVENEL.

201. **Advanced Bacteriology.** Elective. Prerequisite, course 102b. Amount and character of work will depend on needs and qualifications of student. The manufacture of autogenous vaccines, the determination of the opsonic index, making and use of various sera, study of milk and water are among the subjects suggested for study. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

202. **Research.** Elective. Prerequisite, course 102b. Students who are sufficiently prepared will be given problems requiring original investigation in the fields of bacteriology and public health. A reading knowledge of French and German recommended. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

203. **Conduct of Public Health Laboratories.** Elective. Prerequisites, course 102b and 201. Designed for those who expect to take up such work as a profession or for teaching purposes. Graduates in medicine preferred. The collection and shipment of various specimens, their examination, milk, and water problems etc., will be discussed and the practical work carried out in the laboratory. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

CHEMISTRY

111. **Organic Chemistry.** General survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates. Student prepares in the laboratory representatives of the various classes of compounds and

studies their reactions. 1-4 T Th in 3 and 12 Chem. Building. (3) Mr. CALVERT.

For other courses in chemistry, which may be elected, see announcement of courses in chemistry in the annual catalog.

CLINICAL MEDICINE AND SURGERY

101b. **Physical Diagnosis.** An introductory course in the methods of physical diagnosis with drill in the technic upon normal and diseased subjects. 1-4 M W F. (3) Mr. MOSS.

102b. **Minor Surgery.** A systematic study of the elementary principles of surgery, including operative and aseptic technic and bandaging. 1-4 M W F. (2) Mr. MYER.

PATHOLOGY

101. **Pathology and Pathological Anatomy.** A laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. Each student is supplied with about 300 sections which become his property. The corresponding gross material is afforded by a well-equipped museum and by autopsies. *First semester:* 1-4 T Th in 23; *Second semester:* 8-12 M W, 9-12 F in 23. (8) Mr. DOLLEY; Mr. MARTIN.

201a or b. **Advanced Pathology.** Elective. The amount and character of the work will depend upon the needs and qualifications of the student. In connection, opportunity will be afforded for practical experience in the handling of all kinds of morbid material. Hours to be arranged. Mr. DOLLEY; Mr. MARTIN.

202. **Research.** Elective. Opportunity is afforded to students sufficiently prepared for original investigation of unsolved problems in the fields of pathology and pathological physiology. A reading knowledge of German is required and one of French is recommended. A seminary is held once a week. Mr. DOLLEY.

203. **Normal and Abnormal Neuro-cytology.** Elective. The application of the general principles and theories of biology to the nerve cell in health and disease. The work will necessarily consist largely of original investigation and will be adjusted to the training of the student. Hours to be arranged. Mr. DOLLEY.

204a. **Pathological Physiology.** Elective. An experimental course. (2) Mr. DOLLEY; Mr. MARTIN.

PHYSIOLOGY AND PHARMACOLOGY

101a. **General Physiological Chemistry.** Prerequisite, organic chemistry, course 111. Physiological chemistry of the carbohydrates, fats, and proteins; of the cell and special tissues; of the blood; of

respiration; of secretions and of excretions; a quantitative study of the urine in relation to diet. 9 T Th in 22, 1-4 M W in 6. (4) Mr. GULICK; Mr. CARTER.

102a. **Physiology of Secretion, Alimentary Mechanisms, and Reproduction.** Physiology of secretory processes, digestion, absorption, excretion, respiration, metabolism and energy exchange, heat regulation, and production. 11 T Th in 22, 1-4 F in 26. (2) Mr. KRUSE; Mr. SUMMERS.

103a. **Experimental Physiology.** Physiology of the circulation, respiration, muscle and nerve; nervous system, and sense organs. 8 M W F in 22, 9-12 M W F in 26. (6) Mr. GREENE; Mr. KRUSE.

105b. **Experimental Pharmacology.** Physiological action of drugs. The experimental method is used thruout, the demonstrations being made on man and lower animals. 8 T Th in 22, 9-12 T Th in 26. (4) Mr. GREENE; Mr. KRUSE.

210. **Advanced Physiology.** Elective. Advanced courses in physiology, pharmacology and physiological chemistry. Individual problems will be assigned to students of sufficient preparation. Mr. GREENE; Mr. GULICK.

211. **Investigation.** Elective. Opportunity is offered for research in questions of current interest in either of the fields represented. Mr. GREENE; Mr. GULICK.

ZOOLOGY

100a. **Embryology of Vertebrates.** Foundation of vertebrate embryology. Successive stages in the development of the frog, the chick, and the pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. 3 W, 10-12 T Th in 112 Biology Bldg. (3) Mr. LEFEVRE; Mr. TANNREUTHER.

For comparative anatomy, cytology, and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

ELECTIVES

Courses in botany, psychology, zoology, may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science in the annual catalog. With the consent of the dean, medical students may take any accessory work offered in other departments of the University.

MEDICAL CERTIFICATE

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following

commencement. This certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted to the fundamental medical sciences. For this work, thoroly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school.

GRADUATE WORK IN MEDICAL SCIENCES

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thoro work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalog or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest importance. As substantial evidence of the activity of the medical school of the University of Missouri along this line, the following list of publications from the various laboratories for the present year may be of interest.

PUBLICATIONS 1914-15

1. From the Department of Anatomy:

Clark, Eliot R. and Eleanor L., "*On the Early Pulsations of the Posterior Lymph Hearts in the Chick Embryos: Their Relation to*

the Body Movements." Journal of Experimental Zoology, Vol. 17, No. 3, 1914.

Clark, Eliot R., "*An Anomaly of the Thoracic Duct with a Bearing on the Embryology of the Lymphatic System.*" Contributions to Embryology, No. 3, 1915, Carnegie Institution of Washington.

Clark, Eliot R., "*Studies of the Growth of Blood Vessels, by Observations of Living Tadpoles and by Experiments on Chick Embryos.*" Proceedings of American Association of Anatomists. Anatomical Record, Vol. 9, No. 1, 1915.

Clark, Eliot R., Revision of Chapter on "*Lymphatics.*" Morris' Anatomy, 1914.

Johnson, Franklin P., "*A Case of Atresia ani in a Human Embryo of 26 mm.*" Anatomical Record, Vol. 8, 1914. "*A Human Embryo of Twenty-two Segments.*" Ready for Publication.

Wheeldon, Thomas F., "*Demonstration of Models of the Heart of a 20mm Pig.*" Annual Meeting American Association Anatomists, Dec. 1914.

Clark, Eleanor Linton, "*Observations of the Lymph-flow and the Associated Morphological Changes in the Early Superficial Lymphatics of Chick Embryos.*" Proceedings of American Association of Anatomists. Anatomical Record, Vol. 9, No. 1, 1915.

2. From the Department of Pathology:

Dolley, D. H., "*On a Law of Species Identity of the Nucleus-Plasma Norm for Nerve Cell Bodies of Corresponding Type.*" Jour. Comp. Neurol., Vol. 24, 1914, 445.

Kurtz, D. W. B., Jr., "*The Morphological Identity of the Remote Nerve Cell Changes in Surgical Shock with those of Natural Senility.*" (In press.)

3. From the Department of Physiology, Physiological Chemistry, and Pharmacology.

Greene, C. W. and Carl H., "*The Skeletal Musculature of the King Salmon, *Oncorhynchus tshawytscha.**" Bulletin U. S. Bureau Fisheries, Vol. 133, 1914.

Greene, C. W., "*The Storage of Fat in the Muscular Tissue of the King Salmon and its Resorption During the Fast of the Spawning Migration.*" Bulletin U. S. Bureau of Fisheries, Vol. 33, 1914.

Greene, C. W., "*The Fat Absorbing Function of the Alimentary Tract of the King Salmon, *Oncorhynchus tshawytscha.**" Bulletin U. S. Bureau of Fisheries, Vol. 33, 1914.

Greene, C. W., "*Kirk's Handbook of Physiology,*" 780 pages, 509 figures, 8th American Edition, William Wood and Co., New York.

Greene, C. W., "*Handbook of Pharmacology,*" 396 pages, 70 illustrations, William Wood and Co., New York.

Gulick, A., "A Simplification of the Determination of Total Nitrogen by Colorimetry." The Journal of Biological Chemistry, Vol. 18, 1914.

4. From the Department of Preventive Medicine and Bacteriology:

Mitchell, O. W. H., "Water—The Prevention of Its Pollution." University of Missouri Bulletin, Medical Series, No. 7.

Ravenel, Mazyck P., "The House Fly." University of Missouri Bulletin, Extension Series, No. 11.

Ravenel, Mazyck P., "The Education of Health Officers." Journal of the American Medical Association, Nov. 7, 1914.

Ravenel, Mazyck P., "Preventive Medicine—Its Accomplishments and its Aim." University of Missouri Bulletin, Medical Series, No. 8.

Ravenel, Mazyck P., "An Unusual Result Following Anthrax Vaccination and a Lesson." American Veterinary Review, March 1915.

5. From the Department of Clinical Medicine and Surgery:

Myer, Max W., "Autoplastic and Homeoplastic Transplantation of Kidney Tissue." Archiv. for Entwicklungsmechanik des Organismen, B. XXXVII, H. I.

POSTGRADUATE COURSE FOR PHYSICIANS

During the month of May, in each year, a special postgraduate course in clinical pathology and bacteriology is offered. This course is practical in character, and designed especially for the needs of the practitioner. A special circular of information will be sent upon request.

THE PARKER MEMORIAL HOSPITAL

GUY L. NOYES, M. D.....*Superintendent*

FANNIE McLEOD.....*Principal of the School for Nurses*

AUGUSTA C. HARDACRE, R. N...*Head Nurse in the Student Health Service*

By the gift of Wm. L. Parker, the University has an excellent hospital, which has now been in operation for 14 years. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, conveniently located on high ground at the west side of the campus.

A surgical amphitheatre adjoining the hospital has been provided by the gift of the late Adolphus Busch of St. Louis. It is supplied with accessory rooms for sterilizing, anæsthetizing, etc.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the hospital.

Patients are admitted to the hospital at any hour of the day. Those living outside of Columbia should make application in advance for admission, preferably thru their family physician, who should send with the application for admission a brief statement concerning the nature of the patient's illness.

Application for admission should be addressed to the Superintendent of the Hospital.

Lectures and demonstrations are given from time to time in the hospital for the benefit of the students of medicine and the pupil nurses.

Rates and Terms:

The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing:

General medical and surgical cases: Single rooms, \$15 a week and upward; wards, \$10 a week and upward.

Obstetrical cases: \$25 a week.

Special nursing may be had at the regular rates for such service.

Extra fees will be charged for medicines, dressings, and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.

Physicians who hold consultation with or give treatment to patients not resident in the hospital, and require therefore the attendance of a nurse or the use of the equipment of the hospital, must pay a minimum fee of \$1 for such privilege.

Students of the University of Missouri, regularly enrolled as such are (with certain exceptions) given free hospital care and treatment.

THE SCHOOL FOR NURSES

The school for Nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the hospital and laboratories of the University. Nurses have access to the libraries and museums of the University at all times.

The course of instruction is thoro and familiarizes the pupils with the theory and practice of nursing in all its details. The course covers a period of three years of twelve months each. The first three months of residence in the school are probationary, and at the expiration of that time the pupil is regularly enrolled as a member of the school, provided she is found to be acceptable.

A special announcement giving detailed information concerning the School for Nurses will be sent in response to requests addressed to the Principal of the School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.

FACULTY OF THE SCHOOL OF MEDICINE

- ALBERT ROSS HILL, A. B., Ph. D., LL. D.,
President of the University.
- GUY LINCOLN NOYES, M. D.
*Professor in the Department of Clinical Medicine and Surgery,
Superintendent of Parker Memorial Hospital, Acting Dean of
the Faculty.*
- SIDNEY CALVERT, B. S., A. M.,
Professor of Organic Chemistry.
- ELIOT ROUND CLARK, A. B., M. D.,
Professor of Anatomy.
- DAVID HOUGH DOLLEY, A. B., A. M., M. D.,
Professor of Pathology.
- CHARLES WILSON GREENE, A. B., A. M., Ph. D.,
Professor of Physiology.
- GEORGE LEFEVRE, A. B., Ph. D.,
Professor of Zoology.
- WOODSON MOSS, M. D., LL. D.,
Professor in the Department of Clinical Medicine and Surgery.
- MAX WASHINGTON MYER, A. B., M. D.,
Professor in the Department of Clinical Medicine and Surgery.
- MAZYCK PORCHER RAVENEL, M. D.,
*Professor of Medical Bacteriology and Preventive Medicine, Direc-
tor of the Public Health Laboratory.*
- FRANKLIN PARADISE JOHNSON, A. B., A. M., Ph. D.,
Associate Professor of Anatomy.
- ADDISON GULICK, A. B., A. M., Ph. D.,
Assistant Professor of Physiology.
- MARTIN DUPRAY, B. S., M. S.,
Instructor in Bacteriology and Preventive Medicine.
- THEOPHILE KARL THEODORE KRUSE, A. B., A. M.,
Instructor in Physiology.
- FLOYD AUGUST MARTIN, A. B., A. M., M. D.,
Instructor in Pathology.
- GEORGE WASHINGTON TANNREUTHER, A. B., A. M., Ph. D.,
Instructor in Zoology.

EVERETTE ERWIN BUTLER, A. B.,

Assistant in Pathology, Medical Bacteriology and Preventive Medicine.

JOHN MEYNARD CARTER, A. B.,

Assistant in Physiology.

WILLIAM SHAKESPEARE SUMMERS, A. B.,

Assistant in Physiology.

THOMAS FOSTER WHEELDON, A. B.,

Assistant in Anatomy.

FANNIE MCLEOD,

Principal of the School for Nurses.

AUGUSTA C. HARDACRE, R. N.,

Head Nurse in the Student Health Service.

THE UNIVERSITY OF MISSOURI

The University of Missouri stands at the head of the educational systems of the state. It is one of the oldest institutions in the West.

The University was founded at Columbia in 1839 and instruction in academic work was begun in 1841. Few schools in the United States have made the advancement that Missouri has made during the last fifteen years. In 1897 the enrollment was only 805 and in 1914 it was more than 3,800. The increased enrollment is but indicative of the development of the school in educational efficiency.

The work of the University is now carried on in the following schools and colleges:

- College of Arts and Science
- College of Agriculture
- School of Education
- School of Law
- School of Medicine
- School of Engineering
- School of Mines and Metallurgy
- School of Journalism
- School of Commerce
- Graduate School
- Extension Division

All of these divisions are at Columbia with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Agricultural Experiment Station, the Engineering Experiment Station, and the Missouri State Military School.

The fundamental aim of the University is the development of the highest and most efficient type of citizen. The school is supported by the state and endeavors to return to the state practical service. Of later years the University has endeavored to go beyond the campus in its influence on the welfare of the people of Missouri. Extension courses, experiment farms, and free literature on practical subjects are some of the methods adopted. The various extension courses have proven highly satisfactory and have rendered real service to people of the state who previously benefited only indirectly from the University.

The University is located at Columbia, a town situated half way between St. Louis and Kansas City near the center of the state. It is reached by the Wabash, and the Missouri, Kansas and Texas Railways. Columbia is a progressive and prosperous town having

doubled its population in the last few years. It has nearly twenty miles of paved streets.

The University grounds cover more than 800 acres. The main divisions are in the west campus, the east campus, the athletic fields, and the University farm.

The following University buildings are located at Columbia: Academic Hall; Laws Observatory; separate buildings for chemistry, physics, biology, commerce and geology, engineering, manual arts, law; two power houses; Library Building; Medical Laboratory Building; Parker Memorial Hospital; Agricultural Building; Horticultural Building; Schweitzer Hall for agricultural chemistry; green houses; Live Stock Judging, Poultry, Dairy, Farm Machinery, and Veterinary Buildings; the University farm barns and buildings; Switzler Hall for the School of Journalism; Gordon Hotel Building for home economics; Benton and Lathrop Halls, dormitories for men; Read Hall and Sampson Hall, dormitories for women; Rothwell Gymnasium; the houses for the President of the University and the Dean of the faculty of Agriculture; the High School and the Elementary School buildings, used for practice schools in the School of Education. The new library building will be occupied in the course of the summer of 1915.

FOR FURTHER INFORMATION

For further information concerning the School of Medicine, address
DEAN, FACULTY OF MEDICINE,
UNIVERSITY OF MISSOURI,
COLUMBIA, MISSOURI.

Full information regarding the University is given in the catalog, which will be sent on request without charge. For this or special bulletins of the College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, School of Journalism, School of Commerce, Extension Division and the Graduate School, write to

DEAN OF THE UNIVERSITY FACULTY,
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THE
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