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AN OUTLINE OF MEDICAL HISTORY.

THIRD LECTURE.

BY JOSEPH GRINDON, M. D.

We have seen that during the thirteenth century, and especially toward its close, there began to be apparent a ferment in men's minds. These uneasy movings and stretchings of the sleeping European giant expressed themselves in almost every branch of human endeavor. Time does not permit an analysis of the various factors producing these phenomena, but it is certain that the crusades, as pointed out in the last lecture, were most important as a determining factor. They widened men's minds, and therefore the sphere of their activities, and contributed to the liberation of the commonalty by bringing about the downfall of feudalism. These great military expeditions finally came to an end in 1270.

As the harbinger of the dawn there stands forth the English Franciscan monk and Doctor Mirabilis, Roger Bacon (1214 to 1292 or '98). His acquaintance with Latin, Greek, Hebrew and Arabic allowed him to thoroughly familiarize himself with the learning of the ancients, while with marvelous fertility and independence he struck out along new paths in chemistry, physics, mathematics, mechanics and medicine. He was acquainted with lenses, called attention to their usefulness for old people, and understood their applications in the telescope and simple microscope. (Glasses were first ground for optical purposes by Salvino degli Armati in 1285.) Bacon must have understood the art of setting forth his knowledge so as to interest his auditors, for the latter subscribed the sum of two thousand

pounds toward defraying the cost of his experiments; an outlay which yielded large returns in the way of added knowledge.

We may here mention another Englishman, not that he belonged to the same period, for indeed he flourished 250 years later, nor that he conformed to a similar type, for his services to science were of a totally different sort, but because he also, in his way, made straight the paths for the great revival which he almost lived to see. Thomas Linacre (1461-1524) rendered English medicine an immortal service by bringing about a resurrection of the Greek medical classics. His position as physician in ordinary successively to Henry VII and Henry VIII, gave him great influence, which he utilized to secure the founding of chairs of Greek medicine at Oxford and Cambridge. It was likewise by his efforts that the College of Physicians was created in London in 1518. He translated the works of Hippocrates and in every way earned the place which he holds unto this day as the type and highest exemplar of the erudite English physician.

It would be difficult for us to agree upon a time as that of the beginning of the Renaissance, for the reason that it was not so much a re-birth as rather to be compared to the development of a child into a man. When we say that a person was born upon a certain day, we give expression to a physical fact, but when we say that he became a man upon the same day of the same month twenty-one years later, we merely adopt a convention which corresponds to no real phenomenon. So with the Renaissance, forces which had long been active, at about that time began to produce results, at first widely separated in time and place, but rapidly growing so various, so multiplied and so striking as to command the attention of the historian. This rapid efflorescence may seem to the careless observer to show the human intellect suddenly arising armed *cap-à-pie*, like Pallas from the brain of Jupiter. But to hold to such a conception would be to close one's eyes to the truth

and to fail of the splendid lessons which those days hold in store for us. Antecedent causes it must have had. The crusades we have already mentioned. The discovery of printing, by making the thought of one the property of all, was doubtless the most potent of the contributory causes. The discovery of America, on the one hand, and of the new route to the East, on the other, together with the startling new information as to the constitution of the universe, revealed by the genius of Galileo and Copernicus, undoubtedly had a wonderful influence in broadening men's minds and thus making them more receptive to the influx of truth from other directions. Special pleaders have sought to show the cause of the liberation of the human intellect in the religious revolution of the sixteenth century, although the obvious facts are that it followed and did not precede the great intellectual victories of this period, and that it never penetrated to parts of Europe where some of the most brilliant of these were won. No, the real cause lies deeper than all this in the innate love of the mind for truth. It will seek it whenever it can kindle sufficient light to discern the next step in its darksome path. Europe had paid the price of a thousand years of barbarism and was ready to receive its reward, which did not delay. Every spring do we witness a similar seeming miracle, no more natural than that we are now considering, when the plant, pushing through the cold and apparently unyielding earth, uplifts a hundred imploring hands in a silent but eloquent prayer for more warmth and light, and finding these, anon shows to our delighted vision the brilliant flower which has from the first been potentially present in the seed, which, seemingly dead, was really replete with life. It is this fact of the turning of the mind to truth as the sunflower to the sun, or the lode-stone to the northern star, which is the everlasting answer of all true philosophy to pessimism. But let us take up some of the events of this period in more detail.

Dante's Divine Comedy, commenced in the last year of the thirteenth century, was to slumbering Europe like that music by which princes were wont to be awakened. This marvelous production was preceded by and drew its inspiration from a great revival in the study of old Latin texts and rediscovery of forgotten classics.

Thirty years later, the Franciscan monk Schwarz, by his discovery of gunpowder, assured the physical supremacy of civilized man, and therefore his ultimate conquest of the world, helped to level ranks by making the simple trooper as valuable, as a military unit, as the knight, and at the same time created a new class of surgical conditions.

A wonderful development in a very different direction began to show itself at about the same time, for the next ensuing two hundred and fifty years contain within their space the greatest names of all time in the art of painting, while sculpture and architecture arrived at a perfection unknown since the classic period of Greece.

About the middle of the fifteenth century, three Germans, Guttenberg (whose real name was Gänzfleisch), Faust and Schaefer, devised a method of transferring characters to paper by means of wooden types.

Had the German people done nothing else to advance the cause of civilization and of science, they would forever have earned the gratitude of humanity by this discovery. More wonderful than wireless telegraphy, which only a few can decipher, here was a beneficent black magic by which one could simultaneously and in clear tones address thousands of his fellow-beings, no matter how distant, in the quietude of their studies, on the highway, or in the midst of a noisy crowd. True, man had long learned how to put living thought, that ethereal product of a laboratory whose processes still escape the analysis of its users, into concrete dead shapes, from which it could at any time be called into life by the touch of the magic

wand of knowledge. But now the conductivity of the medium was suddenly increased a thousand-fold, and the chances for the preservation of the ideas so communicated multiplied as often. A printed book is a storage battery, compared with which all modern inventions sink into insignificance; a depository of thought immunized but not sterilized; a small mass of matter which can liberate an unlimited amount of energy without decreasing its store; an honest medium which can materialize before our eyes the spirits of the departed; a telephone which transcends time as well as space, to which is connected a megaphone which intensifies the voice of the speaker, though he be dead, to ten million times its original volume. With the discovery of printing, knowledge, until then enclosed in a few reservoirs on bleak hillsides, was to be led by innumerable conduits into the fields and valleys, and into the homes of the people.

The invention of clocks at about this time was less important than that of the mariner's compass, which made possible Columbus' discovery of a new world, and five years later, Vasco da Gama's finding of the new route to the Orient. We of the twentieth century can scarce appreciate the astounding effect these great discoveries must have had upon men's minds. With the dictum of Copernicus in 1543 that this solid earth was not the center of the universe, but only a comparatively small sphere revolving with many others in space, human knowledge attained a height which later achievement can only excel as the tower raises itself above the mountain on which it rests.

That we should find the beginnings and for a time the finest fruits of the Renaissance in Italy, need awaken no surprise. It was there furnished with a ready soil. The lamp of civilization, although at times burning low, had here never been wholly extinguished. Probably three causes contributed to this result. First, the old memories of the empire, dimmed

and blurred though they were, were never wholly effaced, and although she that was mighty among nations, long sat solitary, *sordes ejus in pedibus ejus*, she never forgot that she had once been a queen. In the next place, Italy harbored the seat of government of an organization which held moral sway over Europe, the only organization which appealed to the higher part of man, and one which was the custodian and nurse of all the learning of the time. But besides these two powerful, positive factors, there was a third, negative, and perhaps more potent reason for the existence of a higher culture in the Latin peninsula, namely, that while the Barbarians remained or had become masters of France, Spain, Germany and England, they never completely possessed themselves of Italy. The southern part of the peninsula had remained long subject to the Eastern Empire. In the center, the Ostrogoths, after apparently firmly establishing themselves, had again been driven out by Belisarius. In the north, the Lombards had been conquered by the Franks, themselves, it is true, a barbarian people, but the latter, in order to preserve the fruits of their victory, had allied themselves with the ancient inhabitants of the soil. Thus it came about that feudalism, the direct descendant of the Barbarian system of petty chieftainships, in contradistinction to the Roman system of municipal supremacy which it had in the rest of Europe displaced, in Italy never maintained more than a struggling existence. And so, while everywhere else the inhabitants of the towns at best only strove for a few privileges against powerful lords who lived in remote castles, in Italy the cities themselves were the seat of power, and therefore of culture and learning. The great nobles lived within their walls, and far from being feared as enemies, were acclaimed as the first citizens. These places naturally became the centers of small republics, or rather oligarchies. Each being fairly secure from depredations by the others, they could turn their attention to that commerce to which the Mediter-

ranean on every hand invited them. Thus wealth was accumulated, favoring the cultivation of the arts and sciences, while the rest of Europe remained sunken in penury and ignorance, and ravaged by constant war.

While in France, as stated in our last lecture, surgery and internal medicine were for a long time widely separated, it was not so in Italy, partly perhaps because the revival of anatomy in the latter country began at an earlier date, and partly because of the presence of the school and hospital of Salerno, where many returning crusaders of all lands were treated for their wounds. Among Italians may be mentioned William of Salicet (1210-1275), and his pupil, Lanfranchi of Milan, perhaps better known by the Gallicized form, Lanfranc. Forced by the wars of the Guelphs and Ghibellines to leave his native land, he arrived in 1295 at Paris. The Chancellor of the University, Passavant, wished him to lecture there, which, however, he could not do, being married, whereas all professors were required to be clerics, and therefore, celibates. He accordingly accepted membership in the College de St. Côme, before mentioned, where he lectured and held clinics until his death twenty years later (1315). He distinguished between venous and arterial hemorrhage, and advised ligation in the latter, after all other means had failed.

Toward the end of the fifteenth century there lived in Florence a man, Antonio Benivieni, who by his book, rich in original observations, entitled *Concerning some of the secret and strange causes of Disease*, did much to advance the study of pathology. Malgaigne says of him, "He was the first who had the habit, felt the need, and set the useful example, which he transmitted to his successors, of searching in the cadaver, according to the title of his books, for the concealed causes of disease."

While, as we have seen, the earliest revival of anatomy occurred in Italy, where also surgery enjoyed a position of equal

honor with that of medicine; the sceptre in these sciences soon passed to France, where some of the greatest advances in these sciences were made at a very early date.

Among Frenchmen one must needs mention Dubois, better known as Sylvius. Born in 1478, he studied at Paris. He may be called the Father of Myology, for he it was who first recognized the arrangement of the muscles, and gave names to those that were still without a special designation. He discovered the valves of the large veins, a discovery wrongfully claimed two generations later by Fabricius, and studied the vessels by means of colored injections. He might almost, like Boerhaave of later date, be said to have occupied a settee in place of a chair, for he lectured at the University of Paris on Anatomy, Physiology, Pathology and Therapeutics. Unfortunately he allowed himself, like many others, to be misled on some important points by the authority of Galen. He died in 1555, aged seventy-seven years.

Another who did much, not only for anatomy and pathology, but for internal medicine as well, was Jean Fernel. Born in 1497, he from the earliest youth gave himself so unremittingly to study as to seriously endanger his health and alarm his friends. To their solicitous remonstrances, he answered, "longa quiescendi tempora fata dabunt" (destiny reserves for us repose enough). He verified the observations of Sylvius in regard to the valves in the veins. Although sometimes indulging in fanciful speculations, his notions on the principles underlying pathology were sound, as evidenced by the following language: "As for myself, I shall never believe that I have profound knowledge of any affection, if I do not positively know, just as if I could see it with my eyes, in what part of the human body is the disease, its primitive seat, what suspicions of organic lesions constitute it, whence it proceeded, whether it exists idiopathically or by sympathy, or whether it be kept up by some external cause." He probably did

more than anyone else except Brissot, the introducer of the practice, to further the custom of frequent and extensive bleeding, known indeed to the ancients, but which had long fallen into desuetude, and was afterward in such universal vogue, as many persons still living can testify.

Greater than these was André Vesal, or Vesalius. Born at Brussels in 1514, he studied at Louvain, manifesting from the first his interest in anatomy. Later, together with Servetus, the pupil of Sylvius at Paris, he applied himself so earnestly that at the age of twenty-two he was appointed Professor of Anatomy at Padua, then and long after one of the first seats of learning in Europe. Seven years later he published his great work, *De Humani Corporis Fabrica.*

He was greater than his predecessors because he dared to have the courage of his convictions and to boldly proclaim that Galen's statements in regard to human anatomy were often erroneous, for the good reason that they were for the most part based on observations made upon monkeys. (We may, in passing, remark, that Galen's very errors prove that he understood the underlying principles of comparative anatomy). Of course Vesalius met with the most furious opposition, which, however, did not prevent his being appointed first physician to the Emperor Charles V, the greatest monarch of his day. From that time the ease and pleasures of the Court seem to have weaned him from his anatomical pursuits, for he accomplished nothing further of note, and died at the comparatively early age of fifty.

Vesalius was the first, both in the *Fabrica* and in his other works, to illustrate his text with wood-cuts made from nature.

Among the anatomical errors of Galen exposed by Vesalius, were the existence of an intermaxillary bone in the adult, that the inferior maxilla consisted of two bones, the sternum of seven, and the sacrum and coccyx of three pieces; that the bones of the hand contained no marrow and that the humeri

and femora were strongly curved upon themselves, in explanation of which last two beliefs, Sylvius urged that the bones were differently constituted in Galen's time, and that the comparatively straight femur of later days was due to the practice of wearing tight trousers. Vesalius denied Galen's assumption of the existence of an imputrescible bone in the heart, that the inferior vena cava originated in the liver, and that the human placenta consisted of separate cotyledons. It is difficult to understand how the last named error could have so long persisted in the face of constant observation to the contrary. We need not be surprised that he continued to cling to certain ancient errors, as that the veins were the only blood-vessels, and that the arteries contained animal spirits. It was only toward the latter part of his life that he abandoned belief in the passage of blood through the interventricular septum by means of invisible pores.

The credit of the discovery of the impermeability of the cardiac septum belongs to his ill-starred fellow-pupil, Michael Servetus. Born in 1509, he was the first to describe the lesser or pulmonary circulation, which he seems to have very well understood. Unfortunately he did not limit himself to anatomy, but wrote extensively on theology, to his own undoing, for he was burned at the stake for heresy in 1553, at the instigation of John Calvin, who apparently thought himself entitled to a monopoly in the production of that commodity.

Servetus' statements in regard to the lesser circulation were confirmed by experiment and again announced six years later, by Realdus Columbus, who had succeeded to his teacher, Vesalius, as professor of Anatomy at Padua, when the latter was called to the court of Charles V. Columbus all but discovered the full truth of the circulation of the blood, for he describes how the blood passes from the right side of the heart into the lungs, and back by way of the pulmonary artery into the left ventricle, and so into the aorta. He died at Rome in 1559.

Cesalpinus, 1519 (1524?) to 1603, added some further elucidation in regard to the movement of the blood, but still fell short of a complete understanding of the double circulation.

We shall have occasion a little later to return more fully to the work of Servetus, Columbus and Cesalpinus.

Among the more prominent antagonists of Vesalius was Eustachius (d. 1574), the reputed discoverer of the Eustachian tubes, which he only thought of as adapted to the escape of pus from the middle ear, and to receive medicines. He also described a number of other structures in and about the ear, and prepared some anatomic plates, justly famous (as you can see by this copy) for their great artistic beauty. These plates were lost for a hundred and fifty years and were again found by Lancisi, physician to Pope Clement the XI, who published them in 1728, with the addition of the text written by himself. The exquisitely engraved frontispiece which you here see, showing a medallion of Clement surrounded by allegorical figures, was inserted in recognition of the Pontiff's bearing the expense of the publication. This same Lancisi was in charge of a clinic at Rome, founded by his venerable patient and patron. This valuable copy was presented to me by Dr. James Moores Ball, of this city.

We have spoken of two great investigators who occupied the chair of anatomy at Padua. We should mention three more who bore this honor in succession, each of the last two being the pupil and especial protégé of his predecessor. These were Fallopius, Fabricius and Casserius.

The first of these (born in 1523 at Modena, died 1562) is celebrated not only as a great anatomist, but for his kindness and consideration toward his pupils. His name is familiar in connection with the mammalian oviduct and the aqueduct of the vestibule. Among other structures, he discovered and described the foramen ovale, chorda tympani, and lamina spiralis of the cochlea. He named the membrana tympani,

the petrosal and sphenoidal sinuses, the muscles of the forehead, occiput and tongue, the seminal vesicles, the round ligaments, and the acoustic, trigeminal and glosso-pharyngeal nerves. He disproved the doctrine which had long held sway that the cranial nerves originated in the membranes of the brain.

Fabricius of Aquapendente (1536-1619) is best known for his labors in the comparative anatomy of gestation, and his demonstration of the valves in the veins. The latter, however, he was not the first to discover, in spite of his positive assertion to that effect, as they had been seen before him by Sylvius, Cannanus, Lustanus and Fernel. He was perhaps the first, however, to recognize them as constant structures, and certainly the first to represent them graphically and faithfully. This you can see by reference to the plates in this copy of his Anatomical and Physiological works, presented to me by the late Professor Boislinière.

Mendelssohn, the son of the philosopher and father of the composer, used to say: "I was once known as the son of my father, but now as the father of my son." Fabricius, were he alive, might similarly say: "I was once known as the pupil of my teacher, but now as the teacher of my pupil," for he who sat at Fallopius' feet was reserved to a greater honor as the instructor of William Harvey. Indeed, he seems in a measure to have given direction to the latter's genius, for there exists a remarkable parallelism between the lines of investigation followed by these two great men. A close friendship was nurtured between them, founded upon a genuine mutual admiraation. The younger man characterizes the elder as "a most skillful anatomist and venerable old man." Fabricius, who began life quite poor, is said to have left a large fortune.

Another disciple of Fabricius, and at one time a servant in his household, who succeeded to his chair, was Casserius (1561-1616), best known for his studies on the auditory apparatus, its ossicles with their muscles, and the semi-circular canals.

We have already remarked that in Italy anatomy and surgery progressed hand in hand, and we accordingly find that all these great masters of anatomy achieved wide reputations in surgery. But the latter art was by no means confined to the peninsula. Its greatest triumphs at this period were won by the Profession of France. We have already related how the academical limitations of the French faculty led to the establishment of the more liberal and more progressive Brotherhood of St. Côme, who, however, were still looked upon as an inferior order. Below these, again, were the barber-surgeons.

In course of time, the Brotherhood of St. Côme was admitted to the University. This took place in 1515, and marks a turning point in the history of European surgery. The barber-surgeons were also permitted to attend lectures at the University, and were required to pass an examination.

Among these barber-surgeons was a young man born of poor parents at Laval, somewhere about the year 1510, Ambroise Paré by name. Apprenticed at first to a provincial barber-surgeon, his desire for improvement soon led him to Paris, where he was so fortunate as to secure a three-years' apprenticeship at the Hôtel-Dieu. The duties of apprentices at that time probably consisted in applying dressings, bleeding, assisting at operations, etc., but Paré inspired such confidence that his instructors sometimes permitted him to operate for them.

At about the age of twenty-seven he was appointed a surgeon in the army, and took part in an Italian campaign. It was at that time the practice to pour boiling oil over all amputation wounds to prevent hemorrhage, and into gunshot wounds to prevent the burning and poisoning which was universally believed to accompany such injuries, on account of peculiar properties supposed to be communicated to the ball by the powder. It seems that at an engagement at which Paré was present the boiling oil gave out, and the young surgeon passed a sleepless night anxiously wondering what would be the fate

of the unfortunate patients thus deprived of proper care. In the morning he found to his surprise that these were no worse off than the others. This incident set him to thinking, with the result that he devised a new and more intelligent manner of treating these hurts. His ideas were incorporated a few years later into a little book, entitled: "The Manner of Treating Wounds Made by Arquebuses and Other Firearms, and Those Made by Arrows, Darts and the like, and also by Burns, made especially by Gunpowder, Composed by Ambroise Paré, Master Barber-surgeon in Paris." This work appeared in 1545, and is one of the mile-stones in surgery.

Soon after, he introduced another great reform, that is, ligature of vessels after amputation, in place of the actual cautery.

In 1554 Paré was made Master of the College of St. Côme, and in 1559 appointed surgeon to Henry II. He successively held the same position under Francis II, Charles IX and Henry III, so that the Paris wits said that he was an hereditary appanage of the Crown.

Few surgeons perhaps have enjoyed the unbounded confidence which was accorded Paré, not only by royalty and the nobility, but by the common soldiers as well. It is said that on a certain occasion when introduced by stealth into Metz, that city being then defended by the Duc de Guise against the Emperor Charles V, the soldiers welcomed him with cries of "now we cannot die, for Paré is among us." It is characteristic of the modesty which belongs to greatness, that Paré had inscribed on the walls of his study the words, "je li pansay, Dieu li guarit."* Unlike other great surgeons of those days, he never knew Latin.

We have now reached a point in our recital which brings us to the very threshold of the modern temple of science. The Renaissance having been accomplished, we will from now on

* "I dressed his wounds; God healed him."

witness the rapid growth of the lusty young Hercules to enterprising youth and vigorous manhood. We now come to what is probably the grandest episode in the entire history of Medicine, not only for the fundamental character of the accomplishment, but for its influence on all later progress, an influence which it would be impossible to exaggerate, for the methods by which it was achieved, and for the character and virtues of its author which it brings out in the boldest relief. I refer, of course, to Harvey's discovery of the circulation of the blood.

In order, however, to set clearly before you in what that discovery consisted, and to establish beyond question Harvey's claim to the credit of its discovery, it will be necessary to give an account of the older views upon the subject and to review in a consecutive manner the several advances which led up to the final comprehension of the truth.

That the blood in the vessels possessed a motion was indeed known to the ancients, as evidenced by the passage quoted in our first lecture from the *Dialogues* of Plato, in which he speaks of "the stream of the veins flowing through the body as through a conduit." The veins, however, were universally regarded as the only blood-vessels, the function ascribed to the arteries being that of containing and conveying the animal spirits, or pneumon, of which the heart was the great reservoir. The liver was the producer and the source of the blood, and the blood flowed out from it and back to it along the veins in a motion comparable to the ebb and flow of the tides, or, as Aristotle has it, like the flux and reflux of Euripus. This was the teaching of Erasistratus and of the Asclepiadae.

Galen improved upon this by teaching that blood found its way into the left ventricle, a small part of it by way of the pulmonary artery, lungs and pulmonary vein, but the greater part through invisible pores in the interventricular septum. He seems to have taught that the arteries contained blood as

well as air or animal spirits, for he says in *An in arteriis natura sanguis contineatur:*

"For we have often exposed the large arteries convenient for this purpose and asked the disciples of Erasistratus whether the artery thus exposed did not seem to contain blood. They were obliged to confess that it did, both because Erasistratus asserted that the blood passed into the arteries *when they were uncovered*, and because the fact was evident to the senses; for having placed ligatures on both ends of the inclosed portion of the artery and made an incision into the vessel between them, I showed that the artery itself was full of blood." The generally received opinion throughout the middle ages was that the heart was the great source of animal or inherent heat, *callidum innatum*. The function of the lungs was to fan and cool the heart. The blood was alternately driven to and from the heart, along the veins, being sucked in during the diastole and driven from it in the systole. The arteries contracted and dilated by an activity of their own, during dilation sucking in air from the left ventricle and during contraction discharging smoky and murky vapors through pores in the flesh and skin. By this motion they also served to mix the blood with the air and animal spirits, and thus cool it off. This mass of error rested in great part upon a mistaken idea as to the nature of heat, which was conceived of as a self-existent substance or physical entity. These notions met with universal acceptance until Servetus, who, as we have already said, reasoned out on theoretical grounds a correct idea of the lesser or pulmonary circulation, and denied the permeability of the interventricular septum (1553). The three points on which Servetus based his argument were, first, the impermeability of the septum; second, the position of the valves of the pulmonary vessels; and third, the enormous size of the pulmonary arteries, quite disproportionate to the amount of blood required for the nutrition of the lungs. Servetus knew that the blood returned to the

heart by the lungs was of a brighter color than that in the right ventricle, but still clung to the idea that "spirits" and not plain blood was returned from the lungs.

Six years later, as before stated, Servetus' speculations were confirmed by Realdus Columbus' vivisections upon dogs. How correct was Columbus' understanding of the pulmonary circulation is proved by the following passages which I have excerpted from a translation made by our friend and fellow-alumnus, Dr. L. C. Boislinière. I have substituted for the terms rough artery, venal artery and arterial vein, the modern names of these structures, in order to avoid unnecessary confusion.

In the treatise *De Corde et Arteriis*, Book VII, p. 177, we read: "In the right (ventricle) natural blood is present, but vital blood is in the left. * * * Between these ventricles there is a septum through which nearly all believe there is an opening for the blood from the right to the left ventricle. * * * But they are much mistaken, because the blood is carried through the pulmonary artery to the lungs and there is attenuated, and then it is borne back to the left ventricle of the heart through the pulmonary vein along with air."

In *De Pulmone*, Chapter II, he says: "For the air is taken in through the nostril and mouth and carried through the entire lung by way of the trachea, and the lung mixes this air with the blood, which, proceeding from the right ventricle of the heart, is carried through the pulmonary artery. This pulmonary artery, besides needing blood for its nourishment, is so wide as to serve another purpose; this blood, on account of the constant movement of the lungs, is shaken up and made thin and mixed with air, which in this very collision and shaking, is prepared so that mixed together the blood and the air, are carried through the branches of the pulmonary vein, and finally are carried through its trunk to the left ventricle of the heart, and they are carried thither so exquisitely mixed and

thinned that very little work is left for the heart to do, and after this slight elaboration, which is the putting of the finishing touch to their vital spirits, it remains for it to distribute them by means of the aorta to all the parts of the body. * * * Do you, kind reader, find out by experiment, I pray you, on brute animals, which I advise and exhort you to vivisect; find out, I say, by experiment, if what I have said does not agree with what actually takes place."

We see from the above how utterly erroneous is the statement of Baas (Henderson's translation, p. 425) when he says, "That it (the blood) pushed on further into the left ventricle, thus establishing the lesser circulation from one side of the heart to the other, this he (Columbus) did not expressly teach, but it was reserved for Harvey."

The rediscovery and correct description by Fabricius of the valves in the veins added an important item to the facts on which a correct theory was finally constructed.

Cesalpinus approached so close to a full and correct view of the subject that we wonder how he could ever have fallen short of it. Indeed, the Italians in 1876 erected a monument to his memory as "The discoverer of the circulation of the blood." You shall decide for yourselves as to whether he was truly entitled to this great distinction. I quote the passage upon which the claim rests from Comegys' translation of Renouard's *History of Medicine*, p. 297. "The openings of the heart are disposed in such a manner, that the passage is free from the vena cava into the right ventricle, and from that cavity into the lung; further, there exists a communication from the lung to the left ventricle, and from this last into the aorta. Membranes are placed at the orifices of the various conduits, in such a way that a retrograde flux of the liquid column is impossible. In this way is effected, continually, the passage of the blood from the vena cava into the right cavities of the heart, and from these into the lungs, and thence into the aorta by the

intermediation of the left ventricle, as we have explained in the Peripatecian questions." Arriving at this point, the statement seems so full and complete that we are about to award the palm to Cesalpinus—but as we read on we are astonished to see him reverting to what he has himself almost disproved. His outstretched hand touches the coveted prize, but he has not the courage to grasp it. He continues, p. 298: "Now, while awake, the movement of the innate heat is from within outward, and during sleep it is the reverse; hence it follows that while awake a great quantity of the vital spirit and blood are carried to the arteries, which transmit them to the nerves; and, during sleep, the same heat returns to the heart, not by the arteries, but by the vena cava, which alone communicates with this organ.

"The proof of this is drawn from the arterial pulsations, which are large, vehement, prompt and frequent, with a species of vibration at the moment of awaking, while they are small, languishing and slow during sleep—for at this time the natural heat is carried less to the arteries; but it flows freely there, as soon as we are aroused.

"The veins act entirely different; they enlarge during sleep, and diminish when we are awake, which is easily seen in those on the hands. This occurs, because during sleep the natural heat passes from the arteries into the veins, by means of their anastomoses, and in that way returns to the heart. In the same manner the flux and reflux of the blood toward the superior and inferior parts, like the waves of Euripus, manifest themselves during sleep, and when we are awake also. The same species of movement is manifested either by applying a ligature around some part of the body, or by pressure on the veins in any other way. For when the course of a stream is interrupted, it swells above the obstacle. Perhaps in this case the blood returns back to its source, so that this interruption may not destroy it."

If he had fully grasped the idea of a *circulation*, would he not have pronounced the word—or, if we admit that he may have had the idea without using the word, would he, could he, have fallen back on Aristotle's figure of the flux and reflux of Euripus, knowing full well how that figure had been construed for two thousand years? No, we are forced to conclude (and herein is an illustration of the fact that belief is a moral act and not entirely independent of the will) that he had not the courage to perform what theologians call an "act of faith," but weakly tortured his mind in an attempt to reconcile obvious truth with ancient error.

How different from all this is the picture to which I now invite your attention. William Harvey, friend and physician of the unfortunate Charles I, was born in 1578 at Folkstone in Kent. Having studied, as already stated, in Padua under Fabricius, he, from an early age, turned his attention to the investigation of the heart and blood-vessels and of the problems of generation. He had all the patience and industry needed in the elucidation of the problems to which he applied himself, and possessed the rare gift of clear, logical apprehension. Besides all this he had, like Vesalius, the courage to accept and proclaim what his reason taught him to be true.

His work on the circulation is admirably arranged. He first clears the ground of the old rubbish, next describes the movement of the heart in the living animal, describes its muscular structure, the alternate systole of auricle and ventricle, and shows how the blood is thus propelled into the arteries, the valves determining its direction. Having set forth the whole scheme of the circulation, he concludes with illustrations drawn from comparative anatomy.

His great work entitled, "*Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*," appeared in 1621. I shall, without further ado, give you several citations therefrom. Nor do I think, in view of the great importance

and interest of the subject, that I need apologize for their length.

"When I first gave my mind to vivisections as a means of discovering the motions and uses of the heart, and sought to discover these from actual inspection and *not from the writings of others*, I found the task so truly arduous, so full of difficulties, that I was almost tempted to think, with Frascatorius, that the motion of the heart was only to be comprehended by God. For I could neither rightly perceive at first, when the systole and when the diastole took place, nor when nor where dilatation or contraction occurred, by reason of the rapidity of the motion, which in many animals is accomplished in the twinkling of an eye, coming and going like a flash of lightning, so that the systole presented itself to me, now from this point, now from that, the diastole the same; and then everything was reversed, the motions occurring variously and confusedly together.

"My mind was therefore greatly unsettled, nor did I know what I should myself conclude, nor what believe from others, and I was not surprised that Andreas Laurentius should have said that the motion of the heart was as perplexing as the flux and reflux of Euripus had appeared to Aristotle."

Harvey formulates in his fifth chapter some of his conclusions as follows:

"First of all, the auricle contracts, and in the course of its contraction forces the blood (which it contains in ample quantity as the head of the veins, the storehouse and cistern of the blood) into the ventricle, which, being filled, the heart raises itself straightway, makes all its fibres tense, contracts the ventricles and performs a beat, by which beat it immediately sends the blood supplied to it by the auricle into the arteries. The right ventricle sends its charge into the lungs by the vessel which is called the vena arteriosa (pulmonary artery), but which in structure and function and all other respects is an

artery. The left ventricle sends its charge into the aorta and through this by the arteries to the body at large.

"These two movements, one of the ventricles, the other of the auricles, take place consecutively, but in such a manner that there is a kind of harmony or rhythm preserved between them, the two concurring in such wise that but one movement is apparent, especially in the warmer blooded animals in which the movements in question are rapid. Nor is this for any other reason than it is in a piece of machinery in which, though one wheel gives movement to another, yet all the wheels seem to move simultaneously; or in that mechanical contrivance which is adapted to firearms, where, the trigger being touched, down comes the flint, strikes against the wheel, produces a spark, which, falling among the powder, ignites it, upon which the flame extends, enters the barrel, causes the explosion, propels the ball, and the mark is attained—all of which incidents, by reason of the celerity with which they happen, seem to take place in the twinkling of an eye. * * * Even so does it come to pass with the movements and action of the heart. * * * Whether or not the heart, besides propelling the blood, giving it movement locally and distributing it to the body, adds anything else to it—heat, spirit, perfection—must be inquired into by and by, and decided upon other grounds. So much may suffice at this time, when it is shown that by the action of the heart the blood is transfused through the ventricles from the veins to the arteries and is distributed by them to all points of the body."

In the eighth chapter Harvey passes from demonstration and experiment to convincing argument. He deals with the quantity of blood passing through the heart from the veins to the arteries. "Thus far I have spoken of the passage of the blood from the veins into the arteries, and of the manner in which it is transmitted and distributed by the action of the heart; points to which some, moved either by the authority

of Galen or Columbus, or the reasonings of others, will give their adhesion. But what remains to be said upon the quantity and source of the blood which thus passes, is of a character so novel and unheard of, that I not only fear injury to myself from the envy of a few, but I tremble lest I have mankind at large for my enemies, so much doth wont and custom become a second nature. Doctrine once sown strikes deeply its root, and respect for antiquity influences all men. Still the die is cast, and my trust is in my love of truth and the candour of cultivated minds. And sooth to say, when I surveyed my mass of evidence, whether derived from vivisections and my various reflections on them, or from the study of the ventricles of the heart and the vessels that enter into and issue from them, the symmetry and size of these conduits, for Nature, doing nothing in vain, would never have given them so large a relative size without a purpose—or from observing the arrangement and intimate structure of the valves in particular, and of the other parts of the heart in general, with many things besides, I frequently and seriously bethought me and long revolved in my mind, what might be the quantity of blood which was transmitted, in how short a time its passage might be effected, and the like. But not finding it possible that this could be supplied by the juices of the ingested aliment without the veins on the one hand becoming drained, and the arteries on the other getting ruptured through the excessive charge of blood, unless the blood should somehow find its way from the arteries into the veins and so return to the right side of the heart; I began to think whether there might not be a movement, as it were, in a circle. Now this I afterwards found to be true, and I finally saw that the blood, forced by the action of the left ventricle into the arteries, was distributed to the body at large and in several parts in the same manner as it is sent through the lungs, impelled by the right ventricle into the pulmonary artery, and that it then passed through the veins

and along the vena cava, and so round to the left ventricle in the manner already indicated. This movement we may be allowed to call circular."

Harvey continues by laying down three propositions:

First, that the blood is incessantly transmitted by the action of the heart from the vena cava to the arteries.

Secondly, that the blood under the influence of the arterial pulse enters and is impelled in a continuous, equable, and incessant stream through every part and member of the body, in much larger quantities than is sufficient for nutrition or than the whole mass of fluids could supply.

Thirdly, that the veins return this blood incessantly to the heart. "These points being proved, I conceive it will be manifest that the blood circulates, revolves, is propelled, and then returning from the heart to the extremities, from the extremities to the heart, and thus that it performs a kind of circular movement."

The fourteenth chapter is entitled, "Conclusion of the Demonstration of the Circulation," and begins thus:

"And now I may be allowed to give in brief my view of the circulation of the blood, and to propose it for general adoption.

"Since all things, both argument and ocular demonstration, show that the blood passes through the lungs and heart by the force of the ventricles, and is sent for distribution to all parts of the body, where it makes its way into the veins and pores of the flesh, and then flows by the veins from the circumference on every side to the centre, from the lesser to the greater veins, and is by them finally discharged into the vena cava and right auricle of the heart, and this in such quantity or in such afflux and reflux, thither by the arteries, hither by the veins, as cannot possibly be supplied by the ingesta, and is much greater than can be required for mere purposes of nutrition; it is absolutely necessary to conclude that the blood in the animal body is impelled in a circle, and is in a state of ceaseless

movement; that this is the act or function which the heart performs by means of its pulse, and that it is the sole and only end of the movement and contraction of the heart."

In comparing Harvey's work with that of his predecessors, one is reminded of Tennyson's words in praise of Arthur Hallam:

> "And one would aim an arrow fair,
> But send it slackly from the string;
> And one would pierce an outer ring
> And one an inner, here and there.
> At ast the Master-Bowman, he
> Would cleave the mark."

Harvey's announcement of his discovery, incompletely set forth in his Lumleian Lectures in 1616, but fully set forth five years later in his *Treatise*, awakened a storm of opposition, the chief of his antagonists being Riolan the Younger of Paris, and Plenpius of Louvain. To the honor of the latter be it said, that becoming later convinced of the truth, he formally and openly confessed his error.

Harvey died in 1657.

For the sake of completeness we must mention the final addition to our knowledge of the structures immediately concerned in the circulation by the discovery of the capillaries.

Harvey knew nothing of the capillaries, but supposed that the blood found its way from the arteries to the veins *per partium porositates*, through pores in the tissues. It remained for Malpighi to demonstrate the existence of continuous vascular tubes. Speaking of the pulmonary circulation, he says:

"I had believed that the body of the blood broke out into an empty space and was gathered together again into an open-mouthed vessel, and by the help of the structure of the walls of the air cells. The basis for this view was offered by the tortuous movement of the blood diffused as it was in various directions, and by the gathering together of it at a definite

point. Nevertheless, my faith was shaken by the appearance of the dried lung of a frog, which, as it happened, had retained the redness of the lung in its smallest parts (vessels, as I found them afterwards), for by the aid of a more perfect glass, there appeared to the eye no longer, points which looked like the skin called shagreen, but in place of them, minute vessels, mingled together ring-fashion, and so great is the divarication of these vessels, as they spring here from vein and there from artery, that there is no longer any order preserved, but they appear as a network made up of the prolongations of the two main vessels. * * * Hence it was apparent to the senses that the blood was divided up and flowed through tortuous vessels, and was not poured out into spaces, but moved always through little tubes, and was scattered, owing to the multitudinous bends of the vessels."

But it is time to close and bid adieu for the time to these grand pioneers of our Art, of whom we may say, borrowing the language of Kipling:

"The men bulk huge on the old trail, our own trail, the out trail,
They're God's own guides on the long trail, the trail that is always new."

AINHUM.

WITH REPORT OF A CASE.*

EDMUND A. BABLER, M.D.

Although practically half a century has elapsed since Clark, in a monograph read before the Epidemiologic Society of London, called attention to this peculiar disease affecting the natives of Brazil, the characteristic feature of which is the spontaneous amputation of the affected fingers and toes, it is true that we know very little concerning ainhum.

The disease has been observed in various parts of the civilized world, although only about twenty-four cases have been observed in the United States; the present case being probably the first one reported occurring in Missouri. The literature reveals the fact that the disease is very prevalent in India. The patient is usually a negro; not more than four cases have been reported in which the patient was a Caucasian.

The etiology of ainhum remains an open question. The researches of da Silva Lima led him to regard the disease as due to injuries to the toes, while Scheube contended that ainhum was a trophoneurosis. Zambaco Pacha believed the disease to be a lesion of leprosy. Wellman has recently stated that he agrees with McFarland, who said: "The true cause of the fatty and atrophic changes in the amputated toe is not de-

* From Surgical Dept., Washington University, Service of Prof. H. G. Mudd.

termined; it may be trophic, or it may depend on local cicatricial formation." In Wellman's opinion,the chigger may play an important rôle in prolonging the irritations and inflammations set up by wounds at the base of the toes. The probability of a parasitic origin has been scouted by many; personally, I feel that time may prove the disease of parasitic origin. It certainly does not seem at all plausible that such a destructive process could be brought about by sharp grasses and the like, as has been long advocated by several observers. The fact that the disease has been observed in persons who have reached the meridian of life and who have worn shoes constantly since adolescence tends, I think, to overthrow da Silva Lima's theory. Possibly we may find that uncleanliness advances the development of the disease. Many of the theories that have been advanced by the early writers are quite preposterous. Dupony has observed the occurrence of loin pains at the commencement of some of his cases, and the tendency of the disease to run in families.

Unna regards ainhum as a primary degeneration of the epidermis. It is, in Unna's opinion, a sort of ring-formed scleroderma with callous formation of the epidermis, leading to secondary total stagnation necrosis. The horny layer is much thickened, and the papillæ are elongated and narrowed. In the papillary body, there is cellular infiltration; the papillary vessels are dilated, and the larger and deeper-lying vessels of the cutis and the hypoderm show obliterating endarteritis in different stages of development. The membrana propria is thickened. In discussing the pathology, Brayton says: "These are the progressive changes found in stagnated dermatoses. When the stratum corneum becomes thickened even in small areas, as in corns, atrophy of the underlying epidermis occurs. It is to be expected, therefore, that, with this hyperplasia of the epidermis and downgrowth of the interpapillary process, the corium should show an increase of fibrous tissue and fat;

that owing to pressure there should be changes in the deeper blood-vessels and arteries; an increase of the adventitia or intima coats of the arteries so that the lumen is impaired, and finally obliterating endarteritis with slow gangrene. Eventually the constricting band approaches the bone; tumefaction of the toe occurs with stagnation of lymph and fat, gradually causing degeneration of all the constituents of the above tissue, pulp and cutis; a condition of rarefying ostitis takes place, with final disappearance of the ungual phalanx, the partial disappearance of the second, and almost always the preservation of the third. The line of division may occur through the middle of the proximal phalanx or at the proximal interphalangeal articulation."

In our case, the patient's attention was first called to a small nodule situated on the dorsal surface of the little toe of the right foot, just at the edge of the phalangeal-metatarsal articulation. The nodule deepened and extended to the inner side of the little toe, eventually causing constriction, and the other clinical manifestations of the disease in question. The true pathology of ainhum will continue to remain in question until the etiology of the disease has been determined.

The clinical manifestations of ainhum are quite constant. The disease begins as a rule with a crack, fissure or nodule at the base of the toe on either the plantar or inner side. In our case, the patient's attention was first attracted to a small nodule on the dorsal surface at the base of the little toe; itching was present. The fissure deepens, gradually encircling the toe. Ulceration, bleeding and discomfort are seldom present. The distal portion of the toe becomes rounded and ball-like in appearance; it may be wider transversely than anteroposteriorly. The disease progresses very slowly; it may require ten years to completely sever the toe. Pain is seldom severe; in our case, however, the patient suffered so much at night that he could not sleep. The toe is frequently subjected to trauma.

Ulcers may appear late in the course of the disease. Palpation may be painful to the patient. When the bone has been destroyed and the toe is but loosely attached to the foot, the patient may complain severely of pain on walking. The distal portion of the toe may seem perfectly healthy; sensation may not be impaired. The medical attendant seldom sees these patients during the early course of the disease. In some instances the patient does not present himself for treatment until several of his toes have been spontaneously amputated.

The diagnosis is not difficult. In Raynaud's disease there are preliminary lesions such as bullæ, vesicles, edema, etc.; constitutional symptoms are present; the lesions are symmetrical. In leprosy there are other manifestations of the disease, on other regions of the body pointing to the true character of the affection; preliminary manifestations precede the destructive process. The mere fact that there is a constricting band at the base of the toe causing gradual amputation of the affected appendage, should arouse suspicion.

The prognosis depends upon the degree of destruction present at the time that the patient comes for treatment. Conservative treatment has been unsatisfactory because the medical attendant does not see the patient early enough. Linear incision and antiseptic dressings will probably suffice in the early cases. Amputation is indicated when the disease had produced absorption of the bone. The necrotic mass found in some cases should be evacuated and the sac walls swabbed with carbolic acid; then cleansed with alcohol, and dressed daily.

Report of Case.

James A., aged 50, a colored man, presented for treatment at the Surgical Clinic of the O'Fallon Dispensary, and gave the following history: Born in Virginia, where he remained five years, then moved to Alabama, residing in the latter state for

22 years; moved to Tennessee, and seven years later he came to Missouri, where he has lived during the past thirteen years. The family history is negative. Patient has always enjoyed good health until nine years ago, at which time he contracted syphilis. Three years thereafter, gummata appeared on both sides of neck. About six years ago he suffered a paralysis of the right side of face; appeared suddenly and has remained.

About a year ago the patient observed a small, warty-like growth on inner side near the dorsal surface at the base, of the little toe of the right foot. He removed it by means of his pocket knife. Within a few weeks a similar but larger growth presented at the same side, and continued to grow; within three months it had partially encircled the base of the little toe. His attention has been frequently called to the growth, owing to the presence of more or less pain in the base of the affected toe. A singular feature is the fact that the pain has been worse at night. During the past five months the distal portion of the affected toe has been gradually assuming the appearance of a ball; the hard, dense growth which has extended around the circumference of the toe has gradually produced absorption of the bone; the toe can be moved as though it was but slightly adherent to the foot.

Examination shows the usual findings in ainhum. The reader is respectfully referred to the plate. Leprosy was readily excluded. The glands of the neck were found swollen and firm; not painful; evidence of frequent incisions. The right side of face is paralyzed. At the base of the little toe of the right foot is a semi-solid mass which presents the appearance of being a continuation of the destructive process observed in the little toe. . Pressure causes pain.

Amputation of the affected, and practically destroyed, toe, was advised. A few days later the toe was removed under a local anesthetic. At the base of the little toe, just internal to the phalangeal-metatarsal articulation, was found a necrotic,

bloody-looking mass about as large as a small hazelnut, which led me to believe that the disease was extending to the ring toe. The parts were thoroughly swabbed with pure phenol and then with alcohol. The incised surfaces were apposed by means of sutures, and the parts dressed with moist bichloride gauze. Owing to the fact that the patient would not consent to enter the Washington University Hospital, he was compelled to return home; he placed more or less of his weight upon the right foot, thereby causing two of the sutures to cut out. At the end of ten days the parts had, however, healed. At present the patient can walk and work without discomfort.

The specimen was handed to pathologist E. F. Tiedemann, who confirmed the diagnosis of ainhum.

DR. BABLER'S CASE OF AINHUM.

A KNIFE GUARD TO AID IN THE TARSAL SUBSECTION.

BY ARTHUR E. EWING, M.D., ST. LOUIS, MO.

Since the publication of the article "Improved Entropion Forceps" (Ophthalmic Record, October, 1907, and Bulletin Medical Department, Washington University, Vol. V, No. 4), my esteemed colleague, Dr. Post, has remarked that the manner of stitching the conjunctiva into the bottom of the wound made by the subsection of the tarsus and the tying of the sutures upon the skin surface was not very explicit. As it is essential to permanent results, particularly in the case of the lower lid, that these sutures be properly placed, the procedure is fully illustrated in the accompanying diagram, Fig. 15, in which *a* is the forceps stitch, and *b* one of the doubly armed sutures, the needles of which are entered upon the conjunctival surface about two millimeters apart in the edge of the orbital or the standing portion of the tarsus, being confined as much as possible to the conjunctiva, then passed into the bottom of the wound, back of that portion of the tarsus contained in the separated marginal strip and brought out in the skin at the base of the cilia, or among them, two and one-half or three millimeters distant from one another. At b^1 is shown one of these sutures as they are tied upon the skin surface over the large number twelve thread, *d*, which is laid along the lid near the margin to take the place of the quill in a quill suture. The course of these sutures which pass through the lid as seen in a cross-section of the lid is the same as is indicated by the thread, *b*, in Fig. 8, of the above mentioned article.

Should it be desirable to increase the clamping power of the forceps designed for maintaining the lid in an everted position, this may be accomplished by placing a wedge or a screw device between the junction of the fenestrated blades with the arms of the forceps and the intersection of the arms where they cross.

As a further aid to these forceps in keeping the incision throughout its full length an even distance from the margin of the lid, thus securing uniformity in the width of the marginal strip of tarsus, I have added a guard, Fig. 16, to the excellent knife devised by Dr. Green for the subsection, the action of which is to move along the border of the lid as the incision is made and hold the knife's edge a definite distance from the lid margin. It is placed parallel to the knife, 2.75 to 3 mm. from the edge as seen from before backward, and extends 2 mm. beyond the edge as seen from the side, except at the point, where it is shortened in order to not interfere with the incision being extended well into the angles; its width is about 3 mm. and its back has a curve similar to that of the edge of the knife, so as to not obstruct the view of the operator on the side of the knife to which it is attached. Although originally intended to accompany Dr. Green's knife, it may be used with any knife that would ordinarily be employed for this incision.

Fig. 15.

Fig. 15. *a*. The temporary thread to replace forceps, or "forceps thread".
b. One of the doubly armed sutures, showing how these sutures are inserted.
*b*¹. One of these sutures tied over the thread *d*, which acts as the quill in a quill suture.
d. The quill suture thread as it is placed upon the skin near the lid margin.

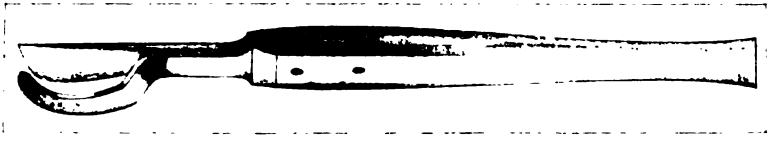

Fig. 16.

Fig. 16. A knife guard for maintaining uniformity in the width of the marginal strip in subsection of the tarsus.

NEW WORK FROM THE LABORATORIES.

RESULTS OF HETEROTRANSPLANTATIONS OF BLOOD VESSELS.*

BY C. C. GUTHRIE.

INTRODUCTION.

It has been shown that segments of blood vessels removed from animals may be caused to regain and indefinitely retain their function of conveying blood.[1] This was accomplished by replacing them in the animals from which they had been removed, and suturing their ends to the ends of other blood vessels that had been divided. Good function has been observed in such cases for months after the operation.[2]

While Carrel and I were working together at the Hull Physiological Laboratory, we planned a series of experimental operations to study the results of heterotransplantations. Our plans included preliminary immunization of animals, if indicated, by injection of serum or tissue extracts. Lack of time, however, prevented us from engaging in the work together. Recently Carrel has reported the results of some heterotransplantations carried out by him at the Rockefeller Institute for Medical Research.[3] He removed segments of arteries from dogs, and after keeping them in cold storage for considerable periods transplanted them into cats. Of five such operations,

* The results recorded in this paper have previously been published in The American Journal of Physiology, 1907, XIX, pp. 482–487.

two were successful, one transplanted segment of dog's carotid artery between the divided ends of a cat's abdominal aorta being free from clot or observable defect at the end of six days, while in another cat similarly operated upon the circulation appeared to be active after seventy-seven days.

The purpose of this note is to record the results of the transplantation of segments of the abdominal aortas of a cat and of a rabbit between the ends of divided common carotid arteries of dogs.

TECHNIQUE.

A segment of abdominal aorta was removed from the rabbit or cat under ether anæsthesia, washed free of blood with 0.9 per cent NaCl solution, after which it was smeared with vaseline both inside and out and wrapped in gauze moistened with the salt solution. It was then laid aside at room temperature for one to two hours, when it was transplanted. The actual technique of making the anastomoses was similar to that improved by Carrel and myself,[4] only serrefines (or bulldog forceps) were used more freely than we at one time thought advisable. The risk of injury to vessels the size of the common carotid arteries or external jugular veins in medium-sized dogs by the direct use of such forceps appears to be slight, provided care is taken to exclude all forceps that have very stiff springs.

In preparing the cut end of the vessel for anastomosis it is best to turn the external sheath back rather than remove it, as it is valuable for covering over the line of union of the vessels after the inner walls have been sutured. With a little care it can be included with them in the suture, and if this is done the anastomosis is much stronger and less liable to leak when the circulation is first re-established. If it is thought best to remove a portion of it, however, it can be most safely and quickly done by gently grasping and stretching with the fingers and snipping off with scissors or a very sharp knife.

The use of forceps as recommended by Watts[5] would be less safe, at least in the hands of an inexperienced operator. As a rule, it is safer to use the fingers than instruments, when possible, in the manipulation of blood vessels. Single strands from Chinese twist silk, threaded into No. 15 sharps needles, then doubled and sterilized in vaseline or oil, were used. The wounds were not closed until all capillary oozing had ceased and the tissues had been thoroughly dried with gauze sponges. Two planes of catgut sutures (Bartlett's twenty-day) were employed in closing the deep and subcutaneous tissues. The skin was closed with an ordinary continuous catgut suture, after which a large cotton dressing was applied directly over the wound and surrounding area and fastened in place by a suitable bandage. In almost all operations on dogs and cats not involving fractures, etc., a short roller bandage over the cotton, fastened with pins, and then the application of a suitable form of tailed bandage made from unbleached cotton or similar material, has given excellent results. Such a dressing is not removed by the animal, and will wear and stay in place for weeks. After the operation the animal is placed in a smooth-walled, open-topped cage, provided with a screen bottom raised several inches from the floor, where it is kept for from twelve hours to a week, depending on the magnitude of the operation. The screen bottom is very essential, as it prevents wetting of the dressings. It is a good plan to put the animal in a sack immediately after the dressing is completed and suspend it in the air until the animal becomes rational. This avoids the possibility of it injuring itself while coming out from the influence of the anæsthetic. For anæsthesia, ether alone is used. After the animal is placed on the operating-table, ether is administered from a Woulf's bottle by means of a rubber hood over the head or a glass tube passed through the larynx into the trachea and a rubber tube connected with the bottle through a respiration valve,[6] which is provided with

an adjustable side opening, enabling one to quickly regulate the mixture of air and ether.

PROTOCOLS.

Dog No. 1. April 24, 1907. Large, adult, mangy white bulldog. Removed 0.5 cm. segment of the right common carotid artery, and in its place put a segment 1.0 cm. long of adult tomcat's aorta removed posteriorly to the renal arteries. Circulation re-established through segment one and three quarters hours after removal from cat. Diameter of segment one-third less than carotid. Closed wound in dog's neck and dressed; applied ointment for mange. Preserved specimens from aorta and carotid for comparisons.

April 26. Animal doing well. Wound dry.

April 29. Pulse appears same in both carotids.

May 1. Pulse same in both carotids. Wound healed. Mange gone.

May 29. Pulse same in both carotids.

June 13. Pulse same in both carotids. Made exploratory incision. Circulation through aortic segment excellent. Diameter of segment somewhat greater than of carotid. Tissue appears normal. Closed wound.

June 21. Wound healed. Pulse same in both carotids. Dog in fine condition.

Dog No. 2. May 15, 1907. Young adult, yellow cur bitch. Weight about 25 lbs. Short-haired, fair condition, except for large double goitre.. Removed 0.5 cm. segment of the left common carotid artery, and in its place put a 2.5 cm segment of adult buck rabbit's abdominal aorta. Circulation re-established through segment one and one-half hours after removal from rabbit. Arteries in dog's neck much enlarged (probably in connection with the goitre, as this is commonly observed in dogs). Diameter of aortic segment about one-half that of carotid. Dr. N. W. Sharpe assisted at this operation. Wound healed promptly.

May. 29 Good pulse felt on both sides in the positions of the carotids, but owing to the large size of the thyroid vessels, no definite conclusion can be drawn from external examination.

June 15. Made exploratory incision. Circulation in aortic segment excellent. Segment about 3.0 to 3.5 cm. long and of the same diameter as the carotid. Both in appearance and to the touch it is very similar to the artery. Dr. Willard Bartlett directly examined the segment at this time.

The circulation was reversed in the right inferior thyroid vein by ligating and dividing both it and the right common carotid artery and anastomosing the central end of the artery to the peripheral end of the vein. The immediate results were similar to those previously described with Carrel,[7] namely, an increase in the size of the gland with an active circulation of arterial blood accompanied by a strong pulsating in the peripheral portion of the vein operated upon.

June 21. Good pulse in position of left common carotid artery. Strong pulse with thrill in right inferior thyroid vein. Right thyroid lobe greatly enlarged and very hard.

Summary of Results.

A segment of cat's aorta transplanted between the ends of the divided common carotid artery of a dog was observed by direct examination at the end of fifty days to be adequately performing its new circulatory function, and apparently to be in good condition; while a segment of rabbit's aorta similarly placed in another dog showed similar results at the end of thirty-one days.

Discussion.

The apparent differences in diameter of the aortic segments before and after transplantation, present some interesting features. It has been shown in horse, ox, etc.,[8] and man[9] that on removal from the body the walls of peripheral arteries (brachial, carotid, basilar, middle cerebral, renal, etc.) may undergo enormous tonic contraction, amounting to as much as 100 per cent in the size of the lumen and 30 per cent in the thickness of the media. Similar observations have been made on the thoracic and abdominal aorta of cats.[10] This tonic contraction may be elicited by mechanical stimulation in arteries from amputated limbs after twenty-four to forty-eight hours, and after even a longer interval by chemical stimulation.[11]

In view of this, it is not permissible, with our present data, to attribute the observed increase in size of the transplanted

aortic segments to a structural change in the walls. Neither is it profitable to speculate as to the probability of re-establishment of vaso-motor connections or functions in the segments, as these points will be put to the experimental test. Subjecting such arterial segments to cold, heat, ammonia vapor, or the employment of other relaxing measures, may lead to an improvement of our present technique, as a contracted blood vessel is less easily sutured than a relaxed one.

CONCLUSIONS.

From these results it would seem that arteries from rabbits or cats may be safely transplanted into dogs.

1. CARREL and GUTHRIE: Comptes rendus hebdomadaires des séances de la Société de Biologie, 1905. American medicine, 1905. Surgery, gynecology, and obstetrics, 1906, ii, pp. 14–15, etc.

2. CARREL and GUTHRIE: The American Journal of the medical sciences, 1906. Report for the Physiological section of the British Medical Association, Toronto, August, 1906.

3. CARREL, ALEXIS: The journal of experimental medicine, 1907, ix, pp. 226–228.

4. CARREL and GUTHRIE: Surgery, gynecology, and obstetrics, 1906, ii, pp. 3–4.

5. WATTS, STEPHEN A.: Bulletin of the Johns Hopkins Hospital, May, 1907, p. 169.

6. GUTHRIE, C. C.: The journal of the American Medical Association, 1907, xlviii, p. 1183.

7. Surgery, gynecology, and obstetrics, *loc. cit.*, p. 10. CARREL and GUTHRIE: Comptes rendus hebdomadaires des séances de la Société de Biologie, 1906, lx, pp. 582–583.

8. MACWILLIAM, J. A.: Proceedings of the Royal Society, 1902, lxx.

9. MACWILLIAM J. A., and MACKIE, A. H.: Journal of physiology, 1906, xxxiv, pp. xxxiv–xxxv.

10. GUTHRIE and PIKE; Science, 1906, N. S. xxiv, p. 53; American journal of physiology, 1907, xviii, p. 29.

11. MACWILLIAM and MACKIE: *Loc. cit.*

RESULTS OF TRANSPLANTATION OF OVARIES IN CHICKENS.

BY C. C. GUTHRIE.

These experiments were undertaken primarily with the object of determining if ovaries transplanted between chickens retain their normal functions.

With the view of studying the transmission of color character in case the ovaries functioned normally, the ovaries were exchanged between two closely related varieties, the chief difference being the color.

During August, 1906, three pure-bred Black S. C. Leghorn and three White S. C. Leghorn pullets were operated upon as indicated below.[1]

B 1
W 1 } controls, not operated.

B 2
W 2 } ovaries removed and exchanged.

B 3
W 3 } ovaries removed and exchanged.

They began laying the first week in February. They were first mated February 14, 1907. All eggs laid before mating were

[1] These results were reported before The American Physiological Society in connection with the seventh meeting of the Congress of American Physicians and Surgeons, Washington, D. C., May 7–9, 1907. American Journal of Physiology, 1907, XIX, pp. xvi–xvii. Seventh International Congress of Physiologists, Heidelberg, August 13–16, 1907. The Section of Comparative Physiology of the Seventh International Zoölogical Congress, Boston, August 19–23, 1907. The Biological Society of Saint Louis, St. Louis, October 16, 1907.

incubated and found to be sterile. The matings so far, are as follows:

B 1 mated to pure-bred Black S. C. Leghorn cock.
W 1 mated to pure-bred White S. C. Leghorn cock.
B 2, W 2 } mated to pure-bred White S. C. Leghorn cock.
B 3, W 3 } mated to pure-bred Black S. C. Leghorn cock.

The results are charted below:

NO. OF HEN.	NO. OF EGGS.	FŒTUS AND CHICK MARKINGS.
B 1	42	Thirteen black with ordinary light breasts and throats.
W 1	40	Seventeen ordinary solid white.
B 2	52	Nine ordinary white; eleven white, with black spots on backs of heads and wings or on backs.
W 2	11	One black and three white and one spotted.
B 3	20	Four ordinary black and two black with white legs.
W 3	38	Twelve white with black spots on backs of head and wings or on backs.

CONCLUSIONS.

1. The transplanted ovaries appear to function in a normal manner.

2. The color characters of the fœtuses and chicks may be influenced by the foster mother.

THE PICROLONATES OF CERTAIN ALKALOIDS.

BY W. H. WARREN AND R. S. WEISS.

The work described in these pages was carried on in the laboratories of the chemical department during the session of 1906-1907 and has already been published in full in the Journal of Biological Chemistry, Vol. III, 327-338.

It is well-known that many different reagents can be used to precipitate alkaloids from solution. We may divide these reagents into two classes. First, we have the so-called general reagents, such as potassium-mercuric iodide, potassium-bismuthous iodide, etc., which produce precipitates with solutions of most alkaloids. They do not give us specific information as to the precise alkaloid present, although in some cases they may do so. If there is a precipitate, some alkaloid is present; if the solution remains unchanged, alkaloids are absent. If we want more definite information, we must use a reagent of the second class, that is to say, one which will behave with the alkaloid in question as does no other substance.

Briefly stated, the object of this investigation was to determine the value of picrolonic acid, both as a general and as a special reagent for alkaloids. A careful study of a dozen of the commoner alkaloids has convinced us that this reagent may be used to advantage in detecting alkaloids.

Knorr, the discoverer of picrolonic acid, adopted this more manageable name to designate a rather complex organic compound, the chemical structure of which stands in close relation to that of the synthetic drug, antipyrine. He used this

reagent to advantage in studying certain compounds which resemble the alkaloids in their properties. Steudel has put picrolonic acid to a far more important use. He has shown that this reagent is of great service in isolating and identifying the two hexone bases, arginine and histidine. The importance of these two bases arises from the fact that they are found among the hydrolytic products of most proteins.

A saturated alcoholic solution is the most convenient form in which to use picrolonic acid. This reagent produces yellow precipitates in most cases, when added to an aqueous solution of some salt of the alkaloid, or to an alcoholic solution of the free alkaloid. This is the case with coniine, nicotine, strychnine, brucine, morphine, codeine, atropine, quinine and hydrastine, but with cocaine, caffeine and aconitine, the results were unsatisfactory.

If the test is not carried beyond the point of noting whether or not a precipitate is produced when the reagent is added to a solution of the alkaloid, then picrolonic acid is merely a general alkaloidal reagent.

It is not easy to recognize alkaloids individually by these yellow precipitates which are usually amorphous or indistinctly crystalline. Even when the preciptiate is crystalline, the form will often vary according to the conditions of precipitation. When these precipitates are redissolved in alcohol and allowed to crystallize, they appear in characteristic forms which are constant for each alkaloid. Used in this way, picrolonic acid becomes a specific reagent. As far as our work has gone, we have not found two alkaloidal picrolonates having the same crystalline form. An examination of the photomicrographs which accompany this article will show these differences.

The two alkaloids, coniine and nicotine, offer good examples of the use of picrolonic acid. The usual tests for distinguishing these alkaloids leave much to be desired, but the

wide difference between the massive crystalline form of coniine picrolonate (Fig. 1) and the delicate, hair-like structure of nicotine picrolonate (Fig. 2) enables us to separate these substances at once.

Undoubtedly the microscopic examination is the most important means of identifying these picrolonates, but we have studied these compounds in other ways. A general property of most organic substances and one which is used to identify them and to determine their purity, is that they melt at a definite temperature when heated. If the substance is impure, its melting-point is lowered, but a perfectly pure compound always melts at the same point. We have established the melting-points of these picrolonates. This serves as an additional means of identifying the precipitate produced by picrolonic acid with an alkaloid.

The melting points of the alkaloids studied are as follows:

Coniine picrolonate,		195.5	Centigrade.
Nicotine	"	213.	"
Strychnine	"	275.	"
Brucine	"	256.	"
Morphine	"	186.5	"
Codeine	"	219.	"
Atropine	"	194.	"
Quinine	"	225.	"
Hydrastine	"	220.	"

As a further means of identifying these picrolonates we have carefully analyzed each compound to make sure that it has the composition assigned to it. As a result of these analyses, we have found that one molecule of the alkaloid usually combines with one molecule of picrolonic acid. An exception is quinine, since one molecule of this alkaloid combines with two molecules of picrolonic acid.

Inasmuch as picrolonic acid resembles picric acid in certain

respects, we were led to compare the behavior of these two reagents toward alkaloids. Our results show considerable variation in the limit of dilution within which alkaloids can be detected with these reagents. Strychnine, which can be detected by picrolonic acid in 1-75,000, affords the most delicate test, whereas coniine can barely be detected by picric acid in 1-250. Yet the difference between these reagents is not as marked as we had expected when we began our experiments. Upon the whole, picrolonic acid is the more sensitive, especially toward coniine, strychnine and morphine. On the other hand, picric acid is the more sensitive toward brucine and codeine. They appear about equally sensitive toward nicotine, quinine, atropine and hydrastine. As a matter of fact, picric acid is a better reagent for nicotine, because the precipitate is distinctly crystalline and quite characteristic in 1-20,000. This reagent would seem to be well adapted for detecting this particular alkaloid.

To recover an alkaloid from its picrolonate, it is necessary only to warm the latter with dilute sulphuric acid, which discharges the bright yellow color of the picrolonate, causing the alkaloid to pass into solution and precipitating pale-yellow picrolonic acid. By extracting with acetic ether, in which picrolonic acid is especially soluble, the aqueous solution of the alkaloid is left colorless.

This has suggested a method of purifying alkaloids in toxicological analysis after their extraction in the usual way from animal tissues. An alkaloid like strychnine, whose picrolonate is very insoluble, may be precipitated from aqueous solution, and thus separated from other substances which interfere with its purification. The precipitated picrolonate may be collected on a filter, washed with water and then warmed with dilute sulphuric acid. After extracting the free picrolonic acid as before, a very pure solution of the alkaloid will remain.

Fig. 1. CONIINE PICROLONATE.

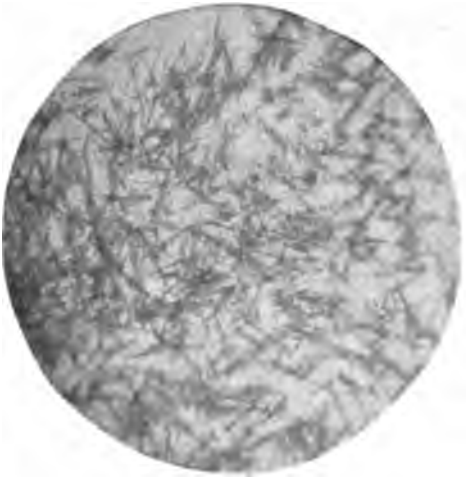

Fig. 2. NICOTINE PICROLONATE.

Fig. 3. NICOTINE PICRATE.

Fig. 4. STRYCHNINE PICROLONATE.

Fig. 5. STRYCHNINE PICRATE.

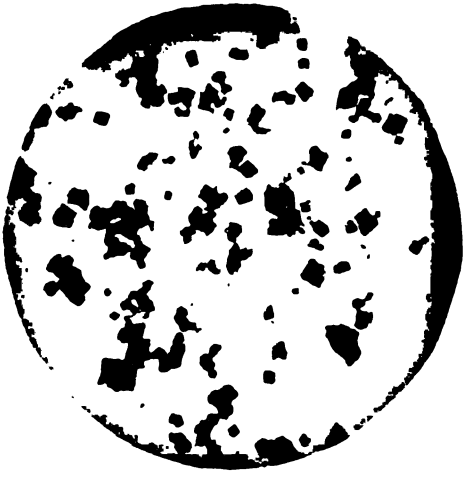

Fig. 6. BRUCINE PICROLONATE.

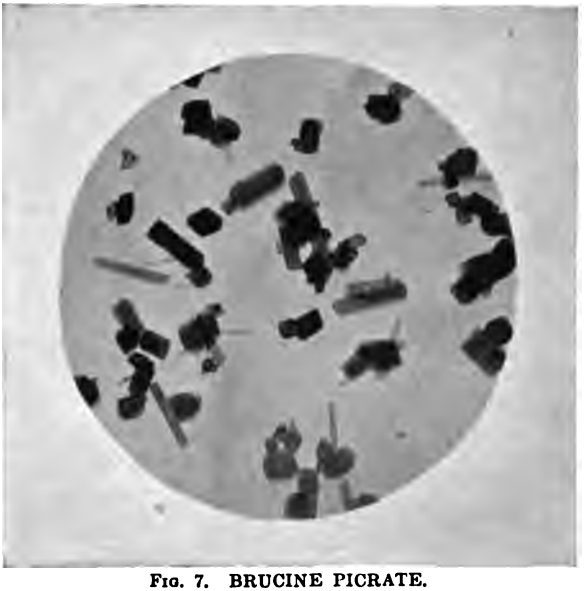

FIG. 7. BRUCINE PICRATE.

FIG. 8. MORPHINE PICROLONATE.

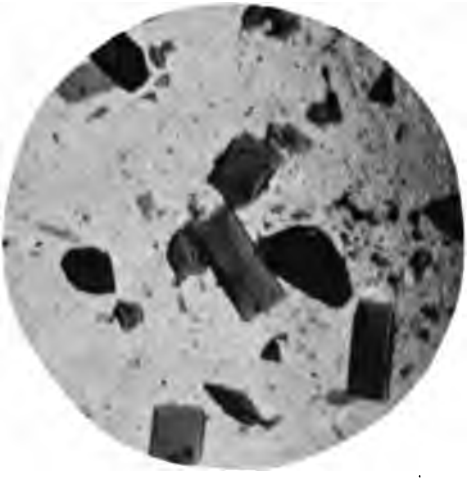

FIG. 9. CODEINE PICROLONATE.

FIG. 10. ATROPINE PICROLONATE.

Fig. 11. QUININE PICROLONATE.

Fig. 12. HYDRASTINE PICROLONATE.

THE ALUMNI ASSOCIATION.

A meeting of the Alumni Association was held on November 14th, in the College Building, on Locust Street, Dr. Robert Schlueter occupied the chair.

Candidates for active membership, Drs. Wm. F. Hardy, of the year 1901, and A. G. Wichmann, of the year 1902, were elected, on Dr. Deutsch's motion, without ballot.

The President brought up the question of having a reunion of the Alumni of the Medical Department. He stated that this subject had been spoken of several years ago, by Dr. Tuholske, and had been repeatedly mentioned by a number of the members, since. He expressed a strong sympathy with such a project, and suggested the advisability of attempting to have a reunion at about the time of the next meeting of the American Medical Association, which follows soon after our Commencement Exercises, and urged that we extend, as a feature of special attraction, an invitation to the visitors, to our clinics.

In accordance with the President's suggestion, Dr. Zahorsky made a motion that such a reunion of the graduates of the two schools be held, and that a committee of five be appointed to take charge of the matter.

Discussion by Drs. Deutsch, Williamson, Homan, Post and the chair, showed much enthousiasm with the idea, and the motion was carried.

The chair stated that several members of the Faculty had expressed their willingness to make up any deficit that might occur.

The Scientific Program was opened by papers by Drs. Wm. H. Luedde and Greenfield Sluder, on "A Case of Ethmoidal

Disease Producing Blindness." Discussion by Drs. Ewing, Williamson, Luedde and Sluder.

Dr. Fuhrman took the chair, while Dr. Schlueter read a paper on "Open Safety-pin in Oesophagus; Removed by Gastrotomy."

Remarks were made by Drs. Sluder and Zahorsky.

The meeting was then adjourned to a room upstairs, where Dr. Willard Bartlett exhibited some particularly beautiful lantern slides of photographs that he had taken last summer, during a trip through the French provinces of Tourraine, Brittany and Normandy.

The descriptions of the architectural beauties, and historical interest attached to the scenes, made the demonstration especially interesting, more particularly because of the fact, that, as Dr. Bartlett pointed out, the tourist seldom gets into these parts of France, and so misses many of the most beautiful sights that exist in that country.

Refreshments were served, and closed a very successful meeting.

THE PROPOSED ALUMNI REUNION.

It is especially desired that our Alumni avail themselves of the coming opportunity to once more meet the familiar faces, and visit the places of early student days. There is a strong spirit abroad to make the occasion a signal one, and the program for an exhibition of the clinics of the school, and its modern teaching facilities, will be fashioned in such a way as to bring before the members, the progress that the school has made in these departments during the past few years. It is to be ex-

pected, judging from the loyalty so often shown by our Alumni for their Alma Mater, that the meeting will be one long to be remembered.

DR. TAUSSIG'S RESIGNATION AS EDITOR.

At a recent meeting of the Faculty of the Medical Department, Dr. Albert Taussig's resignation from the editorship of the BULLETIN was accepted, and his recommendation that he be succeeded by his former associate, Dr. A. S. Bleyer, was confirmed.

The editor desires to express his sincere regret that Dr. Taussig will no longer find it possible to continue in charge, and to say that it is with some fear and hesitation that he assumes the responsibility of this office. His acceptance, furthermore, is made on the provision that Dr. Taussig continue to lend advice and suggestions that are so often needed in discriminating about certain fine points that constantly arise in such work as this.

With this understanding, the change is reluctantly made, and the indulgence of the Alumni is asked, in behalf of the work of the new editor.

BOOK NOTICE.

Clinical Treatises on the Symptomatology and Diagnosis of **Disorders** of **Respiration** and **Circulation,** by Professor Edmund von Neusser, M.D. Professor of the Second Medical Clinic, Vienna; Associate Editor of Nothnagle's Practice of Medicine. Authorized English Translation, by Andrew MacFarlane, M.D. Part I, **Dyspnoea** and **Cyanosis.** Octavo, 203 pp., cloth, $1.50. E. B. Treat & Co., New York, 1907.

This book is the first of a series of three monographs on the disorders of respiration and circulation, that are being published from the pen of von Neusser. The other two volumes are in press, and will appear under the titles, "Tachycardia and Bradycardia" and "Angina Pectoris."

This is a book for the advanced student of clinical medicine, and for the keen, observant and attentive mind alone; one is conscious every moment of communing with a master, who is stating in the simplest and most concise words, an elaboration of the sources of these two symptoms, in the many pathologic states in which they are found.

The occasion here to be dull is almost compelling, except for one who has been able to keep before him, and to elaborate the really great breadth of his subject. The success which has attended Professor von Neusser's effort to make his book of practical interest, and to keep out every suggestion of cloudiness or uncertainty, is a really remarkable piece of teaching. It is true, however, that, because of the ripe and finished character of his reasoning, one must follow each line with the utmost attention to grasp the full meaning placed in it, and to escape the confusion that would result from a more cursory reading of several sections sequentially. This is hardly what one would expect to find consistently present in a book of 203

pages devoted exclusively to these two symptoms. The treatise, furthermore, is characteristically clinical throughout, and is free from every suggestion of the inapposite vagaries that so often confuse a reader in attempting to follow the application of pathologic data to clinical processes.

Especial interest is aroused by the elucidation of the presence, and manner of occurrence of dyspnoea and cyanosis, in conditions in which they are not always looked for, and still exist, not only, not infrequently, but may well be of the greatest therapeutic and prognostic value. For example, the contradictory presence of cyanosis without dyspnoea in kyphoscoliosis; the value of their presence in unrecognized open foramen ovale, until brought out by an intercurrent disturbance; their almost constant presence in congenital stenosis and insufficiency of the tricuspid valve, and in transposition of the great vessels; their occurrence in measles, typhoid, relapsing fever, erysipelas and influenza, among a host of other diseases.

The specialist in the diseases of the cardio-vascular and respiratory systems, will find a great deal of valuable information in this book. The sections dealing with Dyspnoea and Cyanosis in Diseases of the Respiratory Tract, Dyspnoea and Cyanosis in Congenital Cardiac Defects, Dyspnoea and Cyanosis in Acquired Cardiac Lesions, Dyspnoea and Cyanosis in Vascular Lesions and in Neuroses of the Heart, should be of especial interest to him.

The internist can acquire much instruction in the sections devoted to Dyspnoea and Cyanosis occurring in the Infectious Diseases, Dyspnoea and Cyanosis due to Poisons, and Dyspnoea and Cyanosis in General Diseases. In the last quoted section, no less than a score of diseases are mentioned in which the manner of the occurrence of these symptoms is well described.

The subjects of microbic cyanosis and toxic cyanosis are not given an especial place, but are pointed out under their appropriate sections.

DOCTOR ROBERT LUEDEKING.

Memorial Number.

QUARTERLY BULLETIN

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APRIL, 1908

A. S. BLEYER, M.D., EDITOR

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CONTENTS.

At three o'clock in the afternoon, on Saturday, February 29th, 1908, Doctor Robert Luedeking, Dean of the Medical Department of Washington University, passed into rest. The following pages attest the high esteem in which he was held by the Medical Profession of St. Louis.

THE FACULTY.

A special meeting of the Faculty of the Medical Department was held at ten o'clock on Sunday morning March first, to take action on the demise of Doctor Luedeking. Necessary committees were appointed, and all work in the school and the dispensaries was suspended for Monday and Tuesday following.

Resolutions adopted by the Faculty follow:

"The death of Doctor Robert Luedeking has put the Faculty of the Medical Department of Washington University in deep mourning.

"Doctor Luedeking has been with us since 1882, when he was appointed Lecturer in Pathological Anatomy, to be elected Professor of Pathological Anatomy in 1883, in the St. Louis Medical College, the first Professor who devoted his teaching to this subject as a separate branch of instruction west of the Mississippi River. In 1892 he was transferred to the Professorship of Diseases of Children, his favorite study; and to this lately was added a share in the instruction in Clinical Medicine.

"In 1902 he was elected Dean of the Faculty, and he is gratefully remembered for the indefatigable industry, the sacrifices of time and labor, which he brought to this task, and the tact and ready decision displayed in this difficult office. He could always be relied upon to incline to the side of progress and betterment. Upon his strong character and pure ideal, his love of right and justice, was based his eminent ability. The Faculty therefore realize the great value of his services in the Deanship, and deplore the great loss the school has suffered through his premature death.

"To the family of Doctor Luedeking the Faculty extend a deep-felt sympathy in their sad bereavement."

G. BAUMGARTEN,
W. E. FISCHEL,
HENRY SCHWARTZ.

FUNERAL SERVICES AND BURIAL.

At the request of the family, funeral arrangements were assumed by the Faculty of the Medical Department. Services were held in Memorial Hall, Nineteenth and Locust Streets, at two o'clock on Monday, March second.

The arrangement of services, the beautiful and impressive music, the tasteful placing of the many floral offerings that had been sent, and the hall, filled in every available place by the many friends who attended, gave an impression of beauty and solemnity to the ceremonies that cannot be described.

A section of seats had been reserved for the teaching staff, students and nurses; students acted as ushers, and eight students chosen from the senior class acted as pall-bearers. The Board of Directors of the University and members of the Active Faculty were honorary pall-bearers.

An eulogy, delivered by Chancellor Snow, proclaimed the deep feeling and affection felt for our lamented Dean. The noble character of the man, his unfailing devotion to all his tasks, his great services to the school, to his friends and to his patients, were recalled in just the same way to the many present that they would have been, had the address been spoken to his immediate family. It is perhaps to the physician alone that such sentiment can be so broadly felt.

Following Chancellor Snow's feeling remarks, a paper was read by Professor Henry Schwartz, which has been kindly submitted for publication here.

"*My Friends and Fellow Mourners:*

"We have come together to perform a sad duty to our departed friend, and to show honor and respect to his mortal

remains. Our hearts are bleeding, our heads are bowed down in grief, and we are paralyzed by the appalling suddenness and magnitude of our bereavement. The sorrow and grief caused by the untimely and sudden death of Doctor Robert Luedeking is so great and universal that it would be a sin to attempt expressing it in words. But let us hope that a contemplation of his life and the lesson which it teaches will give us strength in our present weakness, and that a realization of the great service which Doctor Luedeking has rendered to the community, to the medical profession, and to the Medical Department of Washington University, will prove a lasting comfort to his family and to those who were nearest to him in life.

"Robert Luedeking was a citizen of the world. He was a man of rare universal culture and education, and he was endowed with a remarkably strong sense of justice, and with the greatest respect for the rights of others. To these qualities of the mind were added those of a kind and sympathizing heart. He was of cheerful disposition, an indefatigable worker, an optimist and an enthusiast regarding the profession of medicine in general and medical education in the United States in particular. He was a model citizen, a devoted son, a loving husband, a kind and indulgent father, and a stalwart friend.

"Born in the City of St. Louis, on November 6th, 1853, Doctor Robert Luedeking was a splendid representative of the best type of American citizens of German extraction. He came of excellent parentage and owed the early formation of his sterling character and the foundation of his broad and universal culture to the example and the influence of his splendid father, who had left Germany and had settled under the Stars and Stripes to enjoy the personal liberty and the freedom which the Constitution of the United States promises and warrants to the inhabitants of this great country. Doctor Luedeking on all occasions acknowledged gratefully and manfully this obligation to his parents.

"It was this early training which accounts for the steady, uninterrupted progress in the development of our departed colleague. It accounts for his success in the public schools of St. Louis. It accounts for his remarkable success at the German universities where he obtained his medical education. It accounts for his success as a medical practitioner in our midst. It accounts for the work of reform which he introduced and established in the Health Department of St. Louis, and it accounts for his splendid record as a medical educator and a contributor to medical literature. The fine qualities of his heart and his cheerful disposition, joined to his remarkable character, explain in a measure the lasting esteem, confidence and friendship which sprang up for Doctor Luedeking wherever he came in contact with his fellow-men.

"Doctor Luedeking was a great physician in the noblest sense of the word. He was possessed of rare medical knowledge and diagnostic skill. He displayed exceptional tact and resourcefulness in the sickroom, which endeared him not only to his patients and their families, but in a higher degree to his fellow practitioners whom so frequently he met in consultation.

"His merits as a citizen and as a practitioner of medicine are great, but they cannot be compared to the work of love which Robert Luedeking has carried on during the last 26 years of his life as a teacher in the Medical Department of Washington University, and during the last six years as the executive officer of that department. It is here that he has erected for himself a monument more lasting than bronze, and it is here that his death caused the deepest and most irreparable gap. But it is here likewise where his memory will be kept alive and where his example will be held forth as a beacon light to coming generations of medical students as long as Washington University shall exist.

"Robert Luedeking led a truly religious life. His principles comprised all that is best in the teachings of the Great Buddha

and of Christ. He served his Creator by admiring and loving His creation, including this beautiful world of ours. He served his Creator by loving and serving his fellow creatures. He knew that his body as a part of this earth and as a part of the universe was subject to the eternal changes of this material world, and he hoped that when his day's work should be done that death would welcome his weary soul to a state of rest.

"Death had no horrors for him. No Christian martyr, no Greek stoic, no great philosopher ever met death with greater composure and greater cheerfulness than did our friend Robert Luedeking. Knowing that the end could not be far off, he continued to lecture to his students, to visit his patients, to comfort his friends and to attend to the arduous duties of his Deanship. He did all this in the most pleasant spirit, and he had a friendly word and a warm handshake for all who came in contact with him during these last days. Only a week ago to-day, when I visited him at his hotel, he conversed with me at length, and in his old pleasant way. Thus he continued to the last. We may indeed exclaim: 'O, Death, where is thy sting; O, Hell, where is thy victory?'

"Robert Luedeking, thou hast truly and deservedly entered into rest.

PEACE TO THY ASHES."

At the termination of the ceremonies, the remains were taken to the Missouri Crematory, where Doctor Carl Barck delivered the following address:

Werthe Anwesende und Leidtragende!

Wenn ich in dem Nachrufe, den ich unserm lieben, uns viel zu frueh entrissenen Freunde widmen moechte, mich der deutschen Sprache bediene, thue ich das nicht ohne Grund. Denn an der Bahre dieses Mannes sollten auch einige Worte

fallen in der Sprache des Landes, das ihm eine zweite Heimath sozusagen, das ihm die geistige Mutter gewesen ist. Von Geburt Amerikaner, war Dr. Luedeking seiner Abstammung und theilweisse seiner Erziehung nach Deutscher, und er vereinigte die besten Eigenschaften dieser beiden Culturvoelker in selten harmonischer Weise in seinem Geiste und in seinem ganzen Wesen. Die zaehe Willens und Thatkraft, die unermuedliche Arbeitslust, die den schon todtkranken nicht rasten liess, war gepaart mit einer idealen Weltauffassung und mit jener Lebensfreudigkeit und dem Frohsinne, die ein Erbtheil der teutonischen Race sind. Und dieser idealen Weltanschauung, die er an deutschen Universitaeten eingesogen, er ist ihr Zeit seines Lebens treu geblieben. Denn das zeichnet diese vor den Hochschulen anderer Laender aus, dass sie nicht bloss Fach-schulen sind, dass der Character, dass der ganze Mensch ausgebildet wird. Und Dr. Luedeking war ein treuer Juenger seiner Alma Mater, der altehrwuerdigen Universitaet Heidelberg, ein Schueler, auf den diese stolz sein konnte. Nicht dadurch, dass er ihr stets ein dankbares und reges Andenken bewahrte,—war er doch der erste Praesident des hiesigen Vereins Alter Deutscher Studenten — sondern viel mehr dadurch, dass der Same, der dort gesaet wurde, in seinem Heimathlande zu reicher Bluethe sich entfaltete und Fruechte trug, die vielen Tausenden zum Segen gereichten.

Die wissentschaftliche Thaetigkeit und das aerztliche Wirken des Dahingeschiedenen ist heute schon vielfach beruehrt worden, aber wohl kaum in treffenderen Worten, als sie Herr Dr. Kolbenheyer unserm allverehrten Collegen nachgerufen hat; und dieser wird mir gerne gestatten, einige Stellen daraus wiederzugeben. 'Dr. Luedeking war einer der wenigen unter uns, von dem man sagen kann, er war ein grosser Arzt. Um mit Recht ein grosser Arzt genannt zu werden, genuegt sogenanntes aerztliches Wissen allein nicht. Dazu gehoeren noch andere Eigenschaften und Faehigkeiten. Ein grosser Arzt

muss vor allem ein grosser Diagnostiker sein. Das Erkennen der Krankheit ist die unabweisbare Grundlage wirklicher, nicht zufaelliger aerztlicher Erfolge. Zum Erkennen der Krankheit gehoert aber viel mehr, als blosses Wissen. Man muss auch die Faehigkeit der scharfen Beobachtung, resp. der ruhigen Combination besitzen. Dazu gehoert aber auch eine inspirative Phantasie, um auf diesem Wege so oft als moeglich das richtige zu treffen. Alle diese erworbenen und angeborenen Faehigkeiten besass Luedeking in ungewoehnlichem Grade.' Diesem Urtheile moechte ich hinzufuegen, dass unser College die alte und die neue Schule in gluecklicher Weise zu verbinden wusste; dass er ueber der Physiologie die Psychologie nicht vergass. Er sah in den Huelfesuchenden nicht bloss die Krankheit, sondern auch den kranken Menschen. Und waehrend er die erstere mit seinem umfassenden Wissen und scharfen Geiste, mit allen Huelfsmitteln der Wissenschaft und Technik zu bekaempfen suchte, brachte er dem letztern sein warmes Herz, seinen Trost und seine Theilnahme entgegen. Und die Vereinigung dieser Eigenschaften des Geistes und des Gemuethes machten ihn zu dem 'grossen Arzte,' als den wir ihn im Einklang mit Dr. Kolbenheyer anerkannten.

Als Sohn des ersten Sprechers der hiesigen Freien Gemeinde war Robert Luedeking ein Vertreter der Wissenschaft, des freien Forschens und freien Denkens, ungehemmt von Vorurtheilen. Doch lag es ihm fern, Proseliten zu machen. Waehrend er fuer sich das Recht seiner Ueberzeugung in Anspruch nahm und dieselbe auch jederzeit ohne Scheu kund gab, gestand er allen anders Denkenden dasselbe Recht zu. Dazu zwang ihn schon ein tief eingewurzeltes Gefuehl der Billigkeit und ein seltener Gerechtigkeitssinn. Diese letztere ist ja die schoenste Bluethe und eigentlich das letzte Ziel aller Moral. Und in gewissem Sinne ist der ganze Entwickelungsgang der Menschheit ein Vorwaertswandern auf dem Wege nach diesem, auf dem Endzwecke. Wie weit wir noch von diesem Ziele ent-

fernt sind, wie spaerlich die Zahl derer ist, die sich zu dieser Hoehe der Denkungsart aufgeschwungen haben, wissen wir alle; einer jener wenigen war unser dahingeschiedener Freund. Denn er war ein Juenger jenes edelsten Verkuenders der Humanitaet und der Duldung, des Dichters von Nathan dem Weisen, dem er in der schoenen Parabel von den drei Ringen die Worte in den Mund legt:

———————. Ich hoere ja, der rechte Ring
Besitzt die Wunderkraft beliebt zu machen,
Vor Gott und Menschen angenehm. Das muss
Entscheiden! Denn die falschen Ringe werden
Doch das nicht koennen.—Nun, wen lieben zwei
Von Euch am meisten?—Macht, sagt an! Ihr schweigt?
Die Ringe wirken nur zuruеck? Und nicht
Nach aussen? Jeder liebt sich selber nur
Am meisten?—O so seid Ihr alle drei
Betrogene Betrueger! Eure Ringe
Sind alle drei nicht echt. Der echte Ring
Vermuthlich ging verloren.————
————Doch wenn sich einst des Steines Kraefte
Bei euern Kindeskindeskindern auessern,
So lad ich ueber tausend tausend Jahre
Sie wiederum vor diesen Stuhl. Da wird
Ein weiserer Mann auf diesem Stuhle sitzen,
Als ich, und sprechen, Geht!—So sagte der
Bescheidene Richter.———

Die Lehren dieses Weisen war der rothe Faden, der sich durch die Handlungen und durch alle Beziehungen unseres Freundes zu seinen Mitmenschen hindurchzog. Bei ihm wirkte die Kraft des Ringes sicherlich mehr nach aussen und desshalb durfte er wohl ein Stueck des echten Ringes sein eigen nennen.

Was immer, verehrte Anwesende, unsere Ansicht ist ueber das, was jenseits der dunkeln Pforte liegt, die unser Freund durchschritten, und durch die wir ihm alle frueher oder spaeter folgen werden, ob wir an die Nirvana des Ostens glauben oder an die Alhalla des Westens, an den ewigen Schlaf oder an das

ewige Leben, sicher ist, dass die Verbindung mit dem jenseitigen Ufer des Flusses Styx abgeschnitten ist. Und so suess und trostvoll der Gedanke an ein einstiges Wiedersehen, es ist der Trost der Zukunft. Der Trost der Gegenwart sind die tausende von Faeden, die zurueckleiten und uns im Geiste mit den Lieben, die uns vorangegangen sind, verbinden. Jedes warme Wort, jede gute That, sie laesst ihre Spuren zurueck, da und dort eingegraben, wie die Runenschrift im Fels, die der Verwitterung trotzt. Jedes tuechtige Streben und Wirken, jedes thatkraeftige Menschenleben, es wirkt zurueck auf die Allgemeinheit, traegt bei zum Fortschritt der Menschheit und dazu, das Leben immer mehr des Lebens werth zu machen. Und in diesem Sinne hat unser dahingeschiedener Freund sicher sein ehrlich Scherflein beigetragen. Unser Gemeinwesen verliert in ihm einen seiner besten Buerger, die medizinische Profession einen ihrer berufendsten Vertreter, wir alle einen warmen und hochgeschaetzten Freund. Und die Seinigen, an denen er mit so grosser Liebe hing, denen er Zeit seines Lebens ein so hingebender Gatte und Vater war, sie duerfen das ideale Bild eines Mannes in ihrem Herzen und in ihrer Erinnerung bewahren.

THE ALUMNI ASSOCIATION.

A special meeting of the Alumni Association of the Medical Department was called by the President, Doctor R. Schlueter, for Wednesday evening, March fourth.

Doctor Schlueter spoke as follows: "After the earthly remains of our honored and beloved Dean, Doctor Robert Luedeking, have been returned to the elements, the imperishable memory of his splendid career will continue to live among us. He is mourned by many people in many walks and stations of life, but we who have been closely associated with him feel the loss most keenly.

"It seems most fitting that we should assemble in the building which was the scene of much of his best work, to pay tribute to his memory. Let us derive from our sorrow that encouragement which comes from the contemplation of a noble life, while we sit in holy meditation and our thoughts are guided by the words of some of those who knew him well."

Dr. W. H. Warren read a paper on "What Doctor Luedeking has done for the College":

"*Mr. President and Members of the Alumni Association:*

"I accepted without hesitation the invitation extended to me to speak to you on this occasion, because I feel that it is a great honor and privilege to tell you some things about our late honored Dean, Doctor Robert Luedeking, which may not be known to everybody present. Therefore, let me first express my sincere appreciation of the chance you have given me to be here as one of the speakers.

"My subject, *What Doctor Luedeking has done for the College,*

must deal with a phase of our late Dean's activity which my position as Secretary and as one of his lieutenants has permitted me to observe closely. It would hardly be possible in the space of time at my disposal to cover all the details of his career as Dean, and I shall not attempt this. I shall hope rather that I may convey to you as well as I can a general idea of the man in his capacity as an executive and as an educator.

"My acquaintance with Doctor Luedeking dates from 1898, when I became connected with this school as Instructor in Chemistry. But I must add that I did not begin to know him until he became Dean in 1902. I had met him only at Faculty meetings, which are few in number and not occasions when one can come very close to a man. I observed, however, that he was one of the few who never failed to be present. Careful attention to duty, no matter how agreeable or otherwise, was a strong characteristic of Doctor Luedeking. He always had a kindly smile and a cordial grasp of the hand for every member of the Faculty, especially for the younger men. But he had very little to say. Indeed, I came to regard him as the silent man of the Faculty. Until he became Dean I do not remember ever having heard him express himself in support of or in opposition to any Faculty measure. Compared with his active participation in Faculty affairs after he became Dean, these years will always seem remarkable. How a man who held such decided views upon all school questions could abstain so completely from entering into discussion may seem difficult of explanation. Yet the motive underlying this apparent indifference was to be found in Doctor Luedeking's character. He was not ready to speak, and he never did speak until he had thought out the subject thoroughly. Possibly if every Faculty member were equally reticent affairs would move slowly. But there are always those who are ready to speak on all occasions. As long as such men keep the ship of state in the channel and avoid the rocks, the profound and meditative man can watch and

wait. It may be that Doctor Luedeking never expected that he would be called to be our guide, but I am sure that he was in complete control of the situation, for he proved to all of us that he was ready to act when the time came.

"This very quality of character caused some of us to view Doctor Luedeking's election to the Deanship with some uncertainty. We all loved him. We were all ready to support him. Yet he had never been active in Faculty matters. He had never had experience in attending to the details of medical school affairs. But on this point we were speedily disillusioned. I have said he had never had experience, but I should have said that there were those of us who thought he never had. He had previously managed other matters requiring as much, if not more, skill. And, after all, executive powers are easily diverted from one field of action to another. In short, he immediately took up the work and carried out our policy of medical education so well that he won the confidence of the entire Faculty. His attention to details was remarkable. The slightest and seemingly most trival matter was never forgotten. Fancy a man as ill as he was when he went but a short while ago to Minnesota, writing back instructions in regard to a student who had conditions to be removed. The routine of running a medical school is not thrilling, yet Doctor Luedeking never looked upon any matter as too trivial for his consideration. And so it is that we now stand introduced to a man of marked executive ability who took up the work of medical education, and attended not only to routine, but instituted new plans, some of which he completed and some of which he has left unfinished.

"What I regard as the most important event in Doctor Luedeking's Deanship,—and I think it interested him more than did anything else,—is the complete amalgamation of our medical school with Washington University. There is no doubt that this change had to come, but we must give him the credit of

hastening matters. When he became Dean the medical school was dependent upon the tuition fees of its students. There had been deficits in the past, and individual Faculty members had contributed what was necessary. For this they deserve great praise. But it was clear that the medical school could not keep up with the best schools without university aid in a financial way. At this critical time Doctor Luedeking made one of his boldest strokes. Looking back upon that period of depression which arose from a constantly increasing deficit that was unavoidable, I accord to him my deepest respect for his far-sightedness, which made him keep on with fixed purpose in spite of the greatest discouragement. I have heard him say more than once: 'I will make or break the school, but I believe I shall make it. I would rather close our doors than continue at the cost of a depreciated educational standard.' I never believed for one instant that we should close our doors, and I know be never did. We had full faith in our Dean and in Washington University, and our trust was not misplaced. Mr. Brookings and others came forward, largely through our Dean's efforts, and made our connection with the University more than a name. But let us not forget the courageous Dean who brought things to a climax. If he had swelled our deficit by reason of needless extravagances, we should have withdrawn our support. But we knew he was not doing this. Each year he expended more and more money upon various departments, especially upon those departments giving laboratory instruction. Increased cost of instruction and an ever-rigider inspection of entrance credentials were the causes which led to our absorption by Washington University. I think nobody can question the wisdom of supporting these causes. As I have already said, this university connection interested Doctor Luedeking more than anything he ever did for the school. And nobody realized better than he did that this work had just begun. He had a clear vision of what he

believed the future had in store for this school. Were I to tell you all he hoped for, you might perhaps think him a dreamer. But Doctor Luedeking was no dreamer of impossibilities. He was a far-sighted, a clear-sighted man, able to see what had to be, and working by logical means to accomplish his purpose.

"Doctor Luedeking always kept in view the question of the educational standard required of those who would study medicine. He found our entrance requirements very inadequate. He characterized the examinations as farcical. The contrast between our present standard and that which we had in 1902 is very great. He began by first changing examiners and demanding that the examinations be more than a name. As our requirements for admission now stand, a student wishing to enter the school must present a diploma from an accredited high school, or equivalent institution, having a four years' course. But this standard is by no means sufficient, and Doctor Luedeking knew this. We know that impulses of progress start from the Atlantic and travel westward. This is true of medical education. The great eastern medical schools are demanding the A.B. degree for entrance. Some of our western schools are also doing this. It is only a question of a few years when Washington University will be making a similar demand. Doctor Luedeking hoped for that time, for nobody was ever prouder of high requirements than he. I have heard him say of recent classes: 'All but *three* members of the freshman class have high school diplomas.'

"In our educational work Doctor Luedeking was gradually leading up to the A.B. degree as an entrance requirement. Beginning with 1910 we shall require one year of undergraduate work in addition to a four years' high school course. Finally, Doctor Luedeking was a most ardent advocate of the combined M.D. and A.B. course, requiring six years of study. The first two years exclusively and a part of the third year are given to undergraduate subjects. Most of the third year and all of the

fourth year are concerned with subjects belonging to the first two years of our present medical curriculum. At the completion of the fourth year the student receives his A.B. degree. He then continues two years longer exclusively with clinical subjects, and receives his M.D. degree at the end of six years of study. We shall no doubt find this course viewed by medical students as necessary if the training is to be thorough. What effect it will have upon the character of the work accomplished can possibly be best appreciated by those of you who were teachers in the medical school ten years ago. I have heard some of you observe that at the present time it is hard to believe that the medical school is the same place it was only a decade ago. A higher standard of mentality must produce men having a finer appreciation of the proprieties of medical school etiquette. Doctor Luedeking was a gentleman in the fullest sense of the word, and at the same time he was a scholar and a man of affairs. This quiet yet forceful man knew the importance of a general culture, and he was anxious that it should precede the strictly scientific training of the physician.

"The Washington University Hospital in its present condition was largely, if not entirely, the outcome of Doctor Luedeking's energy. He was deeply interested in its success and always gave it his best support. The hospital, like the medical school, is an expensive institution. Being in a great measure a charitable hospital, and at the same time being used for the instruction of our students, it cannot be otherwise than expensive. Doctor Luedeking was certainly proud of this hospital, though he regarded it as only the beginning of a greater university hospital sufficiently endowed to permit of its being exclusively charitable, and of its giving the student a complete hospital training. He was sometimes troubled by what seemed to him want of enthusiasm and lack of support on the part of our clinical force towards the hospital. But there was no doubt as to his attitude. One of the men who stands very high in the

councils of the university said, 'Yes, the hospital is expensive, but if Doctor Luedeking says we need it, I will give it my strongest support.'

"The secret of his success in educational matters is easily understood, for he was wont to remark that he cared more for the school than he did for his practice. He was an enthusiast in his educational work, and this accounted for his untiring zeal. In everything he did there was no hidden motive underlying any of his acts. Doctor Luedeking might act contrary to the wishes of a colleague, but I am sure none of us ever felt that he did so for any other reason than because he was convinced that his action was right. No man could have been more diplomatic and at the same time more honest than he. Kindliness of manner and steadfastness of purpose went hand in hand.

"Devotion to a cause is the first requisite for success. Doctor Luedeking, though not an alumnus of this school, felt for it a devotion that could not have been truer. He believed in it and felt that it was destined to be one of the great schools of the country. If my words will not convince you of his loyalty, let his own tell you what was on his mind. The incident I shall relate is full of pathos, and it happened during the last week of his life. As he passed the school building for the last time on a bed of sickness, he looked from the ambulance. 'The old school,' he said. 'Drive slow!' Then turning his head slowly aside, this brave soul added: 'Much work to be done!' Nobody realized better than Doctor Luedeking that he was leaving an unfinished task.

"What may not the example of such a man accomplish! Is there one of us here this evening, be he student about to enter upon a medical career or be he graduate in the midst of practice, who will not pause for a minute and reflect upon the worth of such a man as Doctor Luedeking? Are we not to be proud that it was our good fortune to have such a man as Dean? In

all the future of this medical school, let not the memory of Robert Luedeking be allowed to fade. Physician, educator and friend, he did his life's work well."

DR. LUEDEKING AS TEACHER AND FRIEND.

A paper, "Doctor Luedeking as Teacher and Friend," was read by Dr. Elsworth Smith, Jr.

"I hesitate, after listening to the tributes already paid to the memory of our lamented colleague by those who knew him longer and better than I, to speak further in appreciation of his many gifts of mind and character, and only acceded to the request to address you this evening, because it appeared to be my duty to make such contribution as I could on behalf of those of our Alumni who occupy chronologically, a position midway between Doctor Luedeking's contemporaries and the youngest members of our Association, and especially on behalf of the class of 1887, of which I am a member.

"It was my privilege to know Doctor Luedeking, in a way, even before I met him. Up to 1882 my father had held for a number of years the Chair of Clinical Medicine and Pathological Anatomy in the St. Louis Medical College, but in that year Doctor Luedeking became Professor of Pathological Anatomy. Though it was prior to my matriculation as a medical student, I well remember hearing my father speak frequently in enthusiastic terms of the attainments of the young man who had come to his assistance as a teacher. Later it was my great good fortune to meet Doctor Luedeking as my teacher, and I soon realized the truth of all his senior in the department had said in praise of him.

"Doctor Luedeking's work as a teacher of the class of 1887 carries us back through the present changing views in pathology regarding the chemistry of metabolism in health and disease,

and through the status of pathology at the end of the nineteenth century in its investigation of the rôle of infectious agents in disease, to the time when interest in pathological study was centered mainly in the rôle of the individual cell in morbid processes, or to the epoch of cellular pathology.

"Before Doctor Luedeking appeared on the teaching staff of the old St. Louis Medical College, pathology had been taught by such demonstrations of macroscopic specimens as the professors of pathology and clinical medicine could find time to give. These were supplemented by a few microscopic demonstrations given by an instructor. But on the advent of Doctor Luedeking this important branch, the very basis, in fact, of internal medicine, was dignified with a separate chair and given the consideration and prominence it deserved. Doctor Luedeking filled this chair with signal ability. I am sure that all preceding classes and those which came after our time would join with me in saying that we were fortunate to be allowed to look through his microscope and listen to his valuable words.

"Fresh from the halls of that grand old master, Rudolf Virchow, our professor came to us with all the attainments and enthusiasm such a master alone could impart and inspire in an apt and admiring pupil. With painstaking zeal, clearness and precision, Doctor Luedeking endeavored to explain to his class the subject of cellular pathology, and we appreciated in a way at the time the valuable hours assigned to this important subject. Yet it was only later in our duties as internes in the deadhouse of the old City Hospital, in our daily work and in our private practice, that we realized in all their force and beauty the lessons and maxims of our beloved professor.

"I seem still to hear his clear, attractive voice saying: '*Omnis cellula e cellula*,' and quoting over and over again, as was his wont, the names of Virchow and his pupils—Leyden, Rechlinhausen, Cohnheim, Waldeyer, and others.

"An incident of those student days graphically foretold that will power and courage he was destined to manifest at his life's

close. All of us in the class had noticed that our professor had not been looking well for some time. He appeared pale and weak, and showed, what was quite foreign to him, that his work seemed to be an effort. But he always filled his hour faithfully, though each time he looked more miserable and feeble. One day in the midst of his lecture he fell to the floor in a syncope. We rushed to his assistance and carried him from the amphitheater. Later we learned that his condition of health had been caused by an intestinal disturbance, from which he completely recovered in due course of time. Yet the fact remains that he would not and did not give up, but stood at the post of duty to the end.

"As I looked upon his altered form and countenance after his return last fall from Europe, I silently prayed that his ailment might prove to be comparatively harmless and curable, such as he had experienced during our student days. Yet I felt at the same time that my prayer was useless, for he seemed to manifest the impress of a progressively fatal malady.

"We of course did not enjoy the privilege of having Doctor Luedeking as a teacher of pediatrics or clinical medicine, but all of us have been convinced by the testimony of those who were fortunate enough to be his pupils, and by the fact that the deadhouse is the great school of internal medicine, and by intercourse with him as a consultant, that he was not only an accurate and clever diagnostician, but an able and successful therapeutist as well—in a word, that he was a great physician.

"Such associations of our student days as these engendered a friendship which was fostered and cemented in succeeding years, and which it was my great privilege and happiness to enjoy to the end. The personality of Robert Luedeking was as attractive as his mentality. It is human nature to be attracted towards one who is uniformly pleasant, agreeable and considerate, and who, though a busy man, always has a moment for a hearty handshake and a kindly word of cheer. Doctor Luedeking was such a man. In any calling it is difficult to

keep one's outward demeanor up to this standard, but it is especially difficult in the profession of medicine, with its constant weight of responsibility of life and death, with its numerous perplexities and days of inconvenient hours. Demoralized days must come to all of us, when everything seems to go wrong and nothing right. To meet such occasions calmly, and as Osler says, 'with such control of our nerve centers as not to permit any vasomotor disturbance of our peripheral vessels,' and to command such subjugation of our faculties as to be able to meet our friends with a smile and pleasant words, such is indeed the test of a great man. Doctor Luedeking was a man uniformly fulfilling these requirements. In all the phases of his busy career, as teacher, as dean, as consultant and as friend, he always merited the grand old title of gentleman.

"Probably in the rôle of consultant we naturally look most for the comfort in our work that friendship brings. While of course we are then as always in search of truth, and do not for a minute desire to jeopardize the interests of the patient to shield the physician in charge, still we realize the possibilities for evil besetting the attending physician at the hands of an unscrupulous consultant. A friend who can be conscientiously kind and considerate on such occasions is indeed often a friend in need, especially in the case of the struggling young man with so much at stake in his first few cases.

"This is but a feeble and inadequate glimpse into the useful, busy and noble life of Doctor Luedeking. Though gone, he has left us, especially the Alumni of this college, which he loved so well, a priceless heritage in the example of a well-spent life which was all too short. He has shown us how, with the preliminary education of our public schools, one, through thrift, enthusiasm and faithful application to study, may climb from the bottom to the top in his chosen calling. And how, without the aid of wealth or influence, one may die beloved, honored and mourned by all who crossed his life's pathway.

This is the lesson which all of us should learn from his hallowed life. Let us hope that after a life thus replete with natural religion, he has reaped his eternal reward, and let us say, with Oliver Wendell Holmes:

Fast as the rolling seasons bring,
The hour of fate to those we love,
Each pearl that leaves the broken string
Is set in Friendships crown above.
As narrow grows the earthy chain
The circle widens in the sky,
These are our treasures that remain
But those are stars that beam on high.

BIOGRAPHICAL SKETCH.

Dr. Joseph Grindon presented the following Biographical Sketch, which was concluded with a few very appropriate remarks:

"This community has suffered a great loss in the death of Doctor Robert Luedeking, which occurred early in the afternoon of Saturday, February 29th, after a painful and lingering illness.

"The taking off of any man who has for years stood in the front rank of any department of human effort necessarily leaves a void in that calling. In the case of Doctor Luedeking, that void will be multiplied as many times as his versatile nature presented different sides to the world, for his mind was a diamond of many facets, each reflecting its own ray, while his heart was filled with a broad charity which nurtured friendships with many kinds and conditions of men.

"It is given to but few men to be at the same time deep and broad. Profound insight into the laws of Nature is generally acquired only through the disuse and consequent atrophy of a certain proportion of the thousand and one connecting strands

which bind the individual to his fellows. Those men, few and rare, who can achieve great learning and yet maintain living contacts with many other minds and hearts are of inestimable value. They not only receive, but they give. They are not only an ornament to society, but in the highest degree useful, helpful and ennobling. Their example does the most good because it reaches the greatest number. They command not only admiration, but affection. Such a man was Doctor Luedeking.

"To men of science he was known as one who early in his career had done original and brilliant work in pathological anatomy, while his later writings, laden with the fruits of long experience in clinical medicine, were read eagerly by the practitioner. He devoted special attention to the diseases of children, and many a St. Louis mother will sadly miss the wise counsellor whose coming was so gladly welcomed as she sat with anxious heart watching the uneasy tossing of a little curly head.

"The officers of the Washington University and the Faculty of its Medical Department prized him as an able executive officer. After the death in 1899, of the lamented Henry Mudd, who had served long and successfully as Dean, the Medical Department for a time was at a loss to find one equally devoted and capable. In 1902 Doctor Luedeking was chosen to the place, and showed at once that he possessed the necessary zeal, tact and executive ability demanded by the difficult duties of the position.

"Soon after his graduation in medicine and return to this country, Doctor Luedeking entered the Health Department, and for five years, from 1877 to 1883, served the city successively as Dispensary Physician, Secretary of the Board of Health, and for several periods of a month or two at a time as Acting Superintendent of the City and Female Hospitals. In these institutions he displayed the greatest activity and a keen interest in the welfare of the unfortunates cared for at the city institutions. During the prevalence of smallpox in 1881–'82–'83

he often visited the smallpox hospital. The officers in charge, isolated as they were by the nature of their duties, looked forward to his visits, which were as a ray of sunshine piercing gloomy clouds. His kind face and manner, his jolly laugh, his unfailing cheerfulness were as valuable to them as his advice and suggestions.

"We have just alluded to one of his leading characteristics, his equanimity under any and all circumstances. William Osler, in the opening chapters of a collection of delightful essays entitled 'Aequanimitas,' rightfully classes this attribute as one of the most precious which the physician can possess. There come to all, days of disappointment and annoyance, when the sweetest tempers are in danger of being at least temporarily soured; only the strongest, bravest and kindest at such times remember the feelings of others, and for their sakes maintain an undisturbed serenity.

"He who can do this is at peace with himself, and so it was with the kind friend we have just lost. Even after his face wore the unmistakable impress of mortal disease, and his frame had shrunken to a mere shadow of its former self, he still greeted his friends with the same pleasant smile, the same cordial tone and the same hearty handgrasp as in the old days of health and hope.

"Doctor Robert Luedeking was born in this city in 1853, and was graduated from the High School in 1871. Going to Germany to continue his studies, he attended the University of Heidelberg in 1872–'74, and thence removed to Strassburg, where, in 1876, he received the degree of Doctor of Medicine. After a year of post-graduate work in Vienna, he returned to his native city and for some years held various positions in the City Health Department, as above detailed.

"In 1882 he was appointed Lecturer on Pathological Anatomy in the St. Louis Medical College (now a part of the Medical Department of Washington University), and the following year was promoted to a professorship in the same branch, which

position he continued to hold until 1892, when he was made Professor of Diseases of Children. This chair he continued to hold until his death, although in 1895, a Professorship of Clinical Medicine was added to his duties. He was also chief of the Clinic for Diseases of Children at the O'Fallon Dispensary, and instructor in the children's department of Bethesda Hospital from 1892 on. The same year, as before stated, he became Dean of the Medical Department of Washington University. He was editor of the *St. Louis Medical Review* in 1884–'85–'86, and at the time of his death was a member of the staff of St. Luke's Hospital and of the Jewish Hospital.

"He visited Berlin and attended its university courses and clinics in 1887, in 1897 and in 1903, 1905 and 1906.

"Some of Doctor Luedeking's chief publications are the following:

"'Untersuchungen ueber die Regeneration der Guergestreiften Muskelfaser,"

"The Present Status of Serum-therapy,"

"Pathology of Pneumonia,"

"Concerning the Antistreptococcic Serum,"

"Perforative Inflammation of Meckels' Diverticulum,"

"Cellular Agency in Disease,"

"Notes on Diabetic Coma,"

"Etiology of Gastric Carcinoma,"

"Domestic Milk Modification for Infant Feeding,"

"Heredity in Pathogenesis."

"Mrs. Luedeking, who survives her husband, is a daughter of S. W. Biebinger, formerly President of the Fourth National Bank. There are no sons, his eldest daughter Alice, is the wife of Trescott Chaplin, Esq., son of former Chancellor Chaplin. The younger daughter is attending school in New York.

"Doctor Luedeking's father conducted a girls' school here until 1854. A brother, Dr. Charles Luedeking, is well known as a chemist, and is now connected with the Mallinkrodt Chemical Company of St. Louis.

"There are only a few men in this city whose deaths would be mourned so sincerely or by so many."

RESOLUTIONS.

Resolutions prepared by the Committee appointed by the President, follow:

As a tribute to the memory of our colleague, Robert Luedeking, who has been taken so suddenly from our midst, we, the members of the Alumni Association of the Medical Department of Washington University, wish to express our appreciation of his life of unselfish service to his fellow-men.

Among the attributes which endeared him was devotion to high ideals. He has left a lasting example of noble citizenship. He gave to the practice of medicine deep interest and untiring energy, winning thereby the esteem of the medical profession and the love of his patients. As contributor to medical science and as teacher, our colleague has added to its store of knowledge and spread widely its truths. But it is especially his craeer as Dean of our school which calls forth our admiration: with singleness of purpose he performed a hard task and gave to our Alma Mater the fruits of his labors.

Let us therefore resolve that the memory of Robert Leudeking be cherished, and that these thoughts be perpetuated in the records of our society.

GEORGE HOMAN,
ROBERT J. TERRY,
ALBERT F. KOETTER.

This Committee will further arrange for the perpetuation of Doctor Luedeking's memory in the form of a portrait, bust, or commemorative tablet, to be placed in the College building.

STUDENTS OF THE MEDICAL DEPARTMENT.

At a special meeting of the student-body of the Medical Department of Washington University, held on the fifth day of March, 1908, the following resolutions were unanimously adopted:

WHEREAS our honored and beloved Dean, Doctor Robert Luedeking, has passed away, and

WHEREAS we, the members of the undergraduate body of the Medical Department of Washington University, feel that we have each one of us sustained a deep personal loss, and

WHEREAS we wish to express our admiration for Doctor Luedeking, for his scholarship, his patience and tact, his unfaltering idea of justice, and our affection for the leader and instructor that is gone,

Be it resolved that we take this means of expressing to the members of his family our sympathy in their bereavement, our esteem for the unselfish life that is ended, and our sense of the noble influence that yet lives.

And be it further resolved that engrossed copies of these resolutions be sent to his family and to the Executive Committee of the Faculty.

H. MCYOUNG,
L. H. TUHOLSKE,
S. J. SIMON,
E. F. HARRISON,
Committee.

THE ST. LOUIS MEDICAL SOCIETY.

A special memorial meeting of the St. Louis Medical Society was called by the President, Dr. H. Tuholske, at four o'clock on Sunday afternoon, March first. Addresses were delivered by Doctors W. B. Outten, George Homan, Gustave Baumgarten and Joseph Grindon. On Dr. T. A. Hopkins' motion, a Committee was appointed to draft suitable resolutions.

Resolutions submitted by this Committee follow:

On Saturday, February 29th, 1908, the St. Louis Medical Society lost a prominent, efficient and esteemed member by the death of Doctor Robert Luedeking.

The ultimate basis of esteem is personal character. Doctor Luedeking's intellectual attainments made of him a prominent figure in the profession of this city. His scientific utterance made no pretension to dazzle the judgment of his colleagues. When he had anything to say, it meant the outcome of much thought and laborious study. His "Untersuchungen ueber die Regeneration der Quergestreiften Muskelfaser," published thirty-two years ago, ranks to-day as an achievement not supplanted by any knowledge on this subject of our present great physiologists. If he had written nothing more than this, we would still have reason to be proud of him as a contributor to Medical Science. But the profession honored him most because of his high character. Its purity was never impeached,—its greatness found its best expression in kindness. He was as kind of heart as he proved himself wise of head. It was this combination that made him the trusted physician;—his colleagues and his patients trusted him. The loss of such a man is a great loss.

The St. Louis Medical Society, in profound appreciation of the high ideals attained and exploited by their colleague, feels

that in the death of Robert Luedeking the Society, as well as the profession of the country, has lost an honored man; be it therefore *resolved*, that this memorial be entered upon the records of the Society, and that an engrossed copy of the same be forwarded to the family of Doctor Luedeking as a token of heartfelt sympathy in their deep affliction.

G. BAUMGARTEN,
W. E. FISCHEL,
A. ALT.

BETHESDA PEDIATRIC SOCIETY.

The following minute was adopted by the Society on March 11th, 1908:

Doctor Robert Luedeking was a member of the Bethesda Pediatric Society from the 28th of March, 1900. He was early associated with work in pediatrics in St. Louis, and was always recognized as a sympathetic, painstaking, thorough clinician, and a scientific, convincing teacher in this speciality.

His loss will be especially felt by his co-workers in this line, and his fellow-members of our Society, and the student-body to whom for many years he has taught pediatrics.

Our grief at his loss must be reconciled by the mark which his life has made on the medical history of St. Louis, and the teaching of scientific pediatrics in St. Louis.

For the Society,

G. M. TUTTLE, *President,*
A. S. BLEYER, *Secretary.*

THE STAFF OF BETHESDA HOSPITALS.

At a special meeting of the Bethesda Staff, held Monday evening, March second, the following resolutions were adopted:

Resolved: That in the death of Doctor Robert Luedeking we have sustained an irreparable loss, that his great ability, his high character and his kindliness have greatly endeared him to us all, and that in the years to come we shall miss his genial presence and his ready help.

Resolved: That a copy of these resolutions be transmitted to the bereaved family as an expression of our sympathy, and that they be published in the *Bethesda Herald* and in the *Quarterly Bulletin of the Medical Department of Washington University.*

Resolved: That a photograph of Doctor Luedeking be framed and hung in the Bethesda Foundling's Asylum.

E. W. SAUNDERS,
JOHN ZAHORSKY.

QUARTERLY BULLETIN

OF THE

MEDICAL DEPARTMENT

OF

WASHINGTON UNIVERSITY

JUNE, 1908

Containing
THE COURSES OF INSTRUCTION FOR 1908-1909
A Catalogue *of* Officers *for* 1908-1909
and of Students *for* 1907-1908

VOLUME VI NUMBER 3

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CALENDAR MEDICAL DEPARTMENT.

1908.

September 22. Tuesday, Entrance Examinations.
September 24. Thursday, Examinations for advanced standing.
September 25. Friday, Examinations for removal of conditions.
September 28. Monday, Academic Year begins.
November 26. Thursday, Thanksgiving Day.
December 20. Christmas recess begins.

1909.

January 2. Christmas recess ends.
January 27. Wednesday, Mid-year examinations begin.
February 1. Monday, Second half year begins.
February 22. Monday, Washington's Birthday.
May 1. Saturday, Last day for receiving applications for the degree of M. D.
May 17. Monday, Final examinations begin.
May 22. Saturday, Final examinations end.
May 26. Alumni Banquet.
May 27. Thursday, Commencement.

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HARRY MCCABE JOHNSON, M.D.,
Clinical Professor of Genito-Urinary Surgery.

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* Deceased.

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EDWARD MUELLER, A.M., PH.D.,
Assistant Professor of Chemistry.

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† On leave.

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FRED FAHLEN, M.D.,
Instructor in Clinical Medicine.

H. CLAY CREVELING, M.D.,
Instructor in Clinical Laryngology.

WILLIAM E. SAUER, M.D.,
Instructor in Clinical Laryngology.

MOSES W. HOGE, M.D.,
Instructor in Clinical Neurology.

WALTER L. JOHNSON, M.D.,
Instructor in Clinical Pediatrics.

EDWIN W. EBERLEIN, M.D.,
Instructor in Clinical Pediatrics.

MEYER J. LIPPE, M.D.,
Instructor in Clinical Pediatrics.

AARON LEVY, M.D.,
Instructor in Clinical Pediatrics.

L. C. HUELESMANN, M.D.,
Instructor in Medicine.

WALTER FISCHEL, A.B., M.D.,
Instructor in Physical Diagnosis.

Obstetrics and Gynecology.

BERNARD W. MOORE, M.D.,
Instructor in Obstetrics.

HERMAN A. HANSER, M.D.,
Instructor in Gynecology.

ARTHUR C. KIMBALL, A.B., M.D.,
Instructor in Gynecology.

SHERWOOD MOORE, M.D.,
Instructor in Obstetrics.

Ophthalmology.

JULIUS H. GROSS, M.D.,
Instructor in Ophthalmology.

NATHANIEL M. SEMPLE, M.D.,
Instructor in Ophthalmology.

F. E. WOODRUFF, M.D.,
Instructor in Ophthalmology.

LLEWELLYN WILLIAMSON, M.D.,
Instructor in Ophthalmology.

Otology.

EUGENE T. SENSENEY, A.B., M.D.,
Instructor in Otology.

Physiology.

CLYDE BROOKS, A.B.,
Instructor in Physiology.

FRANCES VIRGINIA GUTHRIE, A.B.,
Research Assistant in Physiology.

Surgery.

HENRY ARTHUR GEITZ, M.D.,
Instructor in Minor Surgery and Bandaging.

ROBERT E. SCHLUETER, M.D.,
Instructor in Clinical Surgery.

MALVERN B. CLOPTON, M.D.,
Instructor in Clinical Surgery.

Pathology and Bacteriology.

CHARLES LEONARD KLENK, M.D.,
Laboratory Assistant.

Pharmacy.

EUGENE P. COCKRELL, PH.G., M.D.,
Assistant and Demonstrator.

LABORATORY ASSISTANTS.

During the session of 1907-1908 the following students have served as assistants in the several laboratories:

Anatomy.

E. T. BRAND.
HIRREL STEVENS, A.B.
C. S. MCGINNIS.
J. E. CHAPIN, A.B.

Physiology and Pharmacology.

W. N. PUGH, Ph.G.
J. A. SEABOLD.
O. H. QUADE.
L. TUHOLSKE, A.B.

Pathology and Bacteriology.

S. B. ABAZA.

Pharmacy.

E. P. STIEHL.

Undergraduate Internes Washington University Hospital.

WILLIAM DAY MOORE.
HENRY J. SMITH, A.B.
PHELPS G. HURFORD.

MEDICAL STAFF WASHINGTON UNIVERSITY HOSPITAL.

WAYNE SMITH, M.D., *Superintendent.*
MENIA S. TYE, *Superintendent of Nurses.*

Medicine.

GUSTAV BAUMGARTEN, M.D.,
WASHINGTON E. FISCHEL, M.D.,
ALBERT E. TAUSSIG, M.D.,
JESSE S. MYER, M.D.,
WILLIAM H. RUSH, M.D.,
WALTER BAUMGARTEN, M.D.,
OLIVER H. CAMPBELL, M.D.,
WALTER FISCHEL, M.D.,
JUSTIN STEER, M.D.,
ELSWORTH SMITH, Jr., M.D.,
LOUIS H. BEHRENS, M.D.,
HENRY S. BROOKES, M.D.,
JOHN C. SALTER, M.D.,
ADRIAN S. BLEYER, M.D.,
C. A. W. ZIMMERMANN, M.D.
L. H. HEMPELMANN, M.D.,
FRED FAHLEN, M.D.,
L. C. HUELESMANN, M.D.

Surgery.

HERMAN TUHOLSKE, M.D.,
NORMAN B. CARSON, M.D.,
WILLARD BARTLETT, M.D.,
VILRAY P. BLAIR, M.D.,
CHARLES H. DIXON, M.D.,
ERNST JONAS, M.D.,
MALVERN B. CLOPTON, M.D.,
PAUL Y. TUPPER, M.D.,
HARVEY G. MUDD, M.D.,
GEORGE W. CALE, Jr., M.D.,
WILLIAM S. DEUTSCH, M.D.
W. M. ROBERTSON, M.D.,
ROBERT SCHLUETER, M.D.,
HENRY A. GEITZ, M.D.,
HARRY M. MOORE, M.D.

Obstetrics and Gynecology.

HENRY SCHWARZ, M.D.,
E. W. SAUNDERS, M.D.,
R. H. FUHRMANN, M.D.,
A. G. SCHLOSSSTEIN, M.D.,
F. J. TAUSSIG, M.D.,
H. A. HANSER, M.D.,
HENRY S. CROSSEN, M.D.,
FRANK A. GLASGOW, M.D.,
WILLIS HALL, M.D.,
GEORGE GELLHORN, M.D.,
B. W. MOORE, M.D.,
A. C. KIMBALL, M.D.,
SHERWOOD MOORE, M.D.

Diseases of the Nervous System.

FRANCIS RHODES FRY, M.D., GIVEN CAMPBELL, Jr., M.D.,
M. A. BLISS, M.D., M. W. HOGE, M.D.

Diseases of Children.

EDWARD WATTS SAUNDERS, M.D., W. L. JOHNSON, M.D.,
GEO. M. TUTTLE, M.D., M. J. LIPPE, M.D.,
JOHN ZAHORSKY, M.D., E. W. EBERLEIN, M.D.,
A. LEVY, M.D.

Ophthalmology.

JOHN GREEN, M.D., HENRY LINCOLN WOLFNER, M.D.
ARTHUR EUGENE EWING, M.D., WILLIAM A. SHOEMAKER, M.D.,
JOSEPH W. CHARLES, M.D., M. WIENER, M.D.,
JULIUS H. GROSS, M.D., N. M. SEMPLE, M.D.,
F. E. WOODRUFF, M.D., LLEWELLYN WILLIAMSON, M.D.

Dermatology.

W. A. HARDAWAY, M.D., JOSEPH GRINDON, M.D.,

Otology.

HORATIO N. SPENCER, M.D., JOHN BLASDEL SHAPLEIGH, M.D.,
A. F. KOETTER, M.D. E. T. SENSENEY, M.D.,
SELDEN SPENCER, M.D.

Orthopedic Surgery.

A. J. STEELE, M.D., PHILIP HOFFMANN, M.D.,
NATHANIEL ALLISON, M.D.

Laryngology and Rhinology.

EDGAR MOORE SENSENEY, M.D., GREENFIELD SLUDER, M.D.,
H. CLAY CREVELING M.D., WILLIAM E. SAUER, M.D.

Genito-Urinary Surgery.

EDWIN C. BURNETT, M.D., H. McC. JOHNSON, M.D.,
W. M. ROBERTSON, M.D.

Rectal Surgery.

CHARLES H. DIXON, M.D., FRANCIS REDER, M.D.

Pathology and Bacteriology.

ERNST FRIEDRICH TIEDEMANN, M.D.
CHARLES LEONARD KLENK, M.D.

STAFF OF THE O'FALLON DISPENSARY.

WAYNE SMITH, M.D., *Superintendent.*

Department of Medicine.

Professors.

JUSTIN STEER.
ELSWORTH SMITH, JR.

Chiefs of Clinic.

HENRY S. BROOKES, M.D.
H. W. BEWIG, M.D.

Clinical Assistants.

F. C. E. KUHLMANN, M.D., W. T. HIRSCHI, M.D
A. F. HENKE, M.D.

Laboratory Assistant.

R. W. MILLS.

Department of Surgery.

Professor.

H. G. MUDD.

Chiefs of Clinic.

R. E. SCHLUETER, M.D., VILRAY P. BLAIR, M.D.,

Clinical Assistants.

WILLIAM BECKER, M.D., EDWIN A. BABLER, M.D.
G. W. KOENIG, M.D.

Department of Obstetrics and Gynecology.

Professor.

HENRY SCHWARZ.

Associate Chiefs.

R. H. FUHRMANN, M.D., WILLIS HALL, M.D.,
GEORGE GELLHORN, M.D., A. G. SCHLOSSSTEIN, M.D.

Department of Genito-Urinary Diseases.

Clinical Professors.

EDWIN C. BURNETT, HARRY McC. JOHNSON.

Clinical Assistants.

O. H. FISCHER, M.D., D. B. GARSTANG, M.D.,
N. W. AMOS, M.D., H. M. MOORE, M.D.

Department of Neurology.

Professor.

F. R. FRY.

Chief of Clinic.

M. W. HOGE, M.D.

Department of Pediatrics.

Professor.

GEORGE M. TUTTLE.

Chief of Clinic.

E. W. EBERLEIN, M.D.

Clinical Assistant.

H. M. LOEWENSTEIN, M.D.

Department of Dermatology.

Professor.

JOSEPH GRINDON.

Clinical Assistants.

THEODORE GREINER, M.D., G. H. RAITHEL, M.D.

Department of Otology.

Professor.

J. B. SHAPLEIGH,

Chief of Clinic.

A. F. KOETTER, M.D.

Clinical Assistant.

W. G. KRENNING, M.D.

Department of Ophthalmology.

Professor.

A. E. EWING.

Chiefs of Clinic.

W. A. SHOEMAKER, M.D., J. W. CHARLES, M.D.

Clinical Assistants.

J. H. GROSS, M.D., N. M. SEMPLE, M.D.,
J. F. SHOEMAKER, M.D.

Department of Laryngology and Rhinology.

Clinical Professor.

GREENFIELD SLUDER.

Chief of Clinic.

H. EDWARD MILLER, M.D.

Clinical Assistants.

H. B. MILLER, M.D., E. L. APPERSON, M.D.

Department of Orthopedic Surgery.

Clinical Lecturer.

PHILIP HOFFMANN.

Clinical Assistants.

F. H. ALBRECHT, M.D., A. E. HORWITZ, M.D.,
M. F. KHOURI, M.D.

Department of Rectal Surgery.

Clinician.

FRANCIS REDER, M.D.

STAFF OF THE WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

Superintendent.
WAYNE SMITH, M.D

Department of Surgery.

Professor.
H. TUHOLSKE.

Chief of Clinic.
ERNST JONAS, M.D.

Associate Chief.
W. S. DEUTSCH, M.D.

Senior Assistants.
W. M. ROBERTSON, M.D., ROBERT BURNS, M.D

Junior Assistant.
M. A. FRANKENTHAL, M.D.

Junior Assistant and Chief of Laboratory.
S. E. NEWMAN, M.D.

Clinical Assistants.
EUGENE A. SCHARFF, M.D., GEORGE M. PARK, M.D.
M. G. GORIN, M.D.

Department of Medicine.

Professor.
W. E. FISCHEL.

Chief of Clinic.
ALBERT E. TAUSSIG, M.D.

Clinical Assistants.
O. H. CAMPBELL, M.D., WALTER FISCHEL, M.D.

Department of Obstetrics.

Washington University Lying-in Hospital and Obstetrical Out-Clinic.

Professor.
HENRY SCHWARZ.

Chief of Clinic.
R. H. FUHRMANN, M. D.

Associate Chief of Clinic.
A. G. SCHLOSSSTEIN, M.D.

Senior Resident Physician.
GRANDISON D. ROYSTON, M.D.

Junior Resident Physician.
WILLIAM KIRWIN, M.D.

Department of Gynecology.

Professor.
H. S. CROSSEN.

Senior Clinical Assistants.
HERMAN A. HANSER, M.D., F. J. TAUSSIG, M.D.

Clinical Assistants.
C. O. C. MAX, M.D., C. G. WRIGHT, M.D.,
G. O. GAUEN, M.D.

Department of Pediatrics.

Professor.
E. W. SAUNDERS.

Chief of Clinic.
JOHN ZAHORSKY, M.D.

Clinical Assistants.
M. J. LIPPE, M.D., ADRIAN S. BLEYER, M.D.

Department of Dermatology.

Professor.
W. A. HARDAWAY.

Senior Assistant.
R. H. DAVIS, M.D.

Clinical Assistant.
A. H. FRIEDEBERG, M.D.

Department of Otology.

Professor.
H. N. SPENCER.

Chief of Clinic.
SELDEN SPENCER, M.D.

Senior Clinical Assistants.
E. T. SENSENEY, M.D.
FREDERICK C. SIMON, M.D.

Department of Neurology.

Clinical Professor.

GIVEN CAMPBELL, JR.

Clinical Assistants.

WILLIAM L. NELSON, M.D. PHILIP B. NEWCOMB, M.D.

Department of Ophthalmology.

Clinical Professor.

H. L. WOLFNER.

Chief of Clinic.

M. WIENER, M.D.

Clinical Assistants.

F. E. WOODRUFF, M.D., F. P. PARKER, M.D.,
L. WILLIAMSON, M.D.. W. C. OWEN, M.D.

Department of Diseases of the Chest.

Clinical Professor.

L. H. BEHRENS.

Clinical Assistant.

ALBERT MAY, M.D.

Department Laryngology and Rhinology.

Chief of Nose and Throat Clinic.

H. C. CREVELING, M.D.

Clinical Assistants.

W. E. SAUER, M.D., A. F. DAMES, M.D.

Department of Orthopedic Surgery.

Professor.

A. J. STEELE.

Chief of Clinic.

NATHANIEL ALLISON, M.D.

Department Rectal Surgery.

Clinical Professor.

CHARLES H. DIXON.

Clinical Assistant.

WILLIAM H. STAUFFER, M.D.

STAFF OF THE ST. LOUIS MULLANPHY HOSPITAL.

Surgeon in Chief.

PROFESSOR N. B. CARSON.

Department of Surgery.

Professor.

N. B. CARSON.

Clinical Assistants.

MALVERN B. CLOPTON, M.D., CHARLES E. HYNDMAN, M.D.

Department of Medicine.

Professors.

JUSTIN STEER, ELSWORTH SMITH, Jr.

Chief of Clinic.

L. H. HEMPELMANN, M.D.

Chief of Clinic and Laboratory.
FRED FAHLEN, M.D.

Clinical Assistants.
L. C. HUELESMANN, M.D., ANDREW C. HENSKE, M.D.

Department of Gynecology.
Professor.
FRANK A. GLASGOW.

Clinical Assistant.
ARTHUR C. KIMBALL, A.B., M.D.

Department of Laryngology.
Professor.
EDGAR M. SENSENEY.

Department of Dermatology.
Professor.
JOSEPH GRINDON.

Clinical Assistant.
THEODORE GREINER, M.D.

Department of Nervous Diseases.
MALCOLM A. BLISS, M.D.

Department of Genito-Urinary Diseases.
Clinical Professor.
HARRY McC. JOHNSON.

Clinical Assistants.
N. W. AMOS, M.D.
D. BUIE GARSTANG, M.D.

STAFF OF THE BETHESDA HOSPITAL AND MATERNITY HOSPITAL.

Physician in Chief.
PROFESSOR E. W. SAUNDERS.

Chief of Children's Clinic.
W. L. JOHNSON, M.D.

Clinical Assistant Children's Clinic.
A. LEVY, M.D.

Chief of Obstetrical Clinic, Maternity Hospital.
B. W. MOORE, M.D.

Assistants in Obstetrical Clinic, Maternity Hospital.
SHERWOOD MOORE, M.D., J. W. WHITE, M.D.

ST. LOUIS CITY HOSPITAL.

Medicine.
PROFESSOR W. E. FISCHEL.
PROFESSOR ELSWORTH SMITH, JR.

Surgery.
PROFESSOR PAUL Y. TUPPER. PROFESSOR N. B. CARSON.
PROFESSOR H. G. MUDD.
CLINICAL PROFESSOR H. McC. JOHNSON.

Neurology.
PROFESSOR FRANK R. FRY.
CLINICAL PROFESSOR GIVEN CAMPBELL.

ST. LOUIS INSANE ASYLUM.

Mental Diseases.
PROFESSOR F. R. FRY. MALCOLM A. BLISS, M.D.

GENERAL INFORMATION.

On arriving in St. Louis at the Union Station, students are within five minutes' walk of the main building of the Medical Department, 1806 Locust Street. The offices of the school are in the building and students are requested to come here for all information.

It would be to the advantage of students if they would register a few days in advance of the opening exercises and secure boarding places, so that their studies may not be interrupted in the beginning.

Students may register and pay the matriculation fee at the office of the Dean, which will be open daily throughout the year from 9 A. M. until 5 P. M. *Positively no students will be admitted for the session of* 1908-1909 *later than October* 15.

The officers of the school, or Y. M. C. A. of this department, will give students information as to rooms, boarding, etc. Board and lodging at a convenient distance form the school may be obtained at from sixteen to twenty dollars a month. In this connection, attention is called to the new Washington University Dormitory and Commons, in which students of the medical department may lodge and board.

Physicians, or alumni, who may wish to receive regularly the Quarterly Bulletin are requested to make written application to the Dean of the Faculty. Notice of change of residence is desired. All further information may be obtained by addressing:

Dean of the Medical Department,
Washington University,
1806 Locust Street,
St. Louis, Mo.

BRIEF HISTORICAL SKETCH.

Under an ordinance enacted in 1891, the Medical Department of Washington University was established. The St. Louis Medical College, which was founded in 1842, had just completed its forty-ninth annual course, when it became the Medical Department of the Washington University. In the year 1899, the Missouri Medical College, which was founded in 1840, was absorbed by the Medical Department of the Washington University. Thus the Medical Department will begin its *eighteenth* annual session September 28, 1908.

The St. Louis Medical College was organized in 1842 as the Medical Department of the St, Louis University. In 1855 it was chartered as an independent institution under the name of the St. Louis Medical College. In 1891 it became the Medical Department of Washington Uuiversity. The first class was graduated in 1843. Classes have been graduated each subsequent year.

Missouri Medical College, St. Louis, Mo. was organized in 1840 as the Medical Department of Kemper College. In 1845 it became the Medical department of the University of Missouri. In 1855 it assumed its present name. The first class was graduated in 1841. It was suspended during the war and no students were graduated in 1862, '63, '64 or '65. It was some times called after its founder, The McDowell Medical College. In 1899 it became a part of the Medical Department of Washington University.

Thus the Medical Department represents the two oldest medical colleges in the West, having assumed their alumni and all their honored traditions, and its graduates may be found in every state.

A school having at its disposal the combined resources of two institutions of such high standing, has much to offer students

of medicine. Its teaching force of professors, lecturers and clinicians, numbers more than one hundred, and the prestige of a university connection, the educational, social and athletic privileges accompanying it are of great benefit to the student.

The union of the two old colleges was consummated solely in behalf of a broader and more thorough training, and we firmly believe that this object has been accomplished.

It is in the front rank in respect to its facilities, the scope and thoroughness of its curriculum, and in regard to the place it occupies in the esteem of the medical profession at large.

COLLEGE BUILDINGS, LABORATORIES AND CLINICAL FACILITIES.

The Medical Department owns and occupies two buildings, the one a hospital, the other a laboratory building, in which are conducted the teaching work of the school; there is in each a large free dispensary. It also has absolute control of the clinical privileges of three large hospitals within easy access of the school buildings. In the several city institutions it has equal privileges with others in regard to clinical instruction.

Locust Street Building.

In this building, which is situated on Locust street, between Eighteenth and Nineteenth streets, are most of the laboratories and the O'Fallon Dispensary. It was erected in 1892, after a careful comparison of the buildings of the leading eastern medical schools had been made. It is a spacious and elegant structure and thoroughly modern in all its equipments.

The building has been designed to facilitate the combination of didactic instruction with laboratory work, by the provision of lecture halls and class rooms.

A number of research rooms have been equipped for advanced work in the departments of Medicine, Pathology and Bacteriology, Chemistry, Physiology and Pharmacology.

In addition to the space occupied by the offices of the dean, secretary and registrar, this building contains six lecture rooms; two large laboratories for elementary, organic and physiological chemistry; practical anatomy rooms for dissection and for the preparation of material; an osteological laboratory; large museum of normal anatomical specimens; laboratory for histology, embryology and organology; a very full working museum of pathological anatomy; pathological and bacteriological laboratory; physiological and pharmacological laboratory; library and reading room; and a fully organized clinical department. The various laboratory departments are equipped with the latest instruments of precision and with

apparatus adapted both for demonstrations and for original research.

Washington University Hospital.

During the summer of 1904 it was decided to remodel and convert the beautiful and spacious building erected in 1895 on the west side of Jefferson avenue, between Washington and Lucas avenues, which was formerly occupied by the Missouri Medical College, into a modern hospital with 100 beds for the reception of patients for teaching purposes. This hospital was opened January 1, 1905, and is now completely and thoroughly equipped in every detail. It is a four-story building, extending back 135 feet, with frontage of 90 feet on Jefferson avenue. It is designed in French Renaissance and Greek detail, construcstructed in gray sandstone and yellow brick.

The main entrance is on Jefferson avenue.

On the first floor are the Faculty room of the Medical department, one lecture room and ten clinic rooms and laboratories. All these rooms are constructed for teaching sections of classes.

The second floor is divided into twenty-one rooms; two maternity wards, examination room, delivery room and physicians' room, two public wards for men and women, one male and one female colored ward, and twelve private rooms.

The third floor is occupied by four wards: one large ward for women, one large ward for men, two wards for children and five private rooms.

The fourth floor contains a large and beautiful operating room, anæsthetist's room, sterilizing room, aseptic laboratory, locker room and dressing room, surgical laboratory, two surgical wards and three private rooms.

Each floor has a model diet kitchen with elevator connections with the basement kitchen. The building is well lighted and ventilated and all floors are thoroughly equipped for the best care of patients. Thus the facilities for clinical study by students in this department are those usual in the best teaching

hospitals in this country. Students have access to all cases occupying beds in this new institution.

From January 1, 1907, to January 1, 1908, 913 patients have been cared for. Including the Dispensary and Lying-In Department, 39,591 visits for treatment have been made during the past year.

The Hospital fosters scientific development, and by its perfect equipment has enabled students to gain experience, assimilate the most comprehensive data, and to advance to a plane of original research and discovery.

Training School for Nurses.

MENIA S. TYE, Superintendent.

In connection with the hospital; a training school for nurses has been organized where a thoroughly modern and scientific course of training in general, surgical and obstetrical nursing is given. Probationers are received from all parts of the United States and Canada. For the better accommodation of the nurses in training, a residence near the hospital has been acquired and fitted up with every necessary comfort as a nurses' home.

Washington University Hospital Dispensary.

This department, formerly the Polyclinic Dispensary, with a new addition recently built, has long been the seat of thorough clinical work and has become of special importance in this respect, from its position immediately next to, and in connection with, the Washington University Hospital. This hospital connection, with a large clinic department enables the student to observe the course and treatment of disease thoroughout its various stages.

The dispensary contains one large operating room which offers unrivaled facilities for instruction in Operative Surgery.

Recently a number of research laboratories have been established in the dispensary in connection with the departments

of Medicine, Surgery, Dermatology, Ophthalmology and Gynecology. A large X-ray machine has also been installed.

During the year 1907, 38,678 consultations were held in the various clinics. See table No. 1 of Dispensary Service, showing number of patients treated in each clinic.

The following clinics are held daily throughout the year:

9 A. M. ..... Diseases of Women.
10 A. M. ..... Diseases of the Nervous System.
10 A. M. ..... General Medicine.
11 A. M. ..... Diseases of Children.
1 P. M. ..... Diseases of the Ear.
2 P. M. ..... Rectal Diseases.
2 P. M. ..... Diseases of the Throat.
2 P. M. ..... Diseases of the Chest.
2 P. M. ..... Diseases of the Eye.
2 P. M. ..... Diseases of the Skin.
3 P. M. ..... Surgery and Diseases of the Genito-Urinary Organs.
3 P. M. ..... Deformities and Joint Diseases.

O'Fallon Dispensary.

The entire first floor of the Locust street building is used by this large free dispensary for its patients. It is a fully equipped dispensary for the sick poor. It also affords ample material for extended practical clinical instruction in the various departments of Medicine and Surgery.

The dispensary is so arranged that each department has a room for practical instruction to students in small sections, in addition to the rooms devoted to the treatment of patients; besides, there is a large amphitheatre for clinical lectures.

All modern appliances for the treatment of diseases have been introduced, so that students can learn thoroughly the use of all methods in each of the special departments of medicine.

During the year 1907, 41,575 consultations were held in the various clinics. See table No. 2, Dispensary Service, showing number of patients treated in each clinic.

The following clinics are held daily throughout the year:

10	A. M.	Diseases of the Nervous System.
10:30	A. M.	Diseases of Women.
11	A. M.	General Surgery.
11	A. M.	General Medicine.
11	A. M.	Diseases of the Skin.
2	P. M.	Diseases of the Ear.
2	P. M.	Diseases of the Nose and Throat.
2	P. M.	Deformities and Joint Diseases.
2.30	P. M.	General Surgery.
2:30	P. M.	Diseases of Women.
3	P. M.	Diseases of the Rectum.
3	P. M.	Diseases of the Eye.
3	P. M.	Diseases of Children.
3	P. M.	General Medicine.
3:30	P. M.	General Medicine for Women.
4:30	P. M.	Genito-Urinary Diseases for Men.

The Obstetrical Out-Clinic is one of the most valuable clinics attached to this dispensary. The junior resident physician in charge of the clinic is chosen at the end of each school year from the graduating class by the professor of obstetrics.

Under the guidance of able instructors senior students are offered special opportunities for practical work in this important branch of medicine. During the senior year each student is required to be in actual attendance upon at least five cases of confinement.

St. Louis Mullanphy Hospital.

This is the oldest and most widely-known hospital in the West, founded in 1828, and conducted under the charge of the Sisters of Charity.

In the hospital proper, approximately one hundred patients are admitted each month for treatment, and in the out-patient department about twenty-five hundred new cases annually.

A large number of the general clinics and about one-half of the bedside teaching to the fourth-year class is given in the wards of this hospital.

The members of the Faculty, who are attending physicians

and surgeons to the hospital, hold regular clinics, and small sections of the classes are taken into the wards, where the students are required to examine patients suffering form various medical and surgical diseases. Students of the fourth-year class are regularly assigned to the care of cases in the wards under the supervision of the attending and house staffs. The hospital itself is one of the largest in this city, and has always been distinguished for the abundance of its clinical material.

Bethesda Hospital.

Bethesda Hospital, with its foundlings' and maternity departments, is under the immediate charge of Professor E. W. Saunders. The Foundlings' Home, 3651 Vista avenue, is within twenty-five minutes' ride of the Medical Department, and is easily accessible from all parts of the city.

This modern institution cares for over one hundred infants and children, and affords exceptional advantages for the study of diseases in infants and young children.

The Maternity Hospital, 1210 Grattan street, is open to senior students of this school only, affording opportunity for obstetrical diagnoses and experience.

Martha Parsons Children's Hospital.

The Martha Parsons Children's Hospital, to which this school has exclusive access, furnishes an aboundance of material for a weekly clinic. Small sections of the class are taught the operations for deformities, application of braces and the results of various methods of treatment.

City Hospital.

The commodious and modern buildings of the New City Hospital, situated on Fourteenth street and Lafayette avenue, can be reached in five minutes from the school buildings by the car lines.

At this institution about fifteen thousand patients are treated annually. The wards, accommodating on an average six hundred patients, offer a wide range in the selection of cases for presentation before the classes. Three clinic rooms are provided for teaching purposes. Clinical instruction, supplemented by the use of the microscope, is given here. The senior class attends weekly clinics in Medicine, Surgery and Diseases of the Nervous System. The second and third year students come in sections for the study of gross pathology and to conduct post-mortem examinations.

Insane Asylum.

The buildings of the Insane Asylum are located in commodious grounds on Arsenal street, opposite Macklind avenue, about thirty minutes' ride from the Medical Department.

The Insane Asylum accommodates about seven hundred inmates. Attendance weekly during the eighth semester, as a part of the work in nervous and mental diseases, is required for senior students.

Maternity Department of the Washington University Hospital.

The Maternity Department is situated on the first floor of the Washington University Hospital. It is in full running order and is completely equipped for obstetrical teaching. The service is under the exclusive direction of the Professor of Obstetrics in the Faculty of the Medical Department of Washington University.

The obstetric operations and subsequent treatment of women and infants, affords invaluable practical experience, such as is offered at no other medical school in the West.

DISPENSARY SERVICE.

TABLE NO. 1.

WASHINGTON UNIVERSITY HOSPITAL FREE DISPENSARY FOR 1907.

	JAN.		FEB.		MARCH		APRIL		MAY		JUNE		JULY		AUG.		SEPT.		OCT.		NOV.		DEC.		Total No. Patients
	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	
Nervous System	28	368	16	270	35	396	38	196	30	322	26	297	34	275	27	351	34	369	26	320	21	273	27	279	4,058
Diseases of Women	47	115	30	68	31	98	41	113	41	111	39	80	31	126	56	115	43	134	59	199	49	114	33	100	1,873
General Medicine	63	89	75	84	63	105	73	108	72	133	55	99	58	89	77	121	71	98	75	123	41	92	43	64	1,971
Diseases of Children	38	53	40	90	41	83	30	58	39	60	30	49	40	118	40	79	38	60	43	103	34	105	35	85	1,391
Diseases of the Ear	29	380	48	491	66	823	43	573	40	560	37	266	54	399	63	389	25	279	35	365	36	274	29	264	5,568
Diseases of the Eye	161	471	193	535	215	594	197	574	177	591	214	560	205	683	175	700	155	531	210	806	137	477	172	607	9,340
Diseases of the Throat	59	303	81	355	82	374	83	493	89	376	74	218	71	251	62	192	76	238	76	238	74	299	61	231	4,456
Rectal Diseases	9	22	2	20	5	29	4	19	3	21	5	26	4	18	5	29	6	55	8	62	6	19	5	18	400
Diseases of the Chest	25	43	42	54	47	82	33	72	50	81	60	88	44	67	48	73	38	46	37	42	33	63	45	67	1,280
Surgery, Male	31	49	23	47	38	54	45	47	32	62	40	51	35	76	38	138	36	131	28	130	23	72	32	167	1,425
Surgery, Female	7	33	26	54	20	51	29	69	32	64	40	105	46	141	40	103	39	71	43	81	47	115	26	108	1,390
Surgery, Genito-Urinary	45	116	39	120	31	92	32	115	53	202	30	162	77	191	58	201	56	163	53	181	51	193	43	174	2,478
Joint Diseases	29	41	25	39	22	42	25	41	34	54	30	58	29	30	28	20	20	32	32	39	10	53	13	59	805
Diseases, Skin	49	125	48	111	55	101	59	173	55	158	50	164	61	138	52	140	61	122	57	127	38	121	43	135	2,243
Lying-in Hosp	9	.....	6	.....	7	.....	9	.....	8	.....	6	.....	4	.....	6	.....	10	.....	5	.....	5	.....	7	.....	82
Total—Old	...	2,208	...	2,338	...	2,924	...	2,651	...	2,795	...	2,223	...	2,602	...	2,651	...	2,329	...	2,816	...	2,270	...	2,358	30,165
Total—New	629	.....	694	.....	758	.....	741	.....	755	.....	736	.....	793	.....	775	.....	708	.....	787	.....	605	.....	614	.....	8,545
Total	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	38,760

DISPENSARY SERVICE.

TABLE NO. 2.

O'FALLON FREE DISPENSARY FOR 1907.

	JAN.		FEB.		MARCH		APRIL		MAY		JUNE		JULY		AUG.		SEPT.		OCT.		NOV.		DEC.		Total No. Patients
	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	
Nervous System	9	91	12	89	12	94	9	98	16	103	9	97	12	98	15	92	9	72	13	83	14	92	7	72	1,218
Diseases of Women	40	41	14	55	13	44	24	47	20	48	27	59	31	36	27	69	22	38	27	66	18	47	14	30	847
General Surgery	27	123	18	81	33	146	30	101	20	100	33	111	22	88	25	116	24	145	24	133	27	137	29	145	1,738
General Medicine	58	93	47	62	62	67	56	90	61	72	45	65	59	62	42	70	50	69	45	71	54	64	36	65	1,465
Diseases of the Skin	17	46	19	40	23	48	11	47	14	31	22	35	22	40	9	26	15	17	22	34	23	74	25	62	722
Nose and Throat	55	386	63	415	68	528	69	531	46	504	40	465	42	445	39	426	37	325	53	407	45	464	52	497	6,092
Diseases of the Ear	31	314	13	334	43	384	34	375	41	341	36	349	26	373	43	368	28	354	22	296	26	251	31	293	4,496
Joint Diseases	6	47	6	94	5	78	8	89	5	88	6	64	6	92	9	80	5	90	8	77	3	79	4	86	1,035
General Surgery	35	63	25	58	26	58	24	46	27	45	20	35	52	185	49	190	46	146	48	152	38	129	27	187	1,711
Diseases of Women	13	22	13	31	4	19	15	48	6	40	10	57	17	66	28	85	15	77	15	78	26	75	16	34	810
Diseases of Children	14	47	16	43	18	36	18	33	13	40	25	64	30	108	28	63	12	39	13	38	17	44	9	36	804
Diseases of Eye	99	1,085	96	1,120	100	1,289	111	1,415	104	1,097	80	1,259	104	1,331	97	1,311	91	1,004	75	946	80	803	86	843	14,636
General Medicine	23	147	20	144	19	133	9	142	18	145	18	134	17	128	22	136	20	125	19	115	15	157	19	115	1,840
Medicine for Women	34	77	34	87	23	88	42	85	32	76	20	49	33	66	27	77	31	72	23	68	29	78	32	53	1,236
Genito-Urinary Diseases	49	236	33	191	36	193	40	143	44	179	51	179	41	196	49	199	42	189	33	177	45	141	38	226	2,750
Out Clinic	16	.....	17	.....	25	.....	22	.....	20	.....	21	.....	23	.....	21	.....	24	.....	26	.....	18	.....	32	.....	265
Total—New	526	.....	446	.....	510	.....	522	.....	487	.....	463	.....	537	.....	530	.....	471	.....	466	.....	478	.....	457	.....	5,893
Total—Old	...	2,818	...	2,944	...	3,205	...	3,290	...	2,909	...	3,012	...	3,314	...	3,308	...	2,762	...	2,741	...	2,635	...	2,744	35,682
Total	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	...	.....	41,575

PRIVILEGES.

As the Medical Department is an integral part of Washington University, its students can enjoy all the privileges and facilities open to members of any Department of the University. Students may reside in the University Dormitories and are eligible to various social, athletic and other organizations of the student body.

The University Gymnasium is situated at the west end of the campus and is open to medical students. It is beautiful and thoroughly equipped, and is under the charge of the Physical Director.

Besides the work of the regular curriculum, the University offers many courses of Public Lectures of general scientific interest which are given from time to time, both at the University and at the Locust street building, throughout the academic year.

The Medical Library.

Committee.

WILLIAM H. WARREN. ROBERT J. TERRY.

Librarian.

GARY THOMAS GOSSARD.

The library, at present numbering about 6,000 volumes, has been classified and carefully catalogued, and is being made use of by students, instructors and others connected with the school. Out of the proceeds of the Co-operative Association and from gifts, a number of new books were added last year

and new journals subscribed for. Of the books purchased a large number are standard text-books and atlases for the use of students. During the present school year all of the journals requiring it were bound, so that now with the catalogue the library is accessible to readers and consultants.

Publication.

The Quarterly Bulletin of the Medical Department of Washington University publishes accounts of the work of the several departments, the progress and results of original research in this school and others, book notices, and personal news of interest concerning the alumni and others connected with the institution.

It is the official organ of the Alumni Association and is mailed free to the graduates of the original schools and of the present one.

Department Libraries.

The following files of scientific journals are kept in the rooms of the professors in charge of the Departments of Chemistry, Anatomy, Physiology, Pharmacology, Pathology and Bacteriology, and may be obtained by applying for them.*

Annales de l'Institut Pasteur. Paris, 8+.

Anzeiger, Anatomischer. K. v. Bardeleben. Jena. Vol. 1+.

Archiv f. Anatomie u. Entwicklungsgeschichte. Waldeyer. Berlin, 1905.

Archiv für experimentelle Pathologie u. Pharmakologie. Redig. E. Klebs, B. Naunyn u. O. Schmiedeberg. Lpzg. Vol. 27+.

Archiv. f. die gesammte Physiologie. E. F. W. Pflüger. Bonn. Vol. 1+.

* A plus sign (+) following the number of a volume indicates that it is complete from that volume to date.

Archives Italiennes de Biologie. Revues, résumés, reproductions des travaux scientifiques italiens. A. Mosso. Vol. 8-20.

Archiv für mikroskopische Anatomie u. Entwicklungsgeschichte. M. Schultze, La Valette St. George, O. Hertwig u. W. Waldeyer. Bonn. Vol. 35+.

Archiv für patholog. Anatomie u. Physiologie u. für klin. Medicin. R. Virchow u. J. Orth. Berl. Vol. 119+.

Archiv. für Physiologie. E. du Bois-Reymond u. W. Engelmann. Jahrg. 1877+.

Archiv f. Physiologische Chemie. Vol. 1+.

Archives de Physiologie normale et pathologique. Brown-Sequard, Dastre, Charcot, etc. 1890+.

Beiträge zur pathologischen Anatomie und zur allgemeinen Pathologie. Jena. Zeigler. Vol. 15+.

Berichte der Deutschen Chemischen Gesellschaft. Vol. 16+.

Biochemisches Centralblatt. C. Oppenheimer. Berlin. Vol. 1+.

Chemisches Central-Blatt. A. Hesse. Berlin 1897+.

Centralblatt für Bakteriologie, Parasitenkunde u. Infectionskrankheiten. 1. Abteilung: Medizin.-hygien. Bakteriologie u. tier. Parasitenkunde. O. Uhlworm. Jena. Vol. 1+.

Centralblatt für allgemeine Pathologie u. patholog. Anatomie. E. Ziegler u. Cl. v. Kahlden. Jena. Vol. 1+.

Centralblatt für Physiologie. Exner, Gad, Fuchs u. Munk. Wien. Vol. 1+.

Ergebnisse der Anatomie u. Entwicklungsgeschichte. Merkel u. Bonnet. Wiesb. Vol. 1+.

Internationale Monatsschrift für Anatomie und Physiologie. A. E. Schäfer, L. Testut, W. Krause. Leipzig. Vol. 1+.

Jahresberichte über die Fortschritte der Anatomie u. Entwicklungsgeschichte. G. Schwalbe. Neue Folge. Jena. Vol. 1+.

Jahresberichte über die Fortschritte der Anatomie u. Physiologie. Hofmann, Hermann, Schwalbe. Lpzg. 1873-1888.

Jahresberichte über die Fortschritte der Physiologie. L. Hermann. Bonn. 1889+.

Jahresberichte über die Fortschritte in d. Lebre v. d. pathogenen Mikro-organismen. P. v. Baumgarten u. F. Tangl. 1885+.

Jahresbericht über die Fortschritte der Thier-Chemie. Hrsg. von R. Maly u. A. Wein u. Weisb. Vol. 19+.

Jahrbuch, Morphologisches. C. Gegenbaur. Lpzg. Vol. 1+.

Journal, American, of Anatomy. Ed. by L. F. Barker, T. Dwight, S. H. Gage, G. Carl Huber, G. S. Huntington, Franklin P. Mall, Charles S. Minot and George A. Piersol. Baltimore. Vol. 1+.

Journal of Comparative Neurology. C. J. Herrich and Yerkes. Granville, O. Vol. 1+.

Journal of Physiology. Ed. by M. Foster and J. N. Langley. Cambridge. Vol. 1+.

Journal, American, of Physiology. Ed. by American Physiological Society. Boston. Vol. 1+.

Proceedings of the Association of American Anatomists. History, Constitution, Membership and the Titles, Abstracts and Papers from 1888 to 1901. Sessions 1-14.

Schmidt's Jahrbücher der in- und ausländischen gesammten Medicin. Lpzg. Jahrg. 1890.

Skandinavisches Archiv f. Physiologie. Tigerstedt. Vol. 1+.

Zeitschrift für Biologie. Buhl, M. v. Pettenkofer, Radlkofer u. Voit. Münich. Vol. 1-30. 1865-94.

Zeitschrift für Hygiene u. Infektionskrankheiten. R. Koch u. C. Flügge. Lpzg. Band 11+.

Zeitschrift für physiologische Chemie. Hoppe-Seyler u. A. Kossel. Strassb. Vol. 1+.

Zeitschrift für Psychologie und Physiologie der Sinnesorgane Hrsg. H. Ebbinghaus u. A. König. Hamb. u. Lpzg. Vol. 1-6.

Zeitschrift für wissenchaftliche Microscopie. Hrsg. von

W. J. Behrens. Band 1-21 u. Reg. Braunschw. u. Lpzg. 1884-1904.

Zentralblatt für Normale u. Pathologische Anatomie mit Einschluss der Mikrotechnik. Hrsgb. R. Krause u. M. Mosse Bd. 1. Berlin, Wien. 1904.

In addition to the purely scientific journals, the library possesses files of the American, English, German and French medical journals. Among the more complete sets are the following:

Alienist and Neurologist, American Journal of the Medical Sciences, American Journal of Neurology, American Medicine, Annals of Surgery, Berliner Klinische Wochenschrift, Boston Medical and Surgical Journal, Braithwait's Retrospect, British Medical and Surgical Journal, Bulletin of the Johns Hopkins Hospital, Courier of Medicine, Medical Times, New York Medical Journal, Prager Vierteljahr Schrift, University of Pennsylvania Medical Bulletin, Wiener Klinische Wochenschrift, Deutsche Zeitschrift f. Nervenheilkunde, Index Medicus, Interstate Medical Journal, Journal of the American Medical Association, Journal of Nervous and Mental Diseases, Lancet, Medical News, Medical Record.

REQUIREMENTS FOR ADMISSION.

Candidates for admission to the Medical Department will be received upon the following conditions:

1. A satisfactory certificate of good moral standing.

2. Admission by Diploma. Any candidate who has received a degree in Arts or Science from a College or University recognized by this Department, will be admitted on presentation of his diploma.

Diplomas of Public High Schools, Acadamies, with a four years' course, also of State Normal Schools having a course equivalent to a four years' High School course, are accepted as complete certificates. Diplomas must be presented by candidates to the Registrar on the date of matriculation.

Any candidate who shall present written evidence of having passed the entrance examinations of a recognized College or University, in which the requirements are equivalent to those demanded for entrance to this department, will be admitted without examination.

EXAMINATION FOR ADMISSION.

Candidates not presenting certificates of admission are required to pass a written examination. This examination will cover sixteen units*; thirteen of these are required, and three are optional, as follows:

(a) Required:—

1. *English*, 3 units.

2. *Mathematics* (Algebra, through quadratics; Plane Geometry), 3 units.

3. *Latin*, 3 units.

4. *French* or *German*, or Greek, 2 units.

5. *History* (Ancient, or Mediæval and Modern, or English or American), 1 unit.

6. *Science* (Physics or Chemistry or Biology or Botany or Zoölogy or Physiology), 1 unit.

* A unit means one year's work of five forty-minute periods each week.

(b) Optional (3 units to be offered from this list):—

1. *Latin* (advanced), 1 unit.
2. *Greek* (advanced) 1 unit.
3. *Science* (additional), 1 unit.
4. *History* (additional), 1 unit.
5. *Civics* and *Economics*, 1 unit
6. *Solid Geometry*, 1 unit.
7. *Plane Trigonometry*, 1 unit.

Examinations will be conducted by an examiner, appointed by the State Superintendent of Public Schools, for all candidates for admission, from the City of St. Louis and for all States except the State of Missouri. The examination of all candidates from the State of Missouri except the city of St. Louis, will be conducted by the County School Commissioner in the County in which the candidate resides. The examinations will be confined to the subjects listed above under the Requirements for Admission to this Department. The fee for the examination for admission must be paid in advance to the examiner.

A student may be allowed to enter upon his medical work conditioned in not more than three units, and these conditions must be removed by satisfactory examination before he is allowed to enter the second year of his medical course.

ENGLISH.

1. *Grammar.* A knowledge of technical terminology and of syntax—such essentials as may be found in Reed and Kellogg's "Higher Lessons in English."

2. *Rhetoric and Composition.* The ability to write correct, clear and coherent English; a knowledge of the principles of capitalization, punctuation, sentence structure and paragraphing.

3. *Literature.* The careful study of certain masterpieces; the reading of a number of assigned books. The candidate will be expected to have a definite knowledge of the subject-matter, and understanding of the literary form and the structure of the works suggested, together with a knowledge of the biography of the authors and some notion of the literary periods in which they lived. Particularly should the candidate be able to express a sensible opinion concerning any book which he has read. Books assigned for "reading" should be taken up with the aim of getting clearly in mind the style and the main features of the subject matter, such as the plot, incidents and characters.

Of candidates arriving in the years 1909-1910, preparation will be expected upon the following books:

(a) For careful study: Shakespeare's "Julius Cæsar;" Milton's "L'Allegro," "Il Penseroso," "Comus" and "Lycidas;" Burke's "Speech on Conciliation with America;" Macaulay's "Essay on Addison" and "Life of Johnson."

(b) For reading: Shakespeare's "Merchant of Venice" and "Macbeth;" the Sir Roger de Coverley papers in "The Spectator;" Irving's "Life of Goldsmith;" Coleridge's "Ancient Mariner;" Scott's "Ivanhoe" and "Lady of the Lake;" Tennyson's "Gareth and Lynette," "Lancelot and Elaine," and "Passing of Arthur;" Lowell's "Vision of Sir Launfal;" and Eliot's "Silas Marner."

The examinations for entrance will consist largely of written work on subjects relating to the books assigned for reading, but questions may be asked on grammar, on rhetoric, and on the works assigned for "careful study." The ability to write good simple English is absolutely essential.

Candidates are urged to read widely in the recognized English Classics instead of limiting their reading to the few selections studied in the classroom.

MATHEMATICS.

Elementary Algebra, to which the student should have given at least one and a half years of study, covers the text of modern books on Algebra as far as quadratics, the latter included. In the course of this work literal equations should be introduced, and general formulæ established and discussed. The factoring of most value is that which is done by inspection, and the least common multiple should generally be determined by inspection. Special stress should not be given to negative exponents, imaginary quantities, or discussions of zero and infinity. It is always well to teach the binominal theorem with positive integral exponents, and arithmetical and geometrical progressions. If possible, pupils should see that an equation involving both x and y may represent a straight line or a curve in a plane, and some practice should be had in drawing graphs. This may involve a few short lectures.

In Geometry any good text-book may be followed, and at least one year and a half should be allowed for Plane and Solid Geometry. Numerous original demonstrations should be required, and problems in construction should be frequent, executed with care and accurate workmanship. Pupils should have practice in varying the forms of figures used for demonstration. In Solid Geometry models should be freely used, in order to make clear the difference between figures in space and figures in a plane. Pupils should have abundant practice in computing areas and volumes connected with prisms, pyramids, cones and spheres.

In plane trigonometry the candidate must be familiar with the trigonometric functions both as to ratios and geometrical lines connected with a circle of radius unity. He must be able to write readily the numerical value of all functions of such angles as 30°, 45°, 60°, 135°, etc., with their proper signs. He must be able to derive formulæ for the sine and cosine of the sum and difference of two angles, of double angles, half angles, etc. He must be familiar with the theory and use of common logarithms of numbers and of trigonometric functions, and be able to solve plane triangles, deriving the necessary formulæ, using such mathematical tables as may be given him.

LATIN.

Candidates are examined as follows:

I. (a) *Latin Grammar.* The inflections; the simpler rules for composition and derivation of words, syntax of cases and verbs-structure of sentences in general, with particular regard to relative and conditional sentences, indirect discourse, and the subjunctive; so much prosody as relates to versification, versification in general, and the dactylic hexameter.

(b) *Latin Composition.* Translation into Latin of detached sentences and easy continuous prose based on Cæsar and Cicero. The examination will assume that the student has devoted the equivalent of one hour a week to Latin Composition. The student will be expected to mark quantities.

II. *Cæsar.* Any four books of Cæsar's Gallic War, preferably the first four.

III. *Cicero.* Any six orations from the following list, preferably the first six: The four orations against Catiline, Archias, the Manilian Law, Marcellus, Roscius Milo, Sestius, Ligarius, the fourteenth Philippic. A passage for sight translation will form part of the paper.

IV. *Vergil.* The first six books of the Æneid. Translation at sight.

The first three of these papers will be required of all candidates for admission.

GREEK.

I. (a) *Greek Grammar.* The inflections of nouns and verbs; the principles of the syntax of nouns and of verbs; the structure of sentences in general, with particular regard to relative and conditional sentences, and to indirect discourse; versification so far as applied to the dactylic hexameter.

(b) Greek Prose Composition: Consisting principally of detached sentences to test the candidate's knowledge of grammatical constructions.

The examination in Grammar and Prose Composition will be based on the first two books of Xenophon's Anabasis.

II. Xenophon: The first four books of the Anabasis.

III. Homer: The first three books of the Iliad (omitting II, 494—end).

I. (a), (b) and II. will be required of all candidates presenting Greek for admission.

GERMAN.

The aim of a two years' High School course such as will satisfy the entrance requirements in German should be to give the student a thorough knowledge of the essentials of German Grammar and facility in reading modern prose and poetry. The work should comprise:

1. In the First Year: Careful drill in pronunciation; dictation; drill in the rudiments of grammar, *i. e.*, the inflections of noun, pronoun and verb; the use of prepositions, and the simplest rules of syntax; simple exercises in conversation; and the reading from 75 to 100 pages of graduated texts, either from a reader or from editions of easy texts.

1. In the Second Year: A thorough review of the first year's work in grammar, supplemented by numerous exercises in translating from English to German; a further study of syntax; conversation, based upon the texts read; practice in translation into German of easy variations upon the matter read, and also in the offhand reproduction, sometimes orally and sometimes in writing, of the substance of selected passages; and the reading of from 150 to 200 pages of literature in the form of easy stories, plays and historical sketches.

The pupil may best satisfy the requirement in grammar by the study of a simplified or condensed presentation such as that contained in Vos' "Essentials of German," which may in the second year be supplemented from other sources; those in translation from German into English by the close reading of some of the following texts: Wiedemann, "Biblische Geschichten;" next a collection

of fairy tales, and, in addition, some of the following list: Zschokke, "Der zerbrochene Krug," Allen and Batt, "Easy German Stories;" Shuecking, "Die drei Freier;" Stifter, "Das Heidedorf," short sketches by Baumbach, Seidel, Storm, Heyse; short plays, as: Wichert, "An der Majorsecke," Wilhelmi, "Einer muss heiraten." For historical reading, one of the short sketches by Freytag, *e. g.*, Aus dem Jahrhundret "Friedrichs des Grossen," is recommended.

FRENCH.

The usual two years' course in preparatory schools which will enable the student to satisfy the entrance requirements in French should give the student a thorough knowledge of the elements of French grammar and a facility in reading easy modern French prose at sight.

1. During the first year, the work should comprise:

A careful drill in pronunciation, the rudiments of grammar; regular and common irregular verbs; the ready use of personal pronouns, elementary rules of syntax; abundant exercises in grammar, the reading of from 100 to 150 pages of easy French, and writing Frencb from dictation.

2. During the second year the work should comprise from 250 to 300 pages of easy modern French prose (stories, plays and historical sketches). Frequent memorizing of a few lines of French (prose or poetry) and conversation exercises on texts thus committed to memory: dictation; continued drill in the rudiments of grammar (adjectives, pronouns, irregular verbs, use of tenses, etc.).

As a mere suggestion the attention of teachers is called to the following texts as suitable for first and second year students:—

Bruno's "Le Tour de la France"; Augier's "Le Voyage de M. Perrichon"; Malot's "Sans famille"; About's "Le roi des Montagnes"; Dumas' "La Tulipe Noire"; Sandeau's "M'elle de la Seigliere"; La Brete, "Mon oncle et mon cure" Thiers' "La Campagnede Waterloo"; George Sand's "La Mare au diable"; Jules Verne (novels); Merimee's "Colomba."

HISTORY.

Such text-books as the following, or their equivalents, are recommended:

"Rome," Myers; "Greece," Myers; "The Middle Ages," Myers; "England," Montgomery; "United States," Fiske.

For the required and the additional units, any two of the above may be offered.

In history, ability to interpret facts is of more importance than knowledge of mere details. The causes of events should be traced out and the significance of periods of history studied.

PHYSICS.

Students offering Physics for entrance must be familiar with the more important phenomena, and with the principle involved in their explanation.

They must be prepared to work simple numerical problems relating to falling bodies; levers; the simple pendulum; phenomena of liquids and gases, including the determination of pressures; the density of solids and liquids by means of the principle of Archimedes; specific heats, and heats of fusion and vaporization; the relations involved in Ohm's law; the simpler phenomena of sound; refraction and reflection and the size and position of virtual and real images due to mirrors and lenses. The student should also be familiar with the use of the vernier and with the metric system.

CHEMISTRY.

Students offering Chemistry must have had laboratory work as well as classroom instruction. They must be acquainted with the methods of preparation, and the chief physical and chemical properties of the more important nonmetallic and metallic elements, such as oxygen, hydrogen, nitrogen, carbon, sulphur, phosphorus, silicon, sodium, potassium, calcium, magnesium, zinc, copper, mercury, silver, aluminium, lead, tin, iron, manganese and chromium. They should be familiar with the chief compounds of these elements. They should have a knowledge of the composition of the atmosphere, of the nature of the flames, of acids, bases, salts, of oxidation and reduction. They should understand the laws of combining proportion by weight and volume, also the laws of gas volumes (Boyle and Charles), and they should be able to make simple calculations involving these laws. More importance is attached to a practical acquaintance with chemical substances in the laboratory and to experimental verification of the quantitative laws of chemistry than to a knowledge of theories such as the atomic and molecular hypotheses, theories of valance and structure, electrolytic dissociation, etc.

The laboratory and class-room work should be similar in scope to that given in Hessler & Smith's "Essentials of Chemistry."

BIOLOGICAL SCIENCES.

Candidates offering credits in the Biological Sciences are expected to have devoted one full school year to the subject offered, with a minimum of three

periods a week of laboratory work and two of recitations. Laboratory notebooks and drawings must be submitted, indorsed by the teacher, as the record of the student's own observations.

The examination will be divided into two parts: (a) a written test on general questions, and (b) a laboratory examination designed to test his practical knowledge and powers of observation.

BOTANY.

The candidate offering Botany as an entrance requirement must have had a full year's work in botany, two-thirds of which should be genuine laboratory work. This work should include a detailed study of types from all the chief divisions of the plant kingdom and should comprise the fundamental principles of plant morphology and the general laws of plant physiology.

In addition to these there should be sufficient knowledge of the methods of classification of the flowering plants to enable the candidates to make intelligent use of an analytical key, such as Gray's "Manual of Botany." The work indicated above should be eminently practical in its nature, and the candidate must satisfy the examiner that his knowledge has been gained by actual investigation of the plant forms in the laboratory, supplemented by explanatory text or lectures.

BIOLOGY.

One half year of Botany together with a half year of either Zoölogy or Physiology.

In general the requirements are the same as those for the separate subjects, except that they are less extensive in each one. In Botany the equivalent of Coulter's "Plant Studies" or Bergen's "Foundations of Botany" will be required. It must also be shown that the knowledge of plants has been acquired from actual contact with the forms in the laboratory. In this laboratory work the candidate should have made personal use of the compound microscope.

If Zoölogy is offered for the second half unit, at least four types must have been dissected in detail by the student himself. These should include an Annelid, a Mollusk, an Anthropod, and an Echinoderm or a Vertebrate. In addition, the student should have studied individually or else by demonstration Paramœcium, Vorticella and Hydra.

In case Physiology is offered, the equivalent of Colton's "Physiology," with additional laboratory work, will be required. Especial emphasis should be laid on the physical and chemical principles underlying physiological phenomena and the laboratory work should be so directed as to bring out such principles.

ZOÖLOGY.

Candidates offering Zoölogy as an entrance subject are expected (a) to have made careful and detailed study of at least ten morphological "types," including a representative from each of the following groups: Protozoa (Amœba, Paramœcium, Vorticella), Porifera, Cœlenterata, Mollusca and Vertebrata (two forms); (b) to be familiar with the general principles and phenomena of animal biology as they are presented in Jordan and Kellog's "Animal Life"; (c) to have supplemented the laboratory work by field trips, and to have some first-hand knowledge of the habits and life conditions of common animals.

Much less value is attached to minute knowledge of structure or of names than to ability in correct observation and careful record.

PHYSIOLOGY.

Martin's "Human Body" (extended course) (or Stewart's "Physiology") is recommended as a text-book. The laboratory work should be of such a nature as to employ the pupil's knowledge of the facts and processes of chemistry and physics in the explanation of physiological phenomena. While an understanding of the more important and general facts of anatomy is expected, the mere acquisition of technical names is considered of secondary importance. Under no circumstances is the work in Hygiene and Elementary Physiology done in the grammar school to be considered sufficient to offer for entrance credit, nor is a period of time less than one full year adequate to cover the ground.

CIVICS AND ECONOMICS.

(a) In Civics the candidate should have studied the organization of the village, city, township or county, and State government under which he has lived; the Constitution of the United States and the operation of the government under the Constitution; the election or appointment of and duties of public officers, the division of functions between National, State and Local Governments, the constitutional guarantees of the liberty of the citizen; and should have a general knowledge of the origin of our political institutions, especially their connection with the English government.

(b) Economics. The nature of demand and supply, value and price under free competition and under monopoly, rent and diminishing returns, interest, profit, wages, the increase of capital and of the supply of labor, conditions affecting the efficiency of labor and of industry, international trade and protective tariffs, the elementary principles concerning money, credit, banking, bimetalism, and taxation. Laughlin's "Political Economy" and Fiske's "Civil Government" will serve to show the scope of the work required.

DRAWING.

Elementary Geometrical Drawing: Problems up to and including straight lines tangent to circles.

Orthographic Projection: The projection of simple solids upon three planes at right angles with each other.

Lettering: Simple single-line free-hand lettering.

In geometrical drawing, orthographic projection and lettering, greater value is placed upon clear, accurate work, finished in pencil, than upon work elaborately finished in ink. Candidates must also give evidence of a knowledge of the proper care of instruments.

In lieu of taking an examination, candidates may present carefully lettered drawings in pencil and also in ink.

THE SIX YEARS' MEDICAL COURSE.

In addition to the usual four years' medical course, Washington University offers a six years' continuous course in general science and medicine. This course leads to the degree of Bachelor of Arts upon completion of four years' work, and to the degree of Doctor of Medicine at the end of the six years' course. It includes everything contained in the four years' medical course, and in addition enables the student to go more deeply into the fundamental sciences upon which medical studies are based.

Students who wish to combine their work in general sciences with their professional studies in medicine so as to receive both degrees, may accomplish this purpose by pursuing the courses as outlined below:

At the end of the second years' work at Washington, the student taking this course will register both in the College and the Medical School.

FIRST YEAR, COLLEGE.

First Term.		*Second Term.*	
English 1	3 units	English 2	3 units
*French 1-a or German 1-a	5 units	French 2-a or German 2-a	5 units
Chemistry 1	3 units	Chemistry 2	3 units
Drawing 1	1 unit	Zoölogy 3	3 units
Zoölogy 1	3 units	Chemistry 4	3 units
Chemistry 3	3 units		
	18 units		17 units

* The Modern Language not presented for admission.

SECOND YEAR, COLLEGE.

First Term.		*Second Term.*	
Physics 8	3 units	Physics 9	3 units
Zoölogy 3	3 units	Zoölogy 6	3 units
Chemistry 5	3 units	Chemistry 6	3 units
Chemistry 7	3 units	Chemistry 8	3 units
German 3-a	1 unit	Botany 6	3 units
Botany 5	3 units	German 4	3 units
	16 units		18 units

THIRD YEAR.

First Term.		*Second Term.*	
Physiological Chemistry (at Medical School)	3 units	Physiological Chemistry (at Medical School)	3 units
Physiology (at Medical School	3 units	Physiology and Pharmacology (at Medical School)	3 units
Psychology 1 (at College)	3 units	Psychology 2 (at College)	3 units
Philosophy 1 (at College)	3 units	Philosophy 2 (at College)	3 units
Anatomy and Histology (at Medical School)	7 units	Anatomy and Histology (at Medical School)	7 units
Elective (at College)	3 units	Elective	3 units
	22 units		22 units

The remaining three years are occupied with prescribed courses at the Medical School.

NOTE:—In the above table a unit means one hour in class and two hours in preparation, or three hours laboratory work.

REQUIREMENTS FOR ADMISSION IN 1910.

The Medical Department of Washington University has decided to make important changes in and additions to the requirements for admission. **These additions will be required of candidates in 1910.**

New Requirements.

Candidates for admission to the Medical Department must have successfully completed the work equivalent to that prescribed for the freshman class in colleges recognized by this Medical Department.

(a) Certificates to that effect from such recognized colleges will be accepted in lieu of an examination.

(b) Candidates not presenting such certificates will be required to pass examinations as follows:

English History Mathematics Latin French or German Physics Chemistry General Biology	**Equivalent to that prescribed for the Freshman Class in colleges recognized by this Department.**

All students, whether entering by certificate of examination, must submit written evidence of their laboratory work in Physics, Chemistry, and General Biology, in the form of note books or other record of experiments, accompanied by the usual certificates as to the trustworthiness of the record.

GENERAL STATEMENT OF THE PLAN OF INSTRUCTION.

The course of medical study extends over a period of four years of eight months each.

The curriculum is based on the amount and kind of work required of the candidate for the degree of Doctor of Medicine.

The courses are graded in such a manner that all the fundamental studies and general subjects must be taken before special courses and advanced work may be pursued.

The work required for the degree consists of obligatory courses throughout the four years. The classes are instructed separately in the clinics and laboratories, as well as in the lecture rooms.

Instruction by the practical methods of laboratory, post-mortem room, day clinic and bedside take up about half the time of the whole course, the other half being given over to the conferences, recitations, informal talks and lectures, as a means of aiding the student in systematizing and remembering the principles of medicine.

In the first year the work is limited to chemistry and anatomy. Nearly all of the time is spent in the laboratories in the study of chemistry, embryology, histology and gross and microscopical anatomy.

The work of the second year consists in a continuance of anatomical studies, physiology, physiological chemistry, toxicology, pathology and bacteriology. The study of these branches is carried on almost entirely in the laboratory. In the second year the course in materia medica is introduced, and in the latter half the class begins the study of the normal physical signs; also the work in minor surgery and bandaging.

The work of the third year consists of a continuance of anatomical studies.

Medicine, surgery and obstetrics, begin in the third year, and are each subdivided into graded courses. The principles of physical diagnosis are presented to the student in the medical and surgical clinics and in a well organized laboratory course of clinical chemistry and microscopy. Into this period of the course are also introduced pharmacology, therapeutics, pharmacy, hygiene and sanitary science and some of the specialties, such as diseases of children, neurology and ophthalmology,

which are taught clinically and didactically, and lecture courses on the eruptive fevers, otology and gynecology in the last half of the year.

The studies of the fourth year are carried on mainly by sectional work in the clinics and at the bedside in the hospitals. Students are drilled in making diagnoses and in prescribing treatment. Cases attended during the week by certain students are discussed by the class. Each senior student is required to attend several obstetrical cases and to make obstetrical diagnosis at the Bethesda Maternity Hospital, Obstetrical Out-Clinic and the Washington University Lying-in Hospital. Forensic medicine, medical jurisprudence and sectional work in the special clinics are included in the work of the last year.

In order to regulate the students' work and to ascertain the results of the teaching, examinations are held regularly at stated periods (see Calendar). Good scholarship, which includes regular attendance and satisfactory work, is insisted upon and required of all students who expect to remain in the School for the degree.

DETAILS OF THE PLAN OF INSTRUCTION.

The Faculty reserves the right to make such changes as seem necessary in the courses which follow.

Department of Chemistry.

WILLIAM HOMER WARREN, Professor of Chemistry.

Physiological Chemistry and Toxicology.

EDWARD MUELLER, Assistant Professor of Chemistry.

FIRST YEAR.

Course 1.—DESCRIPTIVE INORGANIC CHEMISTRY. Professor Warren and Assistant Professor Mueller. Nine hours a week

for the first twelve weeks in the first semester. (Total: Lectures, 36 hours; Laboratory, 72 hours.)

This course is for beginners and for those who have some acquaintance with the subject. It is identical with the regular college course in general inorganic chemistry. The work of each week is divided between lectures and laboratory hours. There are three lectures a week illustrated by experiments. These cover the more important elements and their compounds. Six hours are spent in the laboratory. Experiments, illustrating the fundamental principles of the science are performed.

Course 2.—QUALITATIVE AND QUANTITATIVE ANALYSIS. Professor Warren and Assistant Professor Mueller. Eighteen hours a week for the remaining four weeks of the first semester. (Total: Lectures, 16 hours; Laboratory, 56 hours.)

This course is for those who have taken Course 1, or its equivalent. A few lectures to show the technique of analysis are given, but the work is mainly practical. Thorough training is afforded in the separation and detection of bases and acids. Complete analysis of about fifteen unknown substances, including some of the more important inorganic compounds used in medicine, are made.

The essential principles of Volumetric Analysis are taught, and practice in analyzing unknown solutions and solids is given.

Course 3.—ORGANIC CHEMISTRY, PHYSIOLOGICAL CHEMISTRY AND TOXICOLOGY. Professor Warren and Assistant Professor Mueller. Eight hours a week during the second semester. (Total: Lectures, 45 hours; Laboratory, 75 hours.)

This course is for those who have taken Courses 1 and 2 or their equivalents. In a series of experiments the fats, carbohydrates, proteids, saliva, gastric juice, pancreatic secretion, bile, urine, blood and milk are studied. Especial attention is paid to the recognition of the important physiological proxi-

mate principles in unknown mixtures. Lectures are given in connection with the laboratory work.

SECOND YEAR.

Course 4.—PHYSIOLOGICAL CHEMISTRY AND TOXICOLOGY. Professor Warren and Assistant Professor Mueller. Five hours a week during third semester. (Total: Lectures, 15 hours; Laboratory, 60 hours.)

This course is a continuation of Course 3 given in the second half of the first year.

During the third semester, laboratory practice in the detection of all the common poisons is given in addition to laboratory work in physiological chemistry.

Department of Anatomy.

PAUL Y. TUPPER, Professor of Applied Anatomy.

ROBERT J. TERRY, Professor of Anatomy and Director of the Anatomical Laboratory.

WILLIAM T. COUGHLIN, Instructor in Anatomy.

VICTOR E. EMMEL, Instructor in Histology and Embryology.

*_____, Instructor in Anatomy.

The department offers facilities for study in the following anatomical sciences: Comparative anatomy of vertebrates, human anatomy, histology, embryology and physical anthropology. During the session 1908-09 a prescribed course for medical students, research work and special courses for physicians will be given.

I. PRESCRIBED COURSE.

The prescribed work in anatomy extends through the first two years of the medical curriculum.* A brief course in com-

* To be appointed.

parative anatomy precedes the courses in organology and human dissection which are completed in the first year. Special studies in topographical and applied anatomy follow in the second and third years.

The department is well equipped for teaching. There are three laboratories, a lecture room, a demonstration room provided with a Zeiss epidiascope, a working museum and library. The microscopical laboratories are equipped with Leitz microscopes and furnished with the unit-system tables. The library contains complete sets of the important anatomical journals, standard works of reference, atlases and monographs.

The students are taught to consider the animal body from the standpoints of gross and minute structure and development, and in the case of the human body, the topographical relationships of parts.

The work is done mainly in the laboratory where the student is trained to make careful observations and thus to learn the facts of anatomy at first hand. Drawing, measuring and weighing and week-end written examinations form a large part of the routine of class-work.

Some special work in an anatomical subject will be required of each student before the end of the prescribed course. The student's standing in anatomy will not be determined until the end of the fourth semester.

FIRST YEAR.

COMPARATIVE ANATOMY.—The following three courses extend through the first eight weeks of semester 1, and serve as an introduction to the study of human anatomy. Several animal forms are used, and during this period the common anatomical methods of the dissecting room and microscopical laboratory are explained. Professor Terry and Doctor Emmel.

Course 1.—ANATOMY OF THE DOG-FISH. Laboratory work and demonstrations, nine hours a week.

Course 2.—EMBRYOLOGY. This division includes the study of the sex-cells, the processes of maturation and fertilization, cleavage, the germ layers and the early history of the salamander and chick. Laboratory, seven hours a week; Lectures, one hour; Recitation, one hour.

Course 3.—HISTOLOGY AND HISTOGENESIS. The work includes a study of the cell and tissues, their origins in the embryo, and their subsequent differentiation. The material is obtained from the cat, rabbit, pig, chick and salamander. Laboratory, seven hours a week; Lectures, one hour; Recitation, one hour.

Course 4.—ORGANOLOGY. The study of the organs is taken up in the first semester on the completion of the work in comparative anatomy. It is continued until the close of School. The work includes the gross and fine anatomy of the organs and the history of their development. Human material and material from the abatoirs is made use of in this course. The development of the organs is studied in pig embryos. Laboratory work, eight hours a week; lectures, one hour; recitation, one hour. Professor Terry and Doctor Emmel.

Course 5.—HUMAN DISSECTION. Laboratory sixteen hours a week; Examination, two hours; from November 23rd throughout the second semester. The course includes osteology. Professor Terry and Doctor Coughlin.

SECOND YEAR.

Course 6.—STUDY OF SECTIONS OF THE CADAVER. This course is required of second year students during the first eight weeks of the third semester. Laboratory, twelve hours a week: Examination, two hours. Professor Terry and Doctor Coughlin.

THIRD YEAR.

Course 7.—APPLIED ANATOMY. Two lectures a week in the sixth semester, dealing with the application of anatomy in the practice of medicine. Professor Tupper.

Summary of hours given to certain divisions of the work of the prescribed course:

Histology and microscopic anatomy.....	226 hours.
Embryology.....	138 "
Osteology.....	56 "
Dissection.....	340 "
Topographical anatomy.....	112 "
Applied Anatomy.....	30 "
Total.....	902 "

II. RESEARCH WORK AND SPECIAL COURSES FOR PHYSICIANS.

INVESTIGATION.—Opportunity will be given qualified students to pursue advanced work or to undertake original investigation. The department has been allowed to add to the present anatomical library files of journals and other works to the amount of two thousand dollars. The equipment of optical apparatus for drawing, projection and photography, and for special cytological work is now fairly complete. A moderate appropriation has been made to meet the expense incidental to research, and such other help as may be necessary will be given. Professor Terry and Doctor Emmel.

GRADUATE COURSES.—These will be given from the middle of April until the middle of May, and are adapted to the needs of physicians: A course in the microscopic anatomy of the organs, fee $25; a course in the dissection of the abdomen and the surgical spaces of the neck and limbs, fee, $25; a course in microscopic technique, fee, $15.

Department of Physiology and Pharmacology.

CHARLES CLAUDE GUTHRIE, Professor of Physiology and Pharmacology.

HUGH MCGUIGAN, Assistant Professor of Pharmacology.

CLYDE BROOKS, Instructor in Physiology.

FRANCES VIRGINIA GUTHRIE, Research Assistant in Physiology.

WILLIAM IRVING, Mechanical Assistant.

SECOND YEAR.

Course 1.—EXPERIMENTAL PHYSIOLOGY. This course comprises the Physiology of the Blood, Circulation, Respiration Digestion, Metabolism, Absorption, Secretion, Muscles, Heat, Nervous System, and Special Senses. The fundamental principles are emphasized both in the lectures and the laboratory, after which the medical bearing of the subject is considered. To this end special attention is given to experiments on mammals. The course is arranged so that the experimental side of the subject follows closely after the lectures. In the laboratory the students work in groups of two on the frog and other similar work, and on mammals in groups of four. The student is encouraged to rely upon himself as much as possible, but instructors are always present to give assistance and to criticize whenever necessary.

The course extends throughout the year. Lectures two hours a week. Recitation, one hour a week. Laboratory, six hours a week. (Total Lectures, 60 hours; Recitations 30 hours; Laboratory, 180 hours).

Professors Guthrie and McGuigan and Mr. Brooks.

THIRD YEAR.

Course 2.—EXPERIMENTAL PHARMACOLOGY. The work is arranged with the aim of giving the student a concrete view of

the nature and scope of the subject. The chemicals are grouped as nearly as possible according to their pharmacological action, and one or more of each group is treated in detail both in the class room and the laboratory. Current theories of drug action will be discussed in so far as may seem warrantable. In general, the work will be conducted as in physiology.

The course is given during the fifth semester. Lectures two hours a week. Recitation, one hour a week. Laboratory, four hours a week. (Total, Lectures, 30 hours; Recitations, 15 hours; Laboratory, 60 hours.)

Professors Guthrie and McGuigan.

Course 3.—RESEARCH WORK IN PHYSIOLOGY.

Course 4.—RESEARCH WORK IN PHARMACOLOGY.

Adequate facilities will be offered advanced students for pursuing original investigations in both Physiology and Pharmacology. The laboratory is well stocked with general apparatus, instruments and supplies, and funds are available for securing special additions as occasion demands. Quarters for keeping animals are being reconstructed and enlarged, so that a moderate number can be kept in good condition.

A good working library is available, the files of which are being completed and added to as rapidly as possible.

Department of Pathology and Bacteriology.

ERNST FRIEDRICH TIEDEMANN, Professor of Pathology and Bacteriology.

CHARLES LEONARD KLENK, Laboratory Assistant.

Pathology.

A series of lectures and laboratory instruction is given in the first half of the second year upon elementary pathology; including the consideration of the etiology, types of disease, classification of disease, termination of disease, and signs of

death. The subjects of embolism, thrombosis, inflammation, degeneration and regeneration are fully demonstrated in the lectures and laboratory.

During the last half of the year the lectures and laboratory work are continued and are devoted to the various retrograde and progressive elementary pathological processes, to regeneration, inflammation, the specific inflammations, tumor formation and teratology. In the laboratory the student devotes the time to the preparation and study of illustrative pathological tissues by the microscope, the gross features of the processes discussed being correlated by frequent demonstrations of material from the collection of specimens in the laboratory. Following this work lectures and demonstrations are given in Special Pathology of the various organs of the body.

SECOND YEAR.

Course 1.—GENERAL PATHOLOGY. Lectures and demonstrations, three hours a week, during the year. Professor Tiedemann. (Total: Lectures 90 hours.)

Course 2.—PATHOLOGICAL HISTOLOGY. Laboratory instruction, six hours a week, during the year. Professor Tiedemann. (Total: Laboratory 180 hours.)

Course 3.—GROSS PATHOLOGICAL ANATOMY AND AUTOPSIES. The class is divided into sections and the student is required to participate in and make written reports upon autopsies, which are performed at the City and University Hospitals. Three hours a week, for half the year. Professor Tiedemann. (Total: Laboratory 45 hours.)

Bacteriology.

SECOND YEAR.

Instruction is given to each student in the methods of cultivating bacteria; isolating them in pure culture; the steps

necessary to the identification of particular species; the relation of bacteria to infection; and the methods of sterilization and disinfection.

Course 1.—GENERAL BACTERIOLOGY. Lectures two hours a week in the fourth semester. Professor Tiedemann. (Total: Lectures, 30 hours).

Course 2.—GENERAL BACTERIOLOGY. Laboratory six hours a week in the fourth semester. Professor Tiedemann. (Total: Laboratory, 90 hours).

Advanced Work in Pathology and Bacteriology.

Special courses are offered to advanced students and postgraduates in advanced pathological histology, autopsy making, pathological bacteriology, practical methods of cultivating bacteria, etc., and animal parasitology. An opportunity is offered to those suitably trained to undertake special investigations. This course begins in the middle of May. Fee, $25. Professor Tiedemann.

Department of Materia Medica and Pharmacy.

HENRY MILTON WHELPLEY, Professor of Materia Medica and Pharmacy.

EUGENE P. COCKRELL, Assistant and Demonstrator.

SECOND YEAR.

Course 1.—MATERIA MEDICA. Lectures and demonstrations, two hours a week in the fourth semester. Professor Whelpley. (Total: Lectures, 30 hours.)

By means of statistics a list has been secured which contains the medicines most extensively prescribed at the present time,

including all of those mentioned by practitioners who instruct the students during the junior and senior years.

THIRD YEAR.

Course 2.—PRACTICAL WORK IN PHARMACY AND PRESCRIPTION WRITING. Two hours a week, in the fifth semester. Professor Whelpley. (Total: Laboratory, 30 hours.)

The practical work is confined to such technique as is of value to every physician. The prescription writing gives particular attention to incompatibles and vehicles for the administration of chemicals and disagreeable medicines.

Course 3.—PALATABLE PRESCRIBING. Some lectures and demonstrations in the eighth semester. Elective. Professor Whelpley.

These lectures are based on prescription problems confronting the senior students in their clinical work.

Department of Therapeutics.

*_____, Lecturer on Therapeutics.

THIRD YEAR.

The course in Therapeutics consists in didactic lectures given throughout the third year, on the Physiological Action and Therapeutic Applications of the various drugs and other remedies used in the treatment of disease. These are supplemented by monthly quizzes which are devoted largely to practical work in prescription writing, and in bringing out the main points of the subjects lectured on during the preceding month. Three hours a week in the fifth semester and two hours a week in the sixth semester. (Total: Lectures, 75 hours.)

* To be appointed.

Department of Medicine.

GUSTAV BAUMGARTEN, Professor of the Practice of Medicine.

Professors of Clinical Medicine.

WASHINGTON E. FISCHEL, JUSTIN STEER,
ELSWORTH SMITH, JR.

Clinical Professors of Medicine.

ALBERT E. TAUSSIG. LOUIS H. BEHRENS.
HENRY S. BROOKES.

Lecturers.

JESSE S. MYER, WALTER BAUMGARTEN,
LOUIS M. WARFIELD. JOHN C. SALTER.

Instructors.

C. A. W. ZIMMERMANN, FRED FAHLEN,
OLIVER H. CAMPBELL, L. C. HUELESMANN,
L. H. HEMPELMAN, WALTER FISCHEL.

The course in medicine comprises a graded plan of study extending throughout three years. General didactic lectures and recitations are given upon the practice of medicine, supplemented by bedside, laboratory and dispensary instruction.

Physical Diagnosis is taught by exercises in the last half of the second year and during the third year. Clinical Chemistry and Microscopy is given throughout the third year, taking up the subjects of blood, stomach contents and feces, chemical analysis and microscopic examination of the urine, and exercises in laboratory diagnosis of actual cases.

The Practice of Medicine is taught by lectures and clinics (see description below). The lectures are not intended to re-

peat the contents of any text-book, but are designed to complement the latter and assure the comprehension of its teachings, by stress upon the pathogenesis of the disease, the origin and meaning of its symptoms and its sequence in the morbid process, the reciprocal influence of the disturbed functions of various organs on each other; upon the rationale of methods of treatment and the indications for the use of remedial agents. The lectures are illustrated by pathological specimens, colored plates and diagrams.

Clinical Medicine is taught during the third and fourth years. General medical clinics are held in the Hospitals and Dispensaries connected with this department. Excellent facilities for teaching are furnished, medical clinics being held every day during the year, the laboratories being open for scientific study of cases.

Bedside instruction is given to seniors throughout the year, in the wards of the University and Mullanphy Hospitals. The patients are assigned to the students, who take their histories, make the physical examination, the diagnosis and prognosis, and suggest the line of treatment.

SECOND YEAR.

Course 1.—NORMAL AUSCULTATION AND PERCUSSION. Exercises two hours a week in the fourth semester. Professor Smith (Total: Exercises, 30 hours.)

THIRD YEAR.

Course 2.—CLINICAL CHEMISTRY AND MICROSCOPICAL DIAGNOSIS. Laboratory work, four hours a week during the year. Clinical Professor Taussig, Drs. Myer, Rush, Baumgarten and Salter. (Total: Laboratory, 120 hours.)

Course 3.—PHYSICAL DIAGNOSIS. Exercises two hours a

week in the fifth semester, and one hour in the sixth semester. Professor Smith. (Total: Exercises, 45 hours.)

Course 4.—PRACTICE OF MEDICINE. Lectures and recitations, three hours a week during the year. Professor Baumgarten and Dr. Zimmermann. (Total: Lectures, 60 hours; Recitations, 30 hours.)

Medical Clinics.—Sections of one-third of the Class.

Course 5.—AT WASHINGTON UNIVERSITY HOSPITAL, three hours a week during the year. Clinical Professor, A. E. Taussig.

Course 6.—AT WASHINGTON UNIVERSITY HOSPITAL, three hours a week during the year. Clinical Professor Behrens.

Course 7.—AT O'FALLON DISPENSARY, three hours a week during the year. Clinical Professor Brookes.

(Total: Clinics, 90 hours for each student during the third year.)

FOURTH YEAR.

Course 8.—PRACTICE OF MEDICINE. Lectures and recitations, three hours a week during the year. Professor Baumgarten and Dr. Zimmermann. (Total: Lectures, 60 hours; Recitations, 30 hours).

Medical Clinics.—Sections of one-fourth of the class.

Course 9.—AT MULLANPHY HOSPITAL. Twelve hours a week during the year. Professors Steer and Smith.

Course 10.—AT WASHINGTON UNIVERSITY HOSPITAL. Twelve hours a week during the year. Professor Fischel.

Entire Class.

Course 11.—AT WASHINGTON UNIVERSITY HOSPITAL. Two hours a week during the year. Professor Fischel.

Course 12.—AT CITY HOSPITAL. One hour a week during the year. Professors Fischel and Smith.

(Total, Clinics, 270 hours for each student during the fourth year).

Department of Surgery.

HERMAN TUHOLSKE, Professor of the Practice of Surgery and Clinical Surgery.

PAUL YOER TUPPER, Professor of Operative Surgery.

NORMAN B. CARSON, Professor of Clinical Surgery.

HARVEY GILMER MUDD, Professor of Fractures and Dislocations and Clinical Surgery.

WILLARD BARTLETT, Professor of Experimental Surgery.

GEORGE W. CALE, JR., Clinical Professor of Surgery.

ERNST JONAS, Clinical Professor of Surgery.

Lecturer.

WILLIAM S. DEUTSCH.

Instructors.

HENRY ARTHUR GEITZ. ROBERT SCHLUETER.
MALVERN B. CLOPTON.

The course in Surgery, which includes instruction in surgical pathology, in the principles and practice of surgery, in practical minor surgery, and in operative surgery, is so arranged that every student shall have received at its termination systematic instruction in every subject.

The methods are varied, and are designed to give the student thorough training in the fundamental principles concerning the pathogenesis of all surgical affections; to develop the powers of observation; to make him thoroughly conversant with the principles underlying every plan of treatment; and as far as possible, to give him opportunity under the direction of instructors to put into practice certain major and minor operative procedures. They include demonstrations in surgical pathology, didactic lectures, surgical clinics, surgical ward classes, clinical conferences in surgery, courses in practical minor surgery, including bandaging, fracture dressing, and dispensary work; operative surgery, general reviews, ward work and visits and experimental surgery. A course in Roentgenology will be given in connection with the lectures on Fractures and Dislocations.

At the Washington University Hospital every student will fill the position of Interne in the surgical division for at least two weeks.

SECOND YEAR.

Course 1.—INSTRUCTION IN MINOR SURGERY AND BANDAGING. Two hours a week in the fourth semester. Dr. Geitz. (Total: Exercises, 30 hours).

THIRD YEAR.

Course 2.—DEMONSTRATIONS IN SURGICAL PATHOLOGY AND EXPERIMENTAL SURGERY. One hour a week during the year. Professor Bartlett. (Total, 30 hours).

Course 3.—LECTURES ON THE PRINCIPLES OF SURGERY. One hour a week during the year. Professor Tuholske. (Total: Lectures, 30 hours).

Course 4.—LECTURES AND DEMONSTRATIONS ON FRACTURES AND DISLOCATIONS. ROENTGENOLOGY. Two hours a week during the year. Dr. Blair. (Total: 60 hours).

Surgical Clinics—Sections of one-half the class.

Course 5.—AT WASHINGTON UNIVERSITY HOSPITAL. Two hours a week during the year. Professor Tuholske and Dr. Jonas.

Course 6.—AT MULLANPHY HOSPITAL. Two hours a week during the year. Dr. Clopton.

Course 7.—AT O'FALLON DISPENSARY. Two hours a week during the year. Dr. Schlueter. (Total: Clinics, 90 hours for each student during the third year.)

FOURTH YEAR.

Course 8.—LECTURES ON THE PRACTICE OF SURGERY. One hour a week during the year. Professor Tuholske. (Total: Lectures, 30 hours).

Course 9.—LECTURES ON OPERATIVE SURGERY, WITH EXERCISES ON TNE CADAVER. Two hours a week in the seventh semester. Professor Tupper. (Total: Lectures, 30 hours).

Course 10.—LECTURES ON THE SURGERY OF THE BRAIN AND SPINAL CORD. One hour a week in the eighth semester. Professor Mudd. (Total: Lectures, 15 hours).

Surgical Clinics—Sections of one-fourth of the class.

Course 11.—AT MULLANPHY HOSPITAL. Fifteen hours a week during the year. Professor Carson.

Course 12.—AT WASHINGTON UNIVERSITY HOSPITAL. Four hours a week during the year. Drs. Jonas, Deutsch and Robertson.

Entire Class.

Course 13.—AT WASHINGTON UNIVERSITY HOSPITAL. Two hours a week during the year. Professor Tuholske.

Course 14.—AT CITY HOSPITAL. One hour a week during the year. Professors Tupper, Carson and Mudd. (Total: Clinics, 232 hours for each student during the fourth year).

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY.

Professor of Obstetrics and Gynecology.
HENRY SCHWARZ.

Professor of Clinical Obstetrics.
EDWARD WATTS SAUNDERS.

Professors of Clinical Gynecology.
FRANK A. GLASGOW. HENRY S. CROSSEN.

Clinical Lecturer on Gynecology.
WILLIS HALL.

Lecturers in Obstetrics and Gynecology.
RICHARD H. FUHRMANN. ADOLPH G. SCHLOSSSTEIN.

Lecturers in Gynecology.
GEORGE GELLHORN. FRED J. TAUSSIG.

Instructors in Gynecology.
HERMAN A. HANSER ARTHUR C. KIMBALL.

Instructors in Obstetrics.
BERNARD W. MOORE. SHERWOOD MOORE.

I. INSTRUCTION IN OBSTETRICS.

A graded course of instruction in Obstetrics will be given during third and fourth years, as follows:

Lectures. Attendance on cases of confinement. Manikin practice and section work. Obstetric histology, pathology and bacteriology and clinical conferences.

In the Obstetrical Clinics and Out-Clinics each student is given ample opportunity under the supervision of the physicians in charge to examine cases during the different months of pregnancy, to attend a large number of confinements, and

to continue his attendance on mother and baby during the lying-in period. In the clinical conference held each week the students make reports of the cases they have attended, and discuss them with their instructors.

THIRD YEAR.

Course 1.—OBSTETRICS. LECTURES WITH DEMONSTRATIONS. Two hours a week during the year. Professor Schwarz. (Total: Lectures, 60 hours).

FOURTH YEAR.

Course 2.—OPERATIVE OBSTETRICS. THE PATHOLOGY OF PREGNANCY, LABOR AND PUERPERIUM. LECTURES. One hour a week during the year. Professor Schwarz. (Total: Lectures, 30 hours).

Course 3.—EXERCISES ON THE MANIKIN. Two hours a week during the year in sections of one-quarter of the class. Dr. Fuhrmann. (Exercises, 15 hours).

Course 4.—CLINICAL OBSTETRICS AND CLINICAL CONFERENCE AT THE WASHINGTON UNIVERSITY LYING-IN HOSPITAL. Three hours a week during the year in sections of one-quarter of the class. Professors Schwarz, Dr. Fuhrmann and Schlossstein. (Total: Clinics, 22 hours for each student during the fourth year).

Course 5.—OBSTETRICAL CLINIC AT THE BETHESDA HOSPITAL by appointment, during the year. Professor Saunders.

Course 6.—OBSTETRICAL CLINIC AND OBSTETRICAL OUT-CLINIC OF THE WASHINGTON UNIVERSITY LYING-IN HOSPITAL by appointment, during the year. Professor Schwarz and Associates.

II. INSTRUCTION IN GYNECOLOGY.

A comprehensive Lecture Course, dealing in a systematic way with the Diseases of Women and Clinical courses, in which the

senior students are required, under the eye of the instructor, to make careful and systematic examinations, to make diagnoses and sustain them under criticism, to carry out the minor details of treatment and to witness the various gynecological operations.

THIRD YEAR.

Course 1.—GYNECOLOGY. Lectures and Demonstrations, two hours a week in the sixth semester. Professor F. A. Glasgow. (Total: Lectures, 30 hours).

FOURTH YEAR.

Course 2.—GYNECOLOGY. Lectures and Demonstrations, two hours a week in the eighth semester. Professor Crossen. (Total: Lectures, 30 hours).

Gynecological Clinics.—Sections of one-quarter of the class.

Course 3.—WASHINGTON UNIVERSITY HOSPITAL DISPENSARY. Four hours a week during the year. Professor Crossen, Drs. Hanser and Taussig.

Course 4.—MULLANPHY HOSPITAL. Two hours a week during the year. Professor F. A. Glasgow.

Course 5.—O'FALLON DISPENSARY. Three hours a week during the year. Professor Schwarz, Drs. Gellhorn, Hall and Schlossstein. Total Clinics: 67 hours for each student during the year.

SPECIAL DEPARTMENTS OF MEDICINE AND SURGERY.

Diseases of Children.

EDWARD WATTS SAUNDERS, Professor of Diseases of Children.
GEORGE MARVINE TUTTLE, Professor of Clinical Pediatrics.
JOHN ZAHORSKY, Clinical Professor Diseases of Children.

Instructors in Clinical Pediatrics.

WALTER L. JOHNSON. MEYER J. LIPPE.
EDWIN W. EBERLEIN. AARON LEVY.

The course in Diseases of Children consists of didactic and clinical instruction. Lectures are given on the general diagnosis, symptomatology and treatment of disease in children. The more important subjects receive systematic and full discussion. Among these topics are the feeding of infants, gastro-intestinal diseases, diphtheria, scarlet fever, pneumonia of childhood, etc.

Clinical instruction is given in the dispensaries and the Bethesda Hospital.

The exceptional richness and variety of material afforded by the Bethesda Hospital makes this part of the course a valuable feature. Sections of the class attend classes three times a week and have the opportunity of examining the patients under the direction of the instructor in charge.

In addition to this, the children's clinics at the Washington University Hospital Dispensary and the O'Fallon Dispensary are drawn upon for clinical lectures on the various diseases presenting themselves.

THIRD YEAR.

Course 1.—DISEASES OF CHILDREN. Lectures and demonstrations two hours a week in the fifth semester. Professor Tuttle. (Total: Lectures, 30 hours).

Clinics—Sections of one-half of the class.

Course 2.—AT O'FALLON DISPENSARY. One hour a week during the year. Professor Tuttle and Dr. Eberlein.

Course 3.—AT WASHINGTON UNIVERSITY HOSPITAL. One hour a week during the year. Clinical Professor Zahorsky. (Total: Clinics, 30 hours for each student during the third year).

FOURTH YEAR.

Course 4.—DISEASES OF INFANTS. Lectures, one hour a week in the seventh semester. Professor Saunders. (Total: Lectures, 15 hours).

Course 5.—CLINICS. At Bethesda Hospital, four hours a week during the year, in sections of one-quarter of the class. Professors Saunders, Tuttle and assistants. (Total, Clinics, 30 hours for each student during the fourth year).

Diseases of the Nervous System.

FRANCIS RHODES FRY, Professor of Diseases of the Nervous System.

GIVEN CAMPBELL, JR., Clinical Professor of Diseases of the Nervous System.

MALCOLM A. BLISS, Clinical Lecturer on Neurology.

MOSES W. HOGE, Instructor in Clinical Neurology.

A course of didactic lectures in Neurology is given to the Junior Class during the last half of the third year. These lectures are supplemented by one clinical lecture a week during

the year at the Washington University Hospital and O'Fallon Dispensaries, where the large amount of material always at command enables the teacher to select the subjects to be discussed. Instruction in Mental Diseases is given to senior students at the St. Louis Insane Asylum.

The class is divided into sections, in order to give the student an opportunity of investigating cases under the supervision of the instructors in charge.

THIRD YEAR.

Course 1.—DISEASES OF THE NERVOUS SYSTEM. Lectures one hour a week in the sixth semester. Professor Fry. (Total: Lectures, 15 hours).

Clinics—Entire class.

Course 2.—AT WASHINGTON UNIVERSITY HOSPITAL. One hour a week in the fifth semester. Clinical Professor Campbell.

Course 3.—AT O'FALLON DISPENSARY. One hour a week in the sixth semester. Dr Hoge. (Total: Clinics, 30 hours for each student during the third year).

FOURTH YEAR.

Clinics—Entire class.

Course 4.—AT CITY HOSPITAL. One hour a week during the year. Professor Fry and Clinical Professor Campbell.

Sections of one-half of the class.

Course 5.—AT INSANE ASYLUM AND POOR HOUSE. Four hours a week in the eighth semester. Professors Fry and Dr. Bliss. (Total: Clinics, 60 hours for each student in the fourth year).

Orthopedic Surgery.

A. J. STEELE, Professor of Orthopedic Surgery.
PHILIP HOFFMANN, Clinical Lecturer on Orthopedic Surgery.
NATHANIEL ALLISON, Clinical Lecturer on Orthopedic Surgery.

Orthopedic Surgery will be taught didactically and by recitation to the third year class, and clinically to the senior class. Congenital and acquired deformities, tuberculous and chronic deforming joint diseases, and loss of muscular function from the neuroses, will all be fully considered and made plain by cases from practice.

The uses of plaster of paris in its manifold application will be taught, the construction of braces illustrated, and the surgical operative procedures, tenotomy, osteotomy, osteoclasis, tendon transplantation, etc., will be done before the class.

THIRD YEAR.

Course 1.—ORTHOPEDIC SURGERY. Lectures one hour a week in the sixth semester. Professor Steele. (Total: Lectures, 15 hours).

FOURTH YEAR.

Clinics—Sections of one-quarter of the class.

Course 2.—AT WASHINGTON UNIVERSITY HOSPITAL. One hour a week during the year. Professor Steele.

Sections of one-eighth of the class.

Course 3.—AT O'FALLON DISPENSARY. One hour a week during the year. Dr. Hoffmann.

Course 4.—AT MARTHA PARSONS HOSPITAL. One hour a week during the year. Dr. Allison. (Total: Clinics, 15 hours for each student during the fourth year).

Dermatology.

W. A. HARDAWAY, Professor of Diseases of the Skin and Syphilis.

JOSEPH GRINDON, Professor of Clinical Dermatology and Syphilis.

The instruction given in dermatology and syphilography is partly didactic and partly clinical. It is fully recognized that any familiar knowledge of these branches can be obtained only in the actual work of the dispensary or hospital; nevertheless, a considerable part of what may be termed the elements of these subjects, that is to say, the general consideration of symptoms, causes, therapeutics, etc., should be imparted to the student as a preliminary to the clinic. Such subjects are treated didactically in the third year of the student's course. In addition, certain general diseases, e. g., leprosy, the exanthema, syphilis, are sufficiently discussed, and especially in relation to their diagnosis and their medico-social bearings.

The important subject of vaccination, its history, clinical phenomena and mode of application is exhaustively treated.

In the fourth year students are quite thoroughly drilled in practical clinical work. In addition to instruction by lectures the classes are divided into small sections, and then again so subdivided that to each three or four men is assigned a patient for study. At the next conference a written report is made of each case and fully discussed before the class. An opportunity is also offered for a certain amount of pathological work in dermatology to such students as may desire it.

THIRD YEAR.

Course 1.—DISEASES OF THE SKIN AND SYPHILIS. Lectures and clinical demonstrations, one hour a week for ten weeks in the fifth semester. Professor Hardaway. (Total: Lectures, 10 hours).

Course 2.—ERUPTIVE FEVERS, VACCINATION AND CUTANEOUS SYPHILIS. Lectures one hour a week for ten weeks in the sixth semester. Professor Grindon. (Total: Lectures, 10 hours).

FOURTH YEAR.

Clinics—Sections of one-quarter of the class.

Course 3.—AT WASHINGTON UNIVERSITY HOSPITAL. One hour a week during the year. Professor Hardaway.

Course 4.—AT MULLANPHY HOSPITAL. One hour a week during the year. Professor Grindon. (Total: Clinics, 15 hours for each student during the fourth year).

Genito-Urinary Surgery.

EDWIN C. BURNETT, Clinical Professor of Genito-Urinary Diseases.

H. McC. JOHNSON, Clinical Professor of Genito-Urinary Surgery.

WILLIAM M. ROBERTSON, Lecturer on Genito-Urinary Surgery.

In the department of Genito-Urinary Surgery the students have the advantage of a large out-clinic at the O'Fallon Dispensary and Washington University Hospital Dispensary, where daily clinics are held. At the St. Louis Mullanphy Hospital the privilege is presented to do individual work in the wards and operating room in kidney, ureteral and bladder technique.

FOURTH YEAR.

Course 1.—GENITO-URINARY SURGERY. Lectures one hour a week in the seventh semester. Clinical Professor Johnson. (Total: Lectures, 15 hours.)

Clinics—Sections of one-quarter of the class.

Course 2.—AT O'FALLON DISPENSARY. Two hours a week during the year. Clinical Professor Johnson.

Course 3.—AT O'FALLON DISPENSARY. Two hours a week during the year. Clinical Professor Burnett. (Total: Clinics, 30 hours for each student during the fourth year).

Rectal Surgery.

CHARLES H. DIXON, Clinical Professor of Rectal Surgery.

Lectures and clinical work in this specialty are conducted at the Washington University Hospital Dispensary in connection with the surgical clinics during the fourth year.

Ophthalmology.

JOHN GREEN, Special Professor of Ophthalmology.

Professors of Clinical Ophthalmology.

HENRY LINCOLN WOLFNER. ARTHUR EUGENE EWING.

Clinical Professors in Ophthalmology.

WILLIAM A. SHOEMAKER. JOSEPH W. CHARLES.

Lecturer.

MEYER WIENER.

Instructors.

JULIUS H. GROSS. NATHANIEL M. SEMPLE.
F. E. WOODRUFF. LLEWELLYN WILLIAMSON.

Lectures and demonstrations are given for a period of one year. Daily clinics are given in the dispensaries. The students are divided into sections and each section has the oppor-

tunity in turn of closely inspecting the patients with external inflammatory diseases of the eye, of seeing the method of applying the remedies, of making the commoner applications utilized in the treatment, of learning the use of the ophthalmoscope so that each student may recognize the healthy fundus and its important diseased conditions.

THIRD YEAR.

Course 1.—LECTURES ON THE PRINCIPLES OF OPHTHALMOLOGY. One hour a week in the sixth semester. Professors Green and Ewing. (Total: Lectures, 15 hours).

Clinics—Sections of one-half of the class.

Course 2.—AT O'FALLON DISPENSARY. One hour a week in the sixth semester. Professors Ewing, Shoemaker and Charles.

Course 3.—AT WASHINGTON UNIVERSITY HOSPITAL. One hour a week in the sixth semester. Professor Wolfner and Dr. Wiener. (Total: Clinics, 15 hours for each student during the third year).

FOURTH YEAR.

Clinics—Sections of one-half of the class.

Course 4.—AT O'FALLON DISPENSARY. One hour a week in the seventh semester. Professors Ewing, Shoemaker and Charles.

Course 5.—AT WASHINGTON UNIVERSITY HOSPITAL. One hour a week in the seventh semester. Professor Wolfner and Dr. Wiener. (Total: Clinics, 15 hours for each student during the fourth year).

Otology.

Professors of Otology.

HORATIO N. SPENCER. JOHN BLASDEL SHAPLEIGH.

Lecturers on Otology.

SELDEN SPENCER. ALBERT F. KOETTER.

Instructor in Otology.

EUGENE T. SENSENEY.

The lectures and clinical demonstrations present the surgical anatomy of the ear and nose, the physiology of these organs, the methods of examination, the more important diseases, the therapy and surgical treatment of nasal and aural affections.

THIRD YEAR.

Course 1.—LECTURES ON DISEASES OF THE EAR, WITH CLINICAL DEMONSTRATIONS. One hour in the sixth semester. Professor Spencer. (Total: Lectures, 15 hours).

FOURTH YEAR.

Clinics—Sections of one-quarter of the class.

Course 2.—AT O'FALLON DISPENSARY. Two hours a week during the year. Professor Shapleigh and Dr. Koetter.

Course 3.—AT WASHINGTON UNIVERSITY HOSPITAL. Two hours a week during the year. Professor Spencer and Dr. Selden Spencer. (Total: Clinics, 30 hours for each student during the fourth year).

Laryngology and Rhinology.

EDGAR MOORE SENSENEY, Professor of Diseases of the Nose, Throat and Chest.

GREENFIELD SLUDER, Clinical Professor of Diseases of the Nose and Throat.

Instructors in Clinical Laryngology.

H. CLAY CREVELING. WILLIAM E. SAUER.

Instruction consists of lectures and demonstrations, and of training in the use of instruments. For the practical work at the dispensaries, the class is divided into small sections.

FOURTH YEAR.

Clinics—Sections of one-quarter of the class.

Course 1.—AT MULLANPHY HOSPITAL. Two hours a week during the year. Professor Senseney.

Course 2.—AT O'FALLON DISPENSARY. Two hours a week during the year. Clinical Professor Sluder.

Course 3.—AT WASHINGTON UNIVERSITY HOSPITAL. Two hours a week during the year. Drs. Creveling and Sauer. (Total: Clinics, 45 hours for each student during the fourth year).

Course 4.—LECTURES ON ORTHODONTIA. One hour a week for four weeks. Lecturer ———*. (Total: Lectures 4 hours).

Hygiene and Sanitary Science.

ADRIAN S. BLEYER, Lecturer on Hygiene and Sanitary Science.

THIRD YEAR.

The course in Hygiene and Sanitary Science is designed to bring clearly and concisely before the student those fundamental hygienic principles, which enable the physician to intelligently combat disease-producing conditions in the individual and his surroundings, or in communities at large. The

*To be appointed.

course is conducted by a series of lectures and explanatory quizzes, supplemented, wherever possible, by illustrations and the exhibition of the various apparatus used in sanitary work,

All subjects bearing on the general maintenance of good health—water, food, climate; the construction, ventilation, heating and lighting of buildings; the character of soils; principles of clothing; effects of exercise; disposal of excreta, sewage and refuse; the origin and transmission of the infective diseases; disinfection and quarantine—are treated in detail, their relation to disease discussed, and the necessity for the observance of sanitary laws impressed.

Course 1.—LECTURES AND DEMONSTRATIONS ON HYGIENE AND SANITARY SCIENCE. Two hours a week in the sixth semester. Dr. Bleyer. (Total: Lectures, 30 hours).

Forensic Medicine and Medical Jurisprudence.

DANIEL NOYES KIRBY, Professor of Medical Jurisprudence.
SELDEN P. SPENCER, Professor of Forensic Medicine.

The courses in Medical Jurisprudence and Forensic Medicine are intended to be practical rather than theoretical, and while covering the ground hitherto embraced in this branch, are demonstrated from the view point of the practicing lawyer. and instruction given as to the proper preparation and conduct of a case so as to meet the requirements of the law.

"The Medical Man as a Witness," is the thread of the series of lectures, and on it are strung the various special themes. The practical work of the legal autopsy, the coroner's inquest, the succeeding trial, its preparation and conduct, the use of drugs and other medico-legal subjects are exemplified and applied. The requirements of Statutory Practice Acts are set forth and clearly explained.

FOURTH YEAR.

Course 1.—MEDICAL JURISPRUDENCE. Lectures and recitations, one hour a week in the eighth semester. Mr. Kirby.

Course 2.—FORENSIC MEDICINE. Lectures and recitations, one hour a week in the eighth semester. Judge Spencer. (Total: Lectures, 30 hours).

Dietetics.

*————, Lecturer on Dietetics.

The course on Dietetics will include lectures and recitations upon food, beverages, condiments and diet, in health and disease.

THIRD YEAR.

Course 1.—DIETETICS. Lectures and recitations, one hour a week in the seventh semester. (Total: Lectures 15 hours).

Medical History.

The course on Medical History will consist of evening lectures given from time to time during the session at the college building.

Elective Courses.

Opportunity for the pursuit of elective work is afforded in the third and fourth years. Students of the junior and senior classes are urged to undertake work in the subjects of the first

* To be appointed.

two years. Such work must not conflict with the obligatory work of the curriculum.

No record will be kept of work elected, and such courses shall not count toward the degree. In selecting these studies students must so arrange that no conflict with prescribed work shall occur.

Instructors in charge of elective courses will post notices of the semesters, days and hours, when the work is to be conducted.

GRADUATE COURSES.

Advanced Study and Research.

The rapid development of medical science has necessitated the introduction of many new subjects into the curriculum, and this has led practitioners, who wish to keep abreast of the times, to return to the Medical Department in order to take special courses in the newer subjects. The frequency of requests for advanced work has induced the Faculty to admit medical graduates to any one or more of the regular courses.

While no graduate school in medicine has been established, ample facilities are presented for advanced study and research, and encouragement is given in every way possible to investigators.

Clinical instruction is given in the Washington University Hospital, in the Washington University Hospital Dispensary, O'Fallon Dispensary, Mullanphy Hospital and the out-patient department of that institution, Bethesda Hospital and the eleemosynary institutions of the city. These hospitals afford an abundance of clinical material.

In the Locust street Building is a medical Library with sets of medical periodicals. All of the special laboratories possess libraries which are available for the use of graduate students.

The opportunities are numerous for clinical work combined with the studies in the several laboratories. For full details of the clinical instruction see the various divisions in the Details of the Plan of Instruction.

This Table gives the number of actual hours work for each student for the course of four years—thirty weeks in each year.	1st Year.				2nd Year.			
	S. I.		S. II.		S. III.		S. IV.	
	Lectures.	Laboratory.	Lectures.	Laboratory.	Lectures.	Laboratory	Lectures.	Laboratory.
Chemistry—Inorganic	36	72	....	....	....	....	....	....
" Qualitative Analysis	12	36	....	....	....	....	....	....
" Volumetric Analysis	4	20	....	....	....	....	....	....
" Organic	....	....	30	....	....	....	....	....
" Physiological and Toxicology	....	....	15	75	15	60	....	....
Anatomy—Histology	23	98	15	90	....	....	....	....
" Embryology	23	70	15	30	....	....	....	....
" Dissections	14	112	30	240	....	....	....	....
" Topographical	....	....	....	....	16	96	....	....
" Applied	....	....	....	....	....	....	....	....
Physiology	....	....	....	....	45	90	45	90
Pathology—Gen'l and Path. Histology	....	....	....	....	45	90	45	90
" Autopsies	....	....	....	....	....	23	....	22
Bacteriology	....	....	....	....	....	....	30	90
Materia Medica and Pharmacy	....	....	....	....	....	....	30	....
Pharmacology	....	....	....	....	....	....	....	....
Therapeutics	....	....	....	....	....	....	....	....
Medicine—Auscultation and Percussion	....	....	....	....	....	....	....	30
" Physical Diagnosis	....	....	....	....	....	....	....	....
" Clinical Chemistry and Microscope Diagnosis	....	....	....	....	....	....	....	....
" Principles and Practice	....	....	....	....	....	....	....	....
" Clinics	....	....	....	....	....	....	....	....
Surgery—Minor Surgery and Bandaging	....	....	....	....	....	....	....	30
" Surgical Pathology	....	....	....	....	....	....	....	....
" Fractures and Dislocations, X-ray Demonstrations	....	....	....	....	....	....	....	....
" Operative	....	....	....	....	....	....	....	....
" Brain and Spinal Cord	....	....	....	....	....	....	....	....
" Principles and Practice	....	....	....	....	....	....	....	....
" Clinics	....	....	....	....	....	....	....	....
Obstetrics. (See Note)	....	....	....	....	....	....	....	....
Gynecology	....	....	....	....	....	....	....	....
Pediatrics	....	....	....	....	....	....	....	....
Neurology	....	....	....	....	....	....	....	....
Orthopedics	....	....	....	....	....	....	....	....
Dermatology	....	....	....	....	....	....	....	....
Ophthalmology	....	....	....	....	....	....	....	....
Otology	....	....	....	....	....	....	....	....
Nose and Throat	....	....	....	....	....	....	....	....
Genito-Urinary Surgery	....	....	....	....	....	....	....	....
Hygiene	....	....	....	....	....	....	....	....
Medical Jurisprudence	....	....	....	....	....	....	....	....
Dietetics	....	....	....	....	....	....	....	....
	112	408	105	435	121	359	150	352
	520		540		480		502	
NOTE.—Attendance on confinement cases from Maternity Clinic NOT INCLUDED.	1060				982			

3rd Year.						4th Year.						Totals for Course.	Schedule of the Association of American Medical Colleges.	
S. V.			S. VI.			S. VII.			S. VIII.					
Lectures.	Laboratory.	Clinics.	Lectures.	Laboratory.	Clinics.	Lectures	Laboratory.	Clinics.	Lectures.	Laboratory.	Clinics.		Preferred Minimum.	Allowed Minimum.
												108		
												48		
												24		
												30		
												165 375	300	240
												226		
												138		
												396		
												112		
			30									30 902	630	504
												270	300	240
												270		
												45 315	240	192
												120	140	112
	30											60	60	48
45	60											105	60	48
45			30									75	90	72
												30	100	80
		30			15							45		
	60			60								120	90	72
45			45			45			45			180	180	144
		45			45			135			135	360 735	360 730	278 584
												30		
	15			15								30		
30			30									60	180	144
							30					30		
									15			15		
15			15			15			15			60		
		45			45			116			116	322 547	360 540	288 432
30			30			15	8	11	15	7	11	127	160	128
			30			30		34			33	127	160	128
30		15			15	15		15			15	105	100	80
		15	15		15			15			45	105	120	96
			15					7			8	30		
10			10					7			8	35	40	32
			15		15			15				45	60	48
			15					15			15	45		
								22	4		23	49	60	48
						15		15			15	45	60	48
			30									30	30	24
									30			30	30	24
						15						15	30	24
250	165	150	310	75	150	180	8	40	124	7	428		60	Electro-Therapeutics.
	565			535			595			555				
		1100						1150				4292	4000	

PROMOTION.

At the end of the First Year:

A student, candidate for the degree, will be promoted to the Seeond Year Class, if, having attended regularly the courses of the first year he has done the work satisfactorily, and has no more than two conditions.

Conditions must, however, be made up by the end of the fourth semester.*

At the end of the Second Year:

A student will be promoted to the Third Year Class whose work throughout the First and Second Years has been generally satisfactory. All conditions must be removed in the fall before third year work is begun.

A student cannot enter a Third Year Class with a condition.

At the end of the Third Year:

A student will be promoted to the Senior Class, if he has attended regularly and received credit for the practical courses in Medicine and Surgery, and satisfactorily passed examinations in the lecture courses of Medicine, Surgery and Obstetrics, and if he has been accredited with a majority of all other branches taught in this year. Conditions in completed courses must be removed in the fall before fourth year work is begun.*

At the end of the Senior Year a student will be graduated subject to the conditions named under "Requirements for Graduation."

REQUIREMENTS FOR GRADUATION.

1. The candidate must be twenty-one years of age.
2. He must be of good moral character (which includes unexceptionable conduct while at this school).

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* Examinations for removal of conditions will be held in the fall and spring. (See Calendar).

3. He must have fulfilled the requirements for entrance.

4. He must have attended not less than four annual courses of medical instruction as a regular matriculated medical student, the last of which must have been in this school.

5. He must, by the first of May, have notified the Dean, in writing, of his inteniton to present himself as a candidate for the degree.

6. He must have discharged all indebtedness to the school.

7. He must have taken all obligatory courses offered, here or their equivalent, and have a satisfactory grade in the entire work of the four years.

At the end of the Fourth Year every student, who has fulfilled these requirements, will be recommended for the degree of Doctor of Medicine.

PRIZES.

Two "**George F. Gill Prizes**" are offered to the students of the school, viz.: 1. One prize of fifty dollars to be awarded at the end of the first year to the member of the class who shall have made the highest grade in anatomical work.

At the discretion of the Professor of Anatomy, other students of the First Year who shall have done excellent work in Anatomy, may be awarded "Honorable Mention" at Commencement. The names of students thus chosen will be printed in the Announcement.

2. One prize of fifty dollars to be awarded to a member of the graduating class, of high general standing, who shall have done specially good work in the department of Diseases of Children.

The "**Curtman Prize**" of twenty-five dollars will be awarded at the end of the First Year to the member of the class who shall have made the highest grade in Chemistry.

At the discretion of the Professor of Chemistry, other stu-

dents of the First Year who shall have done excellent work in Chemistry, may be awarded "Honorable Mention" at Commencement. The names of students thus chosen will be printed in the Announcement.

ALUMNI ASSOCIATION PRIZE.

For the purpose of encouraging an interest in scientific work on the part of the young men who have just been graduated, the Alumni Association of The Washington University Medical Department have decided to give each year, at the graduating exercises, a prize of fifty dollars to the graduate of the year before, who presents the best thesis on a medical or surgical subject.

TO THE ALUMNI OF 1908.

1. THE PRIZE WILL BE GIVEN ON THE FOLLOWING CONDITIONS:

1. While it is not desired to restrict the choice of the subject, the award will be made only to such papers as show evidence of original work. Ordinarily reports of interesting or unusual cases, unless they be included as part evidence in the consideration of some more general topic, would not meet the approval of the committee. In the same way literary summaries, unless they bring out some new and important facts, are not desired. Besides the fields of medicine, surgery and specialities, original work may be done in anatomy, histology, physiology, physiological chemistry, pathology, hygiene and bacteriology.

2. The candidate's thesis must be signed with a nom-de-plume and placed in a sealed envelope. This, together with a sealed letter containing the nom-de-plume, name and address of the candidate, must be sent to the Registrar of the medical school not later than May 1, 1909.

The committee reserves the right to publish any of the theses submitted in this contest, in the Bulletin of the Washington University Medical Department. This will not preclude simultaneous publication elsewhere.

3. All inquiries concerning this contest should be directed to the Registrar of the medical school.

SCHOLARSHIPS.

The **George F. Gill Scholarship,** instituted in memory of the late Dr. George F. Gill, Clinical Professor of Diseases of Children, entitles the holder to one year's free tuition.

The **John P. Bryson Scholarship,** instituted in the memory of the late Dr. John P. Bryson, Professor of Genito-Urinary Surgery, entitles the holder to one year's free tuition.

ASSISTANTSHIPS.

A limited number of positions as laboratory assistants in the courses in Chemistry, Anatomy, Histology, Physiology, Pharmacology, Pathology, Bacteriology and Pharmacy are awarded to students of high standing, who have been in attendance for more than one year. The salary attached to these positions is never more than fifty dollars for each session, and is dependent upon the amount of work required of the student.

CO-OPERATIVE ASSOCIATION.

By becoming members of this Association students are enabled to decrease their living expenses in many ways. Membership cards may be obtained at the School Book Store, a department of the Association, where students can obtain the text-books and other supplies needed in the course. As the profits of this store are used in the development of a library for the Medical School, the faculty, instructors, students and all others in connection with this department of the University are urged to give it their patronage.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

This organization has for its chief aim the development of the religious life of the institution, and secondarily, to promote the interests of the students in every other way possible. The Association is non-sectarian, and invites the co-operation of men of all christian denominations. It seeks to contribute to the social life of the student body by providing a reading room and a gymnasium—where men may meet and become ac-

quainted, and promote their mental and physical health. In its rooms the daily papers, weekly and monthly magazines, writing materials and various forms of amusements are at the disposal of those who desire them.

The Association makes a special effort to be of service to new men. Its information bureau answers questions which men strange to the school have to ask. It secures desirable boarding places for them and endeavors to obtain employment for such as desire it. In order to enable the freshmen to meet the older students, a reception, to which all students are invited, is given early in the year.

The affairs of the Association are managed by a board of officers, elected from the student body, under the supervision of the State Association. A student secretary, who receives a salary in addition to his tuition, is in immediate charge at the building. Weekly religious services are held, at which men of prominence from St. Louis and other places address the students. The organization has been in existence for five years only, and already more than two-thirds of the men of the institution are enrolled in its membership.

FEES AND EXPENSES.

Tuition.

All fees and charges are payable at the office of the Treasurer in the Administration Building. All checks should be made payable to the order of Washington University.

Each student, before he can register, will be charged a matriculation fee of five dollars, which is payable but once during the course of four years. In addition, an annual tuition fee of one hundred dollars will be charged, and this is payable in two installments.

The first installment must be paid on or before October 20th, 1908. The second on or before February 20th, 1908.

Laboratory fees are payable in advance and no student will be admitted to a laboratory course until the fees are paid.

If, after October 20th, 1908, a student shall have left unpaid the first installment of his tuition fee, or if, after February 20th, 1909, a student shall have left unpaid the second installment of his tuition fee, or other expenses he may have incurred, he will not be considered in good standing. In case he is a candidate for the degree, he will not be admitted to the final examinations; or, if he is a member of one of the three lower classes, his grades will be withheld and no certificate of attendance will be issued to him until he shall have discharged his indebtedness to the school.

When a student enters the school and pays the required fees, it is taken for granted that he has given the matter due consideration, and that he is prepared to pursue the course of study prescribed. The Faculty stands ready to perform its part of the work as laid down in the curriculum. For these reasons, fees once paid by students cannot, for any cause whatsoever, be refunded or transferred. A student, however, who has paid his tuition fee and for good reason is unable to complete the session, will be given credit for the amount, and upon his return to the school at some subsequent time, he will not be required to pay the same fee a second time.

Laboratory Fees and Other Charges.

At the beginning of the session special fees are charged to cover the cost of materials and apparatus used in the laboratories. No portion of these fees is refunded. Students are further required to make good any loss resulting from damage or breakage of apparatus. Students must supply their own

padlocks for the lockers provided for clothing and apparatus, and the school will not assume any responsibility for any loss of property.

No fees will be charged for demonstrators' or hospital tickets, or for graduation.

Breakage Deposit.

Each student in the first and second year is required to pay to the Treasurer of the University ten dollars ($10.00) to cover breakage in the laboratories. Each student of the third year will be required to pay to the Treasurer five dollars ($5.00) to cover the cost of breakage in the laboratories. This sum, less the amount charged against it for brakage, will be returned at the end of each year. No student will be granted the use of the laboratories or apparatus of the school until the required deposit has been paid.

First Year.

Chemical Laboratory. A laboratory fee of ten dollars will be charged in General Chemistry and Qualitative Analysis and Physiological Chemistry.

Anatomical Laboratories. A fee of five dollars will be charged for the use of anatomical material issued for dissection.

Embryological Laboratory. A fee of two dollars and a half will be charged to cover the cost of material.

Histological Laboratory. A fee of five dollars will be charged for the use of a microscope and for material supplied in histology. A student will be held responsible for damage to his microscope, or for loss of parts, and will be expected to pay the cost. A student using his own microscope will be charged only three dollars.

An annual rental fee of twenty-five cents will be charged for a locker.

Second Year.

Chemical Laboratory. A laboratory fee of five dollars will be charged in Physiological Chemistry and Toxicology.

Anatomical Laboratory. A fee of two dollars and a half will be charged for use of material.

Physiological Laboratory. A fee of five dollars will be charged to cover cost of material.

Pathological Laboratory. A fee of five dollars will be charged for the use of a microscope and for materials supplied in Pathology.

Bacteriological Laboratory. A fee of five dollars will be charged for the use of a microscope and for material.

Third Year.

Pharmacological Laboratory. A fee of five dollars will be charged to cover cost of material.

Clinical Laboratory. A laboratory fee of five dollars will be charged in Urinology, and for the use of a microscope in Clinical Chemistry and Microscopy.

Pharmaceutical Laboratory. A fee of one dollar will be charged for laboratory work in Pharmacy.

A fee of one dollar will be charged for material for the course in fractures and dislocations.

Fourth Year.

A fee of one dollar will be charged for material for the course in operative surgery.

Fees of Alumni, Graduates of Other Medical Schools, and Special Students.

Graduates of the Saint Louis Medical College, of the Missouri Medical College and of the Medical Department of Wash-

ington University have a perpetual free admission. The privilege entitles the holder to attend all lectures and clinics. Should he wish to take any course in which laboratory work is given, he will be charged the specified fee.

Graduates of other medical schools will be charged the matriculation fee of five dollars, and a tuition fee in proportion to the amount of work taken during the session. For all courses in which laboratory work is given the specified fees will be charged in addition.

Graduates who may wish to take special courses of study are requested to make written application to the Registrar, stating plainly the nature of the work they wish to do and the length of time they expect to be in attendance.

Summary of Expenses for the Four Years' Course.

The actual fees charged for each year's attendance at the school are as follows:

	First Year.	*Second Year.*	*Third Year.*	*Fourth Year.*
Matriculation	$5 00	.....	.....	.....
Tuition	100 00	$100 00	$100 00	$100 00
Chemistry	10 00	5 00	.....	.....
Clinical Chemistry and Microscopy	.....	.....	5 00	.....
Breakage Deposit	10 00	10 00	5 00	.....
Anatomy	5 00	2 50	.....	.....
Histology	5 00	.....	.....	.....
Embryology	2 50	.....	.....	.....
Physiology	.....	5 00	.....	.....
Pharmacology	.....	.....	5 00	.....
Pharmacy	.....	.....	1 00	.....
Pathology	.....	5 00	.....	.....
Bacteriology	.....	5 00	.....	.....
Surgery	.....	.....	1 00	1 00
Locker	25	25	25	25
Total	$137 75	$132 75	$117 25	$101 25

Thus, for residence in St. Louis during four annual sessions of thirty-five weeks each, and for attendance at the Medical Department, exclusive of the cost of instruments, clothing, amusements and incidentals, a conservative estimate would be:

	First Year.	*Second Year.*	*Third Year.*	*Fourth Year.*
School	$137 75	$132 75	$117 25	$101 25
Books	25 00	25 00	25 00	25 00
Room Rent	52 50	52 50	52 50	52 50
Board	122 50	122 50	122 50	122 50
Total	$337 75	$332 75	$317 25	$301 25

STUDENTS.

SENIOR CLASS.

NAMES.	RESIDENCE.
Abaza, Sayid Bahgat	Zagazig, Egypt.
Abney, William L.	Napton, Mo.
Archer, Perry Clifford	Shebley's Point, Mo.
Barry, James J.	St. Louis, Mo.
Barter, Angus J., A.B.	Lebanon, Ill.
Bassett, Charles Wallace	St. Louis, Mo.
Bechtold, Frederick William	Bellaire, Mich.
Black, Grover Cleveland	Rushville, Ill.
Blackard, William James	Ridgeway, Ill.
Brand, Eli Thomas.	Bonne Terre, Mo.
Brandt, Benjamin	Cappeln, Mo.
Breedlove, John C.	Muldrow, Okla.
Briggs, Guy Young	St. Louis, Mo.
Burdick, Jesse Jerome	Roodhouse, Ill.
Chapman, William Day	White Hall, Ill.
Davis, Frank L.	Pawnee, Ill.
Dew, Walter Albert	Belleville, Ill.
Duey, Delmer Roy	Winfield, Mo.
Duncan, George Washington	Iberia, Mo.
Fischel, Ellis, A.B	St. Louis, Mo.
Goodpasture, Lloyd E.	Virden, Ill.
Gore, Victor Maurice	Carlinville, Ill.
Gossard, Gary Thomas	Golconda, Ill.
Gundelach, Charles Armin	St. Louis, Mo.
Hall, John.	Marshall, Mo.
Hardy, Bert Witham	Griggsville, Ill.
Helmy, Daud	Alexandria, Egypt.
Hempelmann, Theodore Carl.	St. Louis, Mo.
Herskovitz, Samuel	St. Louis, Mo.
Hertel, Garfield Eugene.	East St. Louis, Ill.
Hurford, Phelps Grant	Pueblo, Colo.
Hewitt, Walter Roy	St. Louis, Mo.
Hill, Halbert Rowland.	Fulton, Mo.
Hobson, Abraham Dana	Fayette, Mo.
Jennings, Perry Wells	Windsor, Mo.

NAMES.	RESIDENCE.
Kerwin, William	Graniteville, Mo.
Kesl, George Matthew	St. Louis, Mo.
Klocke, Frank W	St. Louis, Mo.
Kluegel, William	St. Louis, Mo.
Lozi, Abdel Rahman	Damietta, Egypt.
McCoy, Gurley C.	Lake, Ind.
Moore, Wm. Day	Topeka, Kans.
Olds, Wilson Albert	Medical Lake, Wash.
Prichard, James Eugene	Aurora, Ill.
Raeder, Oscar Jacobus	St. Louis, Mo.
Rich, Harry	St. Louis, Mo.
Sandperl, Harry	St. Louis, Mo.
Sheets, John S.	Owen, Mo.
Smith, Henry Joseph, A.B.	Wendelin, Ill.
Stiehl, Elmer Philip	Belleville, Ill.
Stone, Charles Allen, B.Sc.	Shipman, Ill.
Sturgis, Walter E.	Kennett, Mo.
Suggett, Finnis C.	Reform, Mo.
Tilles, Randall Solon	St. Louis, Mo.
Viley, Leland Peak, A.B.	Marshall, Mo.
Wall, Harvey Monroe	Windsor, Mo.
Westermeier, George Washington	Carlinville, Ill.
Young, Henry McClure, A.B.	St. Louis, Mo.
Zaki, Yousef	Zagazig, Egypt.

Total, 59.

JUNIOR CLASS.

Arbuckle, M. F.	Richmond, Ky.
Barrow, James William	Campbell Hill, Ill.
Brookes, Theodore Prewitt	St. Louis, Mo.
Burchart, Selmar	Memphis, Tenn.
Castlen, Charles Ruby	St. Louis, Mo.
Cayo, Ernest P.	Wheatland, Canada.
Chamberlain, Raymond Webster	Fisher, Ill.
Chapin, John Endicott, A. B.	Syracuse, N. Y.
Chilton, Frank Nifong	Harrisonville, Mo.
Clark, Ira Ross	East St. Louis, Ill.
Davis, William Devine	St. Louis, Mo.
Denny, Leonard Halleck	Brighton, Ill.

NAMES.	RESIDENCE.
Elliott, Carey Baker	Tyrone, Okla.
Gibbs, Harry Wernecke	Curryville, Mo.
Hoberecht, Carl Albert	Sedalia, Mo.
Hogan, Robert E.	West Plains, Mo.
Horst, Otto Carl	St. Louis, Mo.
Howell, John F. Q.	Palmyra, Mo.
Kerr, Lambert A.	Lincoln, Kans.
Kleinschmidt, Harry Edwin	St. Louis, Mo.
Landree, James Clifford	Economy, Mo.
Lincoln, Cicero Lee, Jr.	Columbus, Miss.
McAuliffe, Percy J.	St. Louis, Mo.
McGinniss, Clive Sidney	Oak Hill, Mo.
McNulty, John Benjamin	Memphis, Tenn.
Macklin, Lurin Patrick	St. Louis, Mo.
Margulis, Abraham A.	St. Louis, Mo.
Marshall, Harley	Avalon, Mo.
Nugent, Jesse T.	Paris, Mo.
Paschall, Jesse B.	Fulton, Ky.
Press, Maurice Jerome	St. Louis, Mo.
Pugh, Walsie Newton, Ph.G.	Fulton, Mo.
Quade, Omar H.	St Louis, Mo.
Seabold, John Albert	Baltimore, Md.
Sewing, Arthur H.	St. Louis, Mo.
Stone, Archie Redd	Palmyra, Mo.
Taylor, Thomas Wilfred	Piqua, Ohio.
Thaler, Wm. Ph.G.	St. Louis, Mo.
Theodoroff, Christo	Sophia, Bulgaria.
Torrance, Loyal Benjamin	Maryville, Mo.
Tuholske, Lister H., A.B.	St. Louis, Mo.
Von Schrader, Alleyne	Jefferson Barracks, Mo.
Walker, James Walter, A.B.	Hindsville, Ark.
Weintraub, Solomon A.	St. Louis, Mo.
Weir, William Foster	Sparta, Ill.
Weiss, Richard S.	St. Louis, Mo.

Total, 46.

SOPHOMORE CLASS.

Blackburn, Porter Douglass	Houstonia, Mo.
Burns, Stanley Sherman	Belleville, Ill.
Cowdin, Frederick Putman, A.B.	Chapin, Ill.

NAMES.	RESIDENCE.
Craig, Harry F.	Kinmundy, Ill.
Dickerson, Cecil H., A.B.	Conway, Ark.
DeGaris, Charles Francis	Hannibal, Mo.
DeHaan, Adrian John	East St. Louis, Ill.
Deppe, Arthur H.	Beardstown, Ill.
Drake, James Carl	Bolivar, Mo.
Edler, William	Breese, Ill.
Fay, Harold Wm.	St. Louis, Mo.
Frank, Walter Emile	St. Louis, Mo.
Frech, Lee Orville	White Hall, Ill.
Garlitz, Arnold	St. Louis, Mo.
Garrison, Isaac L., B. S.	Wayne City, Ill.
Green, Louie H.	Alto Pass, Ill.
Griesbaum, Philip, Ph.G.	New Baden, Ill.
Gronoway, Terrence	Macon, Mo.
Hagler, Frederic	Virden, Ill.
Hamlin, Joseph Reagan, Ph.B.	St. Louis, Mo.
Hardaway, Robert Morris, Jr.	Glasgow, Mo.
Harmon, Charles Frederick.	New Palestine, Ill.
Howe. Guy Livingston	St. Louis, Mo.
Kaplan, Maurice Isadore	Burlington, Ia.
Keim, John Philip	St. Louis, Mo.
Kimzey, Logan Guernsey	DuQuoin, Ill.
Knecht, Louis Bernard	Poplar Bluff, Mo.
Lamb, Harvey Densmore, A. B.	St. Louis, Mo.
Lorton, Thomas, B.S.	Herrick, Ill.
Luckey, Horace Leslie	Festus, Mo.
Lutterloh, Pearlie Watson	Jonesboro, Ark.
Ming, Charles Morris	Clinton, Mo.
Moskop, Peter G.	St. Louis, Mo.
Muller, Carl J.	St. Louis, Mo.
Muller, Morits Hugo	Bienne, Switzerland.
Plassmann, Walter F.	Granite City, Ill.
Price, Elwyn Dene	Versailles, Mo.
Ramzi, Abdul Aziz	Assiout, Egypt.
Reuss, Harry Pierce	Belleville, Ill.
Ritchey, George Fenton	Rushville, Ill.
Robinson, Alambert.	St. Louis, Mo.
Ryan, Andrew Howard	St. Louis, Mo.

NAMES.	RESIDENCE.
Schwartz, Fred Oscar	St. Louis, Mo.
Sherman, Edgar P.	Mobile, Ala.
Simon, Selig Joseph	St. Louis, Mo.
Sipple, Raphael Welch	Parsons, Kans.
Steinmann, William A. H.	St. Louis, Mo.
Stookey, John David	Belleville, Ill.
Thorne, Wilcox G.	Anna, Ill.
Vaughan, John R.	St. Louis, Mo.
Westrup, Arthur W.	Webster Groves, Mo.
Wier, Thomas Frank	East St. Louis, Ill.

Total, 52.

FRESHMAN CLASS.

Beatty, John F.	Granite City, Ill.
Broemser, Milton Augustus	Webster Groves, Mo.
Cohen, Oscar Thurman	Fredericktown, Mo.
Davis, Thomas Miller	St. Louis, Mo.
DeMasy, Arthur H.	St. Louis, Mo.
Derivaux, Robert Clarence	St. Louis, Mo.
Doolin, Thomas Carlysle	Ash Grove, Mo.
Hagin, Edward N.	St. Louis, Mo.
Harrison, Ernest F.	Kennett, Mo.
Holaday, Charles H., A.B.	Flora, Ill.
Howe, Elmer W. C. Demiling	Granite City, Ill.
Lewald, James	St. Louis, Mo.
Like, Ottis	Monroe City, Ind.
Mestemacher, Louis H.	St. Louis, Mo.
Meyer, Alphonse Herman	Memphis, Tenn.
Penney, David Litchfield	St. Louis, Mo.
Pratt, Fabian L.	Linneus, Mo.
Pringle, John A.	Pittsfield, Ill.
Roeslein, Fred Leo	Kirkwood, Mo.
Rohlfing, W. A.	St. Louis, Mo.
Scates, Cady Milton	Pitman, Ark.
Smith, Oda Oscar	Newton, Ill.
Smith, Merrill Neville, A. B.	St. Louis, Mo.
Vickrey, Aden Cobbs	Louisville, Ill.
Watkins, George Lancaster	Joplin, Mo.

Total, 25.

Special Students.

NAMES.	RESIDENCE.
Babcock, Mary L.	St. Louis, Mo.
Brooks, Clyde, A. B.	St. Louis, Mo.
Campbell, Frank McLean	St. Louis, Mo.
Ewerhardt, Frank Henry	St. Louis, Mo.
McGuigan, Hugh, Ph.D.	St. Louis, Mo.
Stevens, Hirrel, A.B.	St. Louis, Mo

Post-Graduates.

Blanks, C. L. ..... Farmington, Mo.
(*Beaumont Med. Col., '92*), *Ear, Eye, Nose and Throat.*

Calhoun, James G. ..... St. Louis, Mo.
(*Med. Dept. W. U., '96*), *Eye.*

Grim, Ezra C. ..... Kirksville, Mo.
(*Med. Dept. W. U. '01*), *Anatomy.*

Helf, John C. ..... Berlin, Okla.
(*Mo. Med. Col., '86*), *Medicine and Surgery*).

Hoose, C. H. A. ..... Perryville, Mo.
(*Med. Dept. W. U., '05*), *Eye.*

Morris, Geo. H. ..... Burlington, Ia.
(*Keokuk Med. Col.*), *Medicine and Surgery.*

Rust, F. W. ..... Holland, Indiana.
(*Hospital Med. Col. '86*), *Gynecology.*

Schlernitzauer, Robt. ..... Janesville, Wis.
(*Med. Dept. W. U. '05*), *Medicine, Surgery and Obstetrics.*

Van Brunt, E. W. ..... Watonga, Okla.
(*Mo. Med. Col., '81*), *Medicine and Surgery.*

Other Matriculants.

Benson, Geo. E., A.B. ..... Pattonville, Mo.
Chadwick, Florence ..... Boston, Mass.
Doellefeld, Adam ..... St. Louis, Mo.
Gorman, John D. ..... Kirkwood, Mo.
Guelker, F. H. ..... Beardstown, Ill.
Hobson, Stephen Franklin ..... Fayette, Mo.
Latimer, M. C. ..... Cannelton, Indiana.
McKinney, James Allen ..... Maywood, Mo.
McGee, Otto Kent, A.B. ..... Moberly, Mo.
Strother, George H. ..... Winchester, Ky.
Suzuki, Tsukasa, M.D. ..... Miyagi, Japan.

NAMES.	RESIDENCE.
Senior	59
Junior	46
Sophomore	52
Freshman	25
Specials	6
Post Graduates	9
Other Matriculants	11
	208

ANNOUNCEMENT.

During Commencement week of the session of 1908-09, there will be held a series of clinics and lectures designed especially for practitioners. In designing the instruction offered in this course, the needs of the practitioner have been kept in view, and so far as possible the work has been made of purely practical character. In all the courses the work is of a nature to appeal to the surgeon and general practitioner who wish to complete their knowledge of the newer subjects that have come out during the year.

The number of attendants upon certain clinical courses will be necessarily limited, in order that close personal attention may be accorded, and the admission, under the circumstances will be made in order of application.

From May 26th to June 1st, 1908, inclusive, the following program was carried out with entire success, and the following list of physicians were in attendance.

The Faculty of the Medical School invite all physicians, graduates of this department, and of other medical schools,who are interested, to take this work. No fees are charged.

PROGRAM OF CLINICS.

by the

DEPARTMENT OF MEDICINE, WASHINGTON UNIVERSITY.

May 26th to June 1st, 1908.

Tuesday, May 26th, 1908.

9 to 11 a.m.—Obstetrical Clinic at Washington University Hospital.
PROF. SCHWARZ.

11 to 12 m.—Medical Clinic at O'Fallon Dispensary.
CLIN. PROF. BROOKES.

2 to 3 p.m.—Clinic for Diseases of the Nose and Throat at O'Fallon Dispensary.
CLIN. PROF. SLUDER.

2 to 4 p.m.—Proctological Clinic at Washington University Hospital.
CLIN. PROF. DIXON.

3 to 4 p.m.—Orthopoedic Clinic at O'Fallon Dispensary.
DR. HOFFMANN.

Wednesday, May 27th, 1908.

9 to 12 a.m.—Surgical Clinic at St. Luke's Hospital.
PROF. MUDD.

9 to 12 a.m.—Surgical Clinic at St. Anthony's Hospital.
PROF. BARTLETT.

1 to 2 p.m.—Uranalytical Demonstration at College Building.
PROF. WARREN.

2 to 3 p.m.—Otological Clinic at O'Fallon Dispensary.
PROF. SHAPLEIGH.

3 to 4 p.m.—Anatomical Demonstrations at College Building. Illustrated with the epidiascope.
PROF. TERRY.

4 to 5 p.m.—Physiology and Surgery of the Blood Vessels, with demonstrations, at College Building.
PROF. GUTHRIE.

Thursday, May 28th, 1908.

9 to 10 a.m.—Gynecological Clinic at St. Louis, Mullanphy Hospital.
PROF. GLASGOW.

10 to 11 a.m.—Medical Clinic at St. Louis Mullanphy Hospital.
PROF. ELLSWORTH SMITH.

11 to 12 m.—Medical Clinic at St. Louis Mullanphy Hospital.
PROF. STEER.

12 m. to 1 p.m.—Surgical Clinic at St. Louis Mullanphy Hospital.
PROF. CARSON.

1 to 2 p.m.—Dermatological Clinic at St. Louis Mullanphy Hospital.
PROF. GRINDON.

3 to 5 p.m.—Ophthalmological Clinic at O'Fallon Dispensary.
PROF. A. E. EWING, CLIN. PROF. W. A. SHOEMAKER, CLIN. PROF. J. W. CHARLES, INSTRUCTORS J. H. GROSS and N. M. SEMPLE and DR. J. F. SHOEMAKER.

Friday, May 29th, 1908,

9 to 11 a.m.—Gynecological Clinic at Washington University Hospital.
CLIN. PROF. CROSSEN.

11 a.m. to 1 p.m.—Medical Clinic at Washington University Hospital.
PROF. FISCHEL and CLIN. PROF. A. E. TAUSSIG.

1 to 2 p.m.—Otological Clinic at Washington University Hospital.
PROF. H. N. SPENCER.

2 to 4 p.m.—Surgical Clinic at Washington University Hospital.
PROF. TUHOLSKE.

4 to 5 p.m.—Neurological Clinic at Washington University Hospital.
CLIN. PROF. GIVEN CAMPBELL.

Saturday, May 30th, 1908.

9 to 12 m.—Children's Clinics at Bethesda Hospital.
PROF. SAUNDERS, CLIN. PROF. ZAHORSKY, DRS. A. LEVY and W. L. JOHNSON.

9 to 12 m.—Surgical Clinic at St. Anthony's Hospital.
PROF. BARTLETT.

2 to 4 p.m.—Orthopedic Clinic at Martha Parsons Hospital.
DR. ALLISON.

Monday, June 1st, 1908.

9 to 12 m.—Surgical Clinic at Jewish Hospital.
PROF. TUHOLSKE.

9 to 12 m.—Surgical Clinic at St. Luke's Hospital.
PROF. MUDD.

2 to 3 p.m.—Clinic for Pulmonary and Cardiac Diseases.
CLIN. PROF. BEHRENS.

2 to 3 p.m.—Rhinological Clinic at Washington University Hospital.
DR. CREVELING.

3 to 4 p.m.—Ophthalmological Clinic at Washington University Hospital.
PROF WOLFNER and DR. WIENER.

Directory.

College Building and O'Fallon Dispensary,
1806 to 1814 Locust Street.

Washington University Hospital,
Jefferson and Lucas Avenues.

St. Louis Mullanphy Hospital,
Montgomery Street near Grand Avenue.

St. Anthony's Hospital,
Grand Avenue and Chippewa Street.

St. Luke's Hospital,
Delmar and Belt Avenues.

Bethesda Foundlings Home,
3651 Vista Avenue.

Jewish Hospital,
Delmar Avenue and Windermere Walk.

Martha Parsons Hospital,
Channing Avenue and School Street.

LIST OF VISITING PHYSICIANS IN ATTENDANCE.

1908.

NAMES.	RESIDENCE.
John A. Leavy,	4340 Morgan Street, St. Louis.
W. J. Gundelach	4477 Washington Boul., St. Louis.
B. X. Corbin	Schuyler, Neb.
Moses Haynes	Vandalia, Ill.
S. S. Boulton	Hudson, Ill.
G. W. Tidwell	DeSoto, Mo.
Walter E. Gibson	De Soto, Mo.
G. A. Humpert	Pittsfield, Ill.
J. W. Russell	Longtown, Mo.
Thomas Clay Edwards	Salinas, Cal.
C. Moore	St. Mary's, Mo.
O. Haley	Fredericktown, Mo.
Herman L. LeSaulnier	Red Bud, Ill.
T. T. Dixon	Providence, Ky.
L. C. Slaughter	Fredericktown, Mo.
Jesse W. Hale	Greenville, Mo.
Geo. T. Weber	Olney, Ill.
Andrew D. Steele	Chester, Ill.
G. W. Payne	Bardwell, Ky.
H. W. Chapman	White Hall, Ill.
G. O. Cromwell	Nebo, Ill.
N. R. Gordon	Springfield, Ill.
C. C. Kerlagon	Belleview, Mo.
W. B. Kerr	Dudley, Ill.
F. M. Vessells	Perryville, Mo.
Ed. C. Peelor	Clinton, Mo.
W. H. Johnson	Barry, Ill.
H. G. Horstman	Vergennes, Ill.
R. N. Floyd	Eureka Springs, Ark.
D. S. Calhoun	Sligo, Mo.
Ray Mercer	Loraine, Ill.
L. C. Rohlfing	3521 Dodier Street, St. Louis
J. S. Evans	Brookfield, Mo.
W. E. Schowengerdt	Champaign, Ill.
John P. Beeson	Noel, Mo.

NAMES.	RESIDENCE.
D. F. Morton	Perryville, Mo.
Max Adles	DuQuoin, Ill.
J. S. Cleland	Swanwick, Ill.
Columbus Brown	Herrin, Ill.
C. K. Caruthers	Pine Bluff, Ark.
F. A. Martin	Lakewood, Ill.
Geo. A. Dierle	Quincy, Ill.
Percy Newman	City Hospital, St. Louis.

GRADUATES, 1908.

The Annual Commencement was held on Thursday, May 28, 1908, when Professor William G. Spiller, of the University of Pennsylvania delivered an address to the Graduating Class, and the Chancellor of the University conferred the Degree of Doctor of Medicine upon the following gentlemen:—

Sayid Bahgat Abaza.
William L. Abney, Jr.
Perry Clifford Archer.
James Joseph Barry, Jr.
Angus J. Barter, A. B.
Charles Wallace Bassett.
Frederick William Bechtold.
Grover Cleveland Black.
William James Blackard.
Eli Thomas Brand.
Benjamin Brandt.
John Chisholm Breedlove.
Guy Young Briggs.
Jesse Jerome Burdick.
William D. Chapman.
Frank L. Davis.
Walters Albert Dew.
Delmer R. Duey.
George Washington Duncan.
Ellis Fischel, A.B.
Lloyd E. Goodpasture.
Victor Maurice Gore.
Gary Thomas Gossard.
Charles Armin Gundelach.
John Randolph Hall.
Bert Witham Hardy.
Daud Helmy.
Theodore Carl Hempelmann.
Samuel Herskovitz.
Garfield Eugene Hertel.
Walter Roy Hewitt.
Halbert Rowland Hill.
A. Dana Hobson.
Phelps Grant Hurford.
Perry Wells Jennings.
William Kerwin.
George Matthew Kesl.
Frank William Klocke.
William A. Kluegel.
Abdel Rahman Lozi.

Gurley Curtis McCoy.
William Day Moore.
Wilson Albert Olds, Jr.
James Eugene Prichard.
Oscar Jacobus Raeder.
Harry Rich.
Harry Sandperl.
John J. Sheets.
Henry Joseph Smith, A.B.
Elmer Phillip Stiehl, Ph.G.
Charles Allen Stone, B.Sc.
Walter Edward Sturgis.
Finis Clifford Suggett.
Randall Solon Tilles.
Leland Peak Viley, Jr., A.B.
Harvey Monroe Wall.
George Washington Westermeier.
Henry McClure Young, A.B.
Yousef Zaki.

HOSPITAL APPOINTMENTS.

The graduates of the Medical Department of Washington University are entitled to compete, on equal terms with those of other colleges, for positions on the resident staff of the St. Louis City and Female Hospitals.

Appointments are also made from the graduating class each year to the following hospitals, viz.: Washington University Hospital, Mullanphy, St. Anthony's, Bethesda, Baptist Sanitarium, St. Luke's Hospital, Jewish Hospital, St. Louis & San Francisco Railroad Hospital, Insane Asylum and Poor House, St. Vincent's Hospital, and Alexian Brothers Hospital.

June 1, 1908.

This year thirty-two positions as internes at the St. Louis City and Female Hospitals were awarded after competitive examination conducted by the Board of Health of the City of St. Louis.

Eight of these positions were awarded to graduates of the class of 1908 of this Department. One hundred and twenty-one graduates from all colleges were competitors. Forty-four entered from this school and obtained eight places. A list of their names follows:

Ellis Fischel, M.D.
Bert Witham Hardy, M.D.
Theodore C. Hempelmann, M.D.
Walter R. Hewitt, M.D.
Phelps G. Hurford, M.D.
Henry J. Smith, M.D.
Randall S. Tilles, M.D.
Henry McC. Young, M.D.

The competitive record of our school in these examinations for the City Hospital and Female Hospital has been as follows:

Year.	*No. of Positions.*	*Applicants of Our School.*	*Appointments.*
1900	..	..	6
1901	25	21	20
1902	25	18	15
1903	30	26	22
1904	30	..	22
1905	32	26	22
1906	32	33	23
1907	32	24	19
1908	32	44	8

OTHER HOSPITAL APPOINTMENTS.

BETHESDA HOSPITAL.
Guy Y. Briggs, M. D.

MULLANPHY HOSPITAL.
James J. Barry, M. D.
Leland P. Viley, M. D.

ALEXIAN BROTHERS HOSPITAL.
Eli T. Brand. M. D.
Oscar J. Raeder, M. D.
John J. Sheets, M. D.

ST. ANTHONY'S HOSPITAL.
G. C. McCoy, M.D.

ST. LOUIS SKIN AND CANCER HOSPITAL.
H. R. Hill, M.D.

STATE INSANE ASYLUM (FARMINGTON, MO.).
John Hall, M.D.

JEWISH HOSPITAL.

————————no applicant.

ST. LUKE'S HOSPITAL.

Raymond M. Spivy, M.D.

ST. LOUIS CITY HOSPITAL.

L. G. Bartels, M.D., Senior Interne.
W. H. Cook, M.D., Senior Interne.
L. E. Monroe, M.D., Senior Interne.
T. D. Woodson, M.D., Senior Interne.

ST. LOUIS FEMALE HOSPITAL.

WASHINGTON UNIVERSITY HOSPITAL.

W. D. Moore, M.D.

WASHINGTON UNIVERSITY LYING-IN HOSPITAL.

Grandison D. Royston, M.D.
William Kerwin, M.D.

PRIZES AND HONORS.

1907-8.

Gill Prize in Anatomy.

Alphonse Herman Meyer.

Honorable Mention.

Merrill N. Smith. Edward N. Hagin.

Gill Prizes in Diseases of Children.

Phelps Grant Hurford.

Curtman Prize in Chemistry.

Alphonse Herman Meyer.

Honorable Mention.

Edward N. Hagin. Otis J. Like.
Charles H. Holaday. Aden C. Vickrey.

Honorable Mention.

The following graduates received publicly honorable mention for general excellence in the work of the course of four years in this school:

Henry McClure Young. Charles Armin Gundelach.
Phelps Grant Hurford. Randall Solon Tilles.
Ellis Fischel. Bert Witham Hardy.
Theodore C. Hempelmann. Perry Clifford Archer.
Harry Sandperl. Gary Thomas Gossard.
Harry Rich.

RULES FOR THE GUIDANCE OF STUDENTS.

Definite times are set for holding the examinations of each half-year's work (see Calendar). If for any reason a student wishes an examination at any other than the regular times, he may have it with the consent of his instructor and on the payment of a fee of five dollars to the Registrar.

Examinations in all lecture courses will be conducted in writing, and the value of the returned papers will be indicated by the letters A, B, C, D and E, which expressed in percentages are:

A 90 to 100 per cent.
B 75 to 90 per cent.
C 65 to 75 per cent.
D 40 to 65 per cent.
E below 40 per cent.

The grade C is the lowest which a student may receive and yet pass an examination. The grade D implies that the student is conditioned and must take the examination over again; while the grade E signifies an absolute failure, and the student receiving this mark must repeat the course in which he has failed before he can have another examination.

A student conditioned a second time in a given subject must take the subject again in class before he will be re-examined in it.

Two years is the maximum time allowed for the accomplishment of one year's work. A student failing to comply with this regulation shall be compelled to withdraw from the school.

No credit will be given to a student for a year's work until he has satisfactorily completed all work for preceding years.

A student who is allowed to take advanced work shall receive no credit for that work until he has completed the studies of the year to which such course or courses belong.

A student who fails of promotion shall be required to pursue and pass examinations in all work of the class to which he belongs. Such students, moreover, shall pay full tuition for four consecutive years spent in this school and none thereafter. Students must pay laboratory fees for every laboratory course taken.

Students are responsible for their behavior, and the Faculty reserves the right to terminate the connection of any student with this institution, if, for any cause, he shall prove himself unfit to pursue his professional studies.

All the property of the school, apparatus, specimens, books, etc., is for the use of the students in the prosecution of their studies. Every encouragement is offered for the fullest employment of this equipment. All that is necessary to get the freest access to this property is that the student make an application in due form to the teacher, or others in charge, so that a receipt can be taken and a proper record of the whereabouts of such articles be kept. For microscopes, etc., a cash deposit must be make for security with the Registrar. It is forbidden to remove property of the school without obtaining due permission.

PUBLICATIONS.

Issued by Officers of Instruction in the Medical Department, from March 1, 1907, to March 1, 1908.

ALLISON, NATHANIEL.

"Acquired Coxa Valga" (*American Journal of Orthopedic Surgery*, October, 1907).

"Excision of the Femoral Head for Ununited Fracture of the Femoral Neck" (*Interstate Medical Journal*, March, 1908).

BLAIR, V. P.

"Operations on Jawbone and Face" (Published in *Surgery Gynecology and Obstetrics*).

BLEYER, ADRIEN S.

"Sudden Death in Diphtheria" (*Saint Louis Courier of Medicine*, Vol. XXXVI, No. 6).

"The Transmission of Malaria" (*Saint Louis Courier of Medicine*, Vol. XXXVI, No. 4).

"An Unusual Transmission of Measles" (*Interstate Medical Journal*, Vol. XIV, No. 7).

BROOKS, CLYDE.

"Experimental Glycosuria" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. V, p. 148).

"The Mechanism of Experimental Glycosuria" (with Dr. H. McGuigan, *American Journal of Physiology*, Vol. XVIII, p. 256).

CHARLES, J. W.

"Dendritic Keratitis" (*Ophthalmology*, Vol. III, pp. 604-607).

CROSSEN, H. S.

"The Diagnosis and Treatment of Diseases of Women" (Saint Louis, *C. V. Mosby Medical Book Company*, 800 pp., 700 illustrations).

"The Preferable Method of Anterior Fixation of the Uterus when the Abdomen is Open" (*Journal of the American Medical Association*, Vol. XLVIII, pp. 1488-1490 and 1497-1499).

"Abdominal Surgery without Detached Pads or Sponges" (*Interstate Medical Journal*, Vol. XIV, No. 9).

DAVIS, ROBERT H.

"Tertiary Manifestations of Syphilis" (*Saint Louis Medical Review*, April, 1907).

DIXON, CHARLES H.

"Gangrene of Appendix in Three-weeks-old Child" (*Annals of Surgery*, Vol. XLVII, No. 1, p. 57).

"Double Tubular Pregnancy" (*Bulletin, Saint Louis Medical Society*).

EWING, ARTHUR E.

"Retinal Exhaustion" (*American Journal of Ophthalmology*, Vol. XXIV, No. 7).

"An Improved Entropion Forceps" (*Ophthalmic Record*, Vol. XVI, No. 10, and *Quarterly Bulletin of the Medical Department of Washington University*, Vol. V, No. 4).

"A Knife Guard to Aid in the Tarsal Subsection" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. VI, No. 5, and *Ophthalmic Record*, Vol. XVII, No. 1).

"Forceps for Fixing the Everted Eyelid" (*Weekly Bulletin of the Saint Louis Medical Society*, Vol. II, No. 24).

FAHLEN, FRED.

"Heart Block: Its Relation to the Study of Heart Action" (*Saint Louis Medical Review*, Vol. LV, No. 10, pp. 237-241).

FRY, FRANK R.

"A Loss of Comprehension of Proper Names" (*Journal of Nervous and Mental Diseases*).

"Some of the Motor Phenomena of Chorea Clinically Considered" (*Journal of American Medical Association*).

"The Claim Agent and the Psychostehnic" (*Index Lancet*).

GELLHORN, GEORGE.

"A New Mode of Treatment of Inoperable Cancer of the Uterus" (*Journal of the Amer. Med. Association*, 1907).

"Menstruation ohne Ovarien" (*Zentralblatt fur Gynækologie*, 1907, No. 40).

"The Treatment of Inoperable Carcinoma of the Uterus by means of Acetone" (*Saint Louis Medical Review*, November, 1907).

"Die Behandlung des Inoperablen Uteruskarzinoms mit Azeton" (*Muenchener Mediçin. Wochenschr.*, 1907, Dezember).

"A Case of Pseudomyxoma of the Peritoneum" (*Bulletin Saint Louis Medical Society*, March, 1907).

GRINDON, JOSEPH.

"Hand-book of Cutaneous Therapeutics" (with W. A. Hardaway, Philadelphia, Lea Brothers & Co., 1907, 8vo. pp. iv, 606).

GUTHRIE, C. C.

"Results of Removal and Transplantation of Ovaries in Chickens" (*Proceedings of the American Physiological Society, American Journal of Physiology*, XIX, pp. xvi-xvii).

"Surgical Rooms of the Department of Physiology and Pharmacology" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. V, pp. 138-139).

"A Study of the Relative Efficiency of Various Solutions on the Activity of the Isolated Mammalian Heart" (*Quarterly*

Bulletin of the Medical Department of Washington University, Vol. V, pp. 155-77).

"Transplantations d'ovaries pratiquées avec succes chez la poule" (*Archives Internationales de Physiologie*, Vol. V, p. 108).

"Heterotransplantation of Blood Vessels" (*American Journal of Physiology*, Vol. XIX, pp. 482-7).

"Results of Heterotransplantations of Blood Vessels" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. VI, pp. 39-44).

"Results of Transplantation of Ovaries in Chickens" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. VI, pp. 45-46).

"Survival of Tissues and Organs under Perfusion" (*Proceedings of the American Physiological Society for* 1907).

"Further Results of Heterotransplantations of Blood Vessels" (*Proceedings of the American Physiological Society for* 1907).

"Transplantation of Formaldehyde-Fixed Blood Vessels" (*Science*, n. s., Vol. XXVII, 1908).

"Structural Changes and Survival of Cells in Transplanted Blood Vessels" (*Journal of American Medical Association*, 1908).

HARDAWAY, W. A.

"Hand-book of Cutaneous Therapeutics" (with Joseph Grindon). Philadelphia, Lea Brothers & Co., 8vo., pp. iv, 606).

HOFFMANN, PHIL.

"A Statistical Study of the Relation between the Height of the Longitudinal Arch and the Functions of the Foot" (*American Medicine*, August, 1907).

HOGE, M. W.

"Diagnostic Points between Hysteria and Organic Nervous Disease" (*Interstate Medical Journal*, Vol. XV, No. 2, pp. 198-201).

JONAS, ERNST.

"Temporary Uretero-Vaginal Fistula after Panhysterectomy for Fibroid of the Uterus" (*American Journal of Obstetrics*, Vol. LVI, No. 5).

"Report of Two Cases: A Complete Lateral Fistula of the Neck, and a Complete Median Cervical Fistula" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. VI, No. 2).

MCGUIGAN, HUGH.

"Animal Oxidations" (*Quarterly Bulletin of the Medical Department of Washington University*, Vol. V.)

"Sugar Metabolism" (*Proceedings of the American Society of Biological Chemists*, New York, July 1, 1907).

"The Oxidation of Various Sugars and the Oxidizing Power of Different Tissues" (*American Journal of Physiology*, Vol. XIX, pp. 175-198).

"A Study of the Oxidizing Power of Cupric Acetate Solutions" (with A. P. Matthews, *American Journal of Physiology*, Vol. XIX, pp. 199-222).

"Preventive Medicine" (*Dietetic and Hygienic Gazette*, New York, January, 1908).

RUSH, WILLIAM HARVEY.

"The Clinical Importance of the Uneven Distribution of Hydrochloric Acid on the Gastric Contents" (with Dr. A. E. Taussig, *Boston Medical and Surgical Journal*, Vol. CLVIII, No. 3, pp. 79-83).

SAUER, W. E.

"Review of the Oto-laryngological Literature of 1907" (*Interstate Medical Journal*, January, 1908).

"Review of the Progress Made in the Direct Method of Examination of the Larynx, Trachea, Bronchi and Esophagus" (*Bulletin St. Louis Medical Society*, November 28, 1907).

SHOEMAKER, W. A.

"An Unusual Case of Parenchymatous Keratitis" (*American Journal of Ophthalmology*, Vol. XXIV, No. 12, pp. 361-364).

SPENCER, SELDEN.

"A Practical Guide to the Examination of the Ear" (Published by C. V. Mosby Medical Book Company).

STAUFFER, W. H.

"The Treatment of Hemorrhoids."

"Sigmoiditis" (*Journal Missouri State Medical Association*, Vol. III, No. 7).

TAUSSIG, ALBERT E.

"Report of a Case Wrongly Diagnosed as Cerebral Abscess" (*Surgery, Gynecology and Obstetrics*, June, 1907, with Dr. N. Sharpe).

"Pneumaturia" (*Boston Medical and Surgical Journal*, June 13, 1907).

"Gastric Cancer Producing a Gastrocutaneous Fistula" (*New York Medical Journal*, July 13, 1907).

"The Use and Abuse of the Microscope in General Practice" (*Interstate Medical Journal*, No. 11, 1907).

"The Clinical Importance of the Uneven Distribution of Hydrochloric Acid in the Gastric Contents" (*Boston Medical and Surgical Journal*, Jaunary 16, 1908—with Dr. W. H. Rush).

TERRY, ROBERT J.

Chapter on the "Organs of Voice and Respiration" in Morris's Human Anatomy, fourth edition, P. Blakiston's Son & Co., 8vo.

"Tuberculosis of the Skeleton" (with Nathaniel Allison, *American Journal of Orthopedic Surgery*, Vol. XIX, pp. 398-408).

"Neuroglia Syncytium in Batrachus (Opsanus tau)" (*Anatomischer Anzeiger*, Vol. XXXI, Band. No. 1, pp. 27-30).

TUHOLSKE, HERMAN.

"Unusual Positions of the Appendix, with Report of Cases" (*Interstate Medical Journal*, Vol. XV, pp. 270-273).

TUPPER, P, Y,

"The Surgeon of Today" (*Journal Missouri State Modical Association*, June, 1907).

WARFIELD, LOUIS M.

"The Cutaneous Tuberculin Reaction" (a clinical report. *Interstate Medical Journal*, Vol. XV, No. 3).

WARREN, W. H.

"The Picrolonates of Certain Alkaloids" (with R. S. Weiss. *Journal of Biological Chemistry*, Vol. III, pp. 327-338, twelve illustrations.)

(A brief statement of the same work, *Quarterly Bulletin of the Medical Department of Washington University*, Vol. VI, pp. 47-50, twelve illustrations).

WHELPLEY, HENRY MILTON.

"Identification of Pharmaceutical Preparations" (*Missouri Pharmaceutical Association*, June, 1907).

"The Missouri Pharmaceutical Association Meeting, 1882" (*Missouri Pharmaceutical Association*, June, 1907).

"Timely Topics" (*Missouri Pharmaceutical Association*, June, 1907).

WILLIAMSON, LLEWELLYN.

"Medical Education in London" (*St. Louis Medical Review*, March 16, 1907).

"Homonymous Quadrant Anopsia" (*American Journal of Ophthalmology*, December, 1907).

"Squint in its Relation to the General Practitioner" (*Medical Herald*, February, 1908).

ZAHORSKY, JOHN.

"The Therapeutics of the National Formulary" (*Saint Louis Courier of Medicine*, Vol. XXXVI, pp. 220, 269, 351).

"The Municipal Control of Measles" (*Ibid.*, XXXVI, pp. 334-338).

"Saunders' Disease" (*Interstate Medical Journal*, Vol. XIV, No. 9).

"A Little Human Milk" (*St. Louis Medical Review*, July, 1907).

"The Home Modification of Cow's Milk" (*Ibid.*, September, 1907).

ZIMMERMANN, C. A. W.

"Report of an Obstinate Case of Aestivo-Autumnal Malaria" (*Illinois State Medical Journal*, December, 1907).

PUBLIC LECTURES AND ADDRESSES.

Delivered by Officers of Instruction in Medical Department Washington University during the period from March 1st, 1907, to March 1, 1908.

ALLISON, NATHANIEL.

"Acquired Coxa Valga" (Before American Orthopedic Association, Washington, D. C., May, 1907).

"Excision of the Femoral Head for Ununited Fracture of the Femoral Neck" (Before Surgical Section, Saint Louis Medical Society, November 23, 1907).

BAUMGARTEN, G.

Address to the Graduating Class of Saint Luke's Hospital Training School for Nurses, May, 1907.

"Die Anaemien" (Paper read before the Verein Deutscher Aertze, January 3, 1908).

BLAIR, V. P.

"Exophthalmic Goiter Complicated by Other Surgical Lesions."

"Illustrated Lecture on Facial Outlines" (Read before St. Barnabus Guild).

BLEYER, ADRIEN.

"Infant Feeding" (A course of lectures given to Mothers' Club, United Hebrew Charities, winter of 1907-8).

"An Unusual Transmission of Measles" (Read before Bethesda Pediatric Society, May 10, 1907).

BLISS, M. A.

"Psychotherapy" (Address before the St. Louis Medical Society, January 18, 1908).

BROOKS, CLYDE.

"The Effect of Altitude on the Gaseous Metabolism" (Before Public School Graduating Class, Colorado Springs, Colo., June, 1907).

CAMPBELL, GIVEN.

"Presentation of a Patient with Tabes Dorsalis and Muscular Atrophy" (Before the Saint Louis Neurological Society, March 25, 1907).

"Presentation of an Unusual Case of Ophthalmic Migraine" (Before the Saint Louis Neurological Society, May 27, 1907).

"Discussion of Juvenile Paresis with Presentation of a Case" (Before the Saint Louis Neurological Society, September 30, 1907).

"Presentation of a case of Fracture of the Spine with Cord Injury and X-Ray Plates" (Before Saint Louis Neurological Society, January 27, 1908).

CROSSEN, H. S.

"The Treatment of Placenta Prævia" (Delivered at the Inaugural Meeting of the Obstetric Section of the Saint Louis Medical Society, January 28, 1908).

"Foreign Bodies in the Peritoneal Cavity" (Delivered before the Saint Louis Medical Society, February 15, 1908).

DAVIS, ROBERT H.

"Tertiary Manifestations of Syphilis" (Read before the Saint Louis Medical Society, March, 1907).

DIXON, CHARLES H.

"Double Tubular Pregnancy" (Before Surgical Section, Saint Louis Medical Society, January 25, 1908).

FAHLEN, FRED.

"The Cardiac Neuroses" (Before Internal Medical Section, Saint Louis Medical Society, February 8, 1908).

GELLHORN, GEORGE.

"Die Behandlung des Inoperablen Uteruskarzinoms mit Azeton." (79 Versammlung Deutscher Naturforscher und Aertze in Dresden, September 17, 1907).

"An Unusual Case of Pseudo-myxoma of the Peritoneum" (Saint Louis Medical Society, February 22, 1908).

"Die Diagnose der Pyurie" (Verein Deutscher Aertze in Saint Louis, February 28, 1908).

GUTHRIE, C.C.

"Results of Removal and Transplantation of Ovaries in Chickens," with Photographs and Specimens. (Presented before the Physiological Section of the Congress of American Physicians and Surgeons, Washington, D. C., May 7, 1907).

"Successful Ovarian Transplantation in Fowls," with Photographs. (Presented before the Seventh International Congress of Physiologists, Heidelberg, August 13-16, 1907).

"Further Results of Transplantation of Ovaries in Chickens" (Presented before the Seventh International Zoölogical Congress, Boston, August 19-23, 1907).

"Analysis of Results of Ovarian Transplantations in Fowls" (Read before the Saint Louis Biological Society, October 16, 1907).

"Survival of Tissues and Organs under Perfusion" (Read before the American Physiological Society, Chicago, January 1, 1908).

"Further Results of Heterotransplantations of Blood Vessels" (Read before the American Physiological Society, Chicago, January 2, 1908).

"Some Practical Aspects of the Physiology of the Circulation"

Part I. A consideration of some phenomena of the circulation with especial reference to mechanical conditions.

Part II. Description of methods, and some phenomena observed after alterations of the circulation by vascular anastomoses. (Read before the Saint Louis Medical Society, Saint Louis, February 29, 1908).

Demonstrations—

(1) Drawings of a simple form of sterilizer.

(2) Drawings of a respiratory valve for administering anæsthetic (Before the Seventh International Congress of Physiologists, Heidelberg, August 13-16, 1907).

Demonstrations—

(1) Photographs of results of ovarian transplantations.

(2) Chicks from transplanted ovaries (Before the Physiological Section of the Congress of American Physicians and Surgeons, Washington, D. C., May 7, 1907).

Demonstrations—

(1) Gross and Microscopical Specimens of Heterotransplanted Blood Vessels after Eight Months.

(2) Gross specimen, showing an astomosis of central end of left common carotid artery to peripheral end of right common carotid artery by a new method, eight months after operation. (Before the American Physiological Society, Chicago, December 31, 1907, to January 2, 1908).

Demonstrations—

(1) Instrument for perfusing the coronary arteries in resuscitation of the heart.

(2) Improved form of cardiograph.

(3) Cardiograms.

(4) Instruments used in anastomosing blood vessels.

(5) Gross and microscopical specimens of tissues before and after transplantation.

(6) Animals showing clinical results of alteration of the circulation by blood vessel anastomoses. (Before the Saint Louis Medical Society, Saint Louis, February 29, 1908).

HEMPELMANN, L. H.

"Addisonsche Krankheit" (Read before the Verein Deutscher Aertze, October, 1907).

HOGE, M. W.

"Diagnostic Points between Hysteria and Organic Nervous Disease" (Before the SaintLouis Medical Society, October 26, 1907).

"Review of the Literature on the Subconscious" (Before the Saint Louis Neurological Society, February 24, 1908).

MCGUIGAN, HUGH.

"Glycosuria" (Before the American Society of Biological Chemists, Chicago, December 30, 1907).

"Glycolysis and Carbohydrate Metabolism" (Before the Saint Louis Biological Club, February 19, 1908).

"Experimental Diabetes" (Before the Saint Louis Medical Science Club, May, 1907).

SAUER, W. E.

Lectured to the Saint Louis Society for the Prevention of Tuberculosis, August 24, 1907.

SENSENEY, E. T.

"Surgery of the Nasal Septum" (Read before the Saint Louis Medical Society).

SPENCER, SELDEN.

"Report of a Case of Extra Aural Abscess" (Read before the City Hospital Alumni Association).

"Chronic Purulent Otitis Media, progress since 1900" (Read before the Saint Louis Medical Society, November 16, 1907).

"School Inspection in Relation to Hearing" (Read before the Saint Louis Society of Pedagogy, December 7, 1907).

TERRY, ROBERT J.

"Syncytium, with a demonstration of a recently discovered neurolgia syncytium" (Saint Louis Biological Club, November 30, 1907).

"The Cranium of a 23 mm. Cat Embryo" (Before the Association of American Anatomists, January 2, 1908).

"The Morphology of the Pineal Region in Teleosts" (Before Seventh International Zoölogical Congress, Boston, August 20, 1907).

TUHOLSKE, HERMAN.

"Unusual Positions of the Appendix, with Report of Cases" (Before the Saint Louis Surgical Society, January 8, 1908).

"Beginnings of Surgery" (Before the Saint Louis Branch, Guild of Saint Barnabas, January 20, 1908).

"Higher Education" (Before the Saint Louis Alumni Association of Westminster College, Fulton, Mo., February 21, 1908).

TUPPER, P. Y.

"The Surgeon of Today" (Annual oration on Surgery before the Missouri State Medical Association, May, 1907).

TUTTLE, GEORGE MARVIN.

"The Medical Charities of Saint Louis: Problems of Practice" (Before the Saint Louis School of Philanthropy, February 28, 1908).

WHELPLEY, HENRY MILTON.

"Historical Sketches" Illustrated. (American Pharmaceutical Association, September, 1907).

"Pharmaceutical Education" (National Association Boards of Pharmacy, N. Y., 1907.

"Some Prominent Pharmacists and Physicians I have met" Illustrated. (University of Wisconsin, January 10, 1908).

"Pre-Columbian Cranial Surgery in Peru" Illustrated. (St. Louis Medical History Club, February, 1908).

"Mammoth Cave of Kentucky" Illustrated. (Alumni Association, Medical Department, Washington University, February, 1908).

"Indian Flint Implements" Illustrated. (Saint Louis Naturalists Club, 1908).

THE WASHINGTON UNIVERSITY HOSPITAL AND DISPENSARY.

The intimate connection between the Medical School and the Washington University Hospital and Dispensary renders it proper to mention the facilities of the hospital as an important adjunct to the Medical School. In the building of the Hospital, the location and arrangement, the purpose of medical education was constantly borne in mind. It is one of the most important agents in the training of the medical student and is operated solely for teaching purposes, besides it is a benefaction and great charity for the sick poor of St. Louis.

The entire practice in the Hospital and Dispensary is under the control of the professors of the Medical School and their assistants. By such an arrangement ample material is always at hand for thorough clinical instruction. The Lying-in Department of the Hospital and the out-patient obstetrical service supply excellent opportunities for practical training in obstetrics.

The following is a brief summary of the work of the Hospital and Dispensary during the past two years:

HOSPITAL.	1906	1907
Hospital Days	17,786	17,282
Patients admitted	974	913
Total Cost of Maintenance	$25,323.62	$24,852.57
Cost of patient per day	1.425	1.438
Total free days	2,586	3,420
Number of operations	438	473
MATERNITY DEPARTMENT—DELIVERIES—		
Lying-In Department	75	82
Out-Patient Department	252	265
Total	327	347

DISPENSARY CONSULTATIONS—		
For Diseases of Women	1,707	1,873
For Diseases of Nervous System	3,313	4,058
For General Medical Cases	2,158	1,971
For Diseases of Children	1,051	1,391
For Diseases of Ear	4,692	5,568
For Diseases of Nose and Throat	4,357	4,456
For Diseases of Eye	6,517	9,340
For Diseases of Chest	1,282	1,280
For Diseases of Rectum	161	400
For General Surgical Cases	5,566	5,293
For Diseases of Skin	2,394	2,243
For Deformities and Joint Diseases	981	805
Total number of Consultations	34,239	38,678

Few persons beyond the number of those who are actually engaged in the administration of the University have any conception of the amount (see brief report) and diversity of the work done each year by this department. Over 9,500 new patients were taken care of in the Hospital and Dispensary, receiving treatment free of charge, and in many cases medicines and surgical dressings.

The Hospital furnished to the sick poor 3,420 days of free bed accommodations.

The following photographs give an idea of the excellent clinical facilities, which students of medicine and students of nursing have in the hospital and dispensary, to obtain a thorough training in every department of medicine and surgery.

WASHINGTON UNIVERSITY HOSPITAL AND DISPENSARY.

SOME OF THE NURSES OF THE TRAINING SCHOOL. WASHINGTON UNIVERSITY HOSPITAL.

OFFICE OF THE WASHINGTON UNIVERSITY HOSPITAL.

ONE OF THE PRIVATE ROOMS. WASHINGTON UNIVERSITY HOSPITAL.

ONE OF THE WOMEN'S WARDS. WASHINGTON UNIVERSITY HOSPITAL.

ONE OF THE MEN'S WARDS. WASHINGTON UNIVERSITY HOSPITAL.

OPERATING ROOM. WASHINGTON UNIVERSITY HOSPITAL.

SEATING CAPACITY 100.

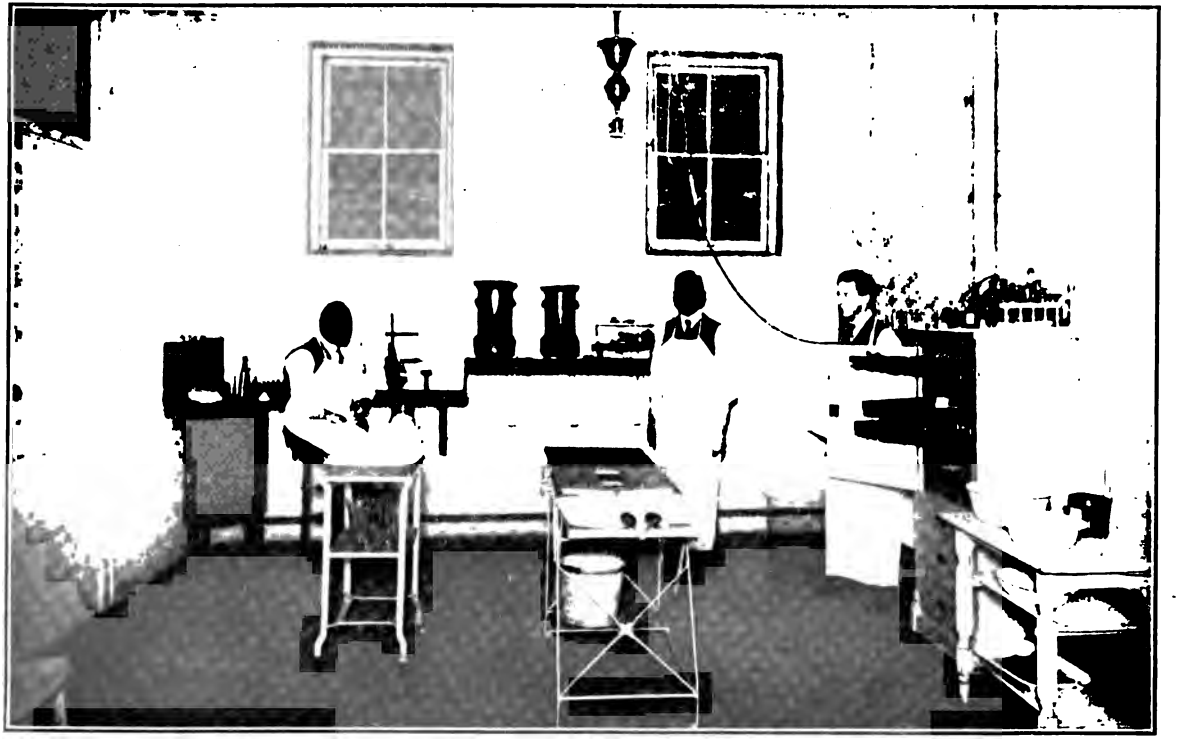
DELIVERY ROOM—LYING-IN DEPARTMENT. WASHINGTON UNIVERSITY HOSPITAL.

A SECTION OF THE WAITING ROOM. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

OPERATING ROOM—EYE CLINIC. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

A SECTION OF THE EAR CLINIC. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

A SECTION OF THE NOSE AND THROAT CLINIC. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.



A SECTION OF THE SURGICAL CLINIC—5 ROOMS IN ALL. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

CLINICAL AMPHITHEATER FOR DISPENSARY PATIENTS.

A SECTION OF THE SENIOR CLASS IN ATTENDANCE. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

SURGICAL AMPHITHEATER FOR DISPENSARY PATIENTS. WASHINGTON UNIVERSITY HOSPITAL DISPENSARY.

QUARTERLY BULLETIN

OF THE

MEDICAL DEPARTMENT

OF

WASHINGTON UNIVERSITY

SEPTEMBER, 1908

A. S. BLEYER, M.D., EDITOR

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CONTENTS.

PREFATORY NOTE.

In this number of the Bulletin, the Editor has aimed to present a word from a number of the clinical departments of the Washington University Hospital Dispensary, on the ideas that are forward at this time for utilizing material for the benefit of students.

It is believed that even graduates of recent years will find some striking contrasts between the present methods of clinical instruction and those that were in vogue during their school days. There is a pronounced trend towards what might be designated individualization in teaching, the bringing of the student more closely under the guidance of the teacher. Because of this he may be allowed greater latitude than formerly and is encouraged to exercise original thought, with this method his own initiative is fostered under rigid and conservative discipline. Such examples as history-taking, the making of diagnoses and outlining plans of treatment, and doing minor surgical operations in the departments of surgery, obstetrics and ophthalmology, will illustrate what advances have already been made.

Aside from purely didactic subjects, the unusually capable student can not derive the maximum benefit from lectures prepared for the average student, nor is it in any way wise to adopt any plan of instruction that will limit the development and expansion of his thought. Lastly, such a plan of instruction need not in any way interfere with the recognized standards for the class, since advancement of such standards if it occurs, will come very largely from the class body itself and will be commensurate with its ability and not remain an arbitary thing that has been prearranged.

In this number, most of the clinicians have kindly added reports of cases of unusual interest observed recently in their departments.

It should perhaps be noted that the three books reviewed in this issue are by members of the teaching staff of this school.

In Memoriam.

DAVID COALTER GAMBLE, M.D.

Clinical Professor of Otology in the Washington University.

Dr. David Coalter Gamble was born in Saint Louis, September 16, 1844, and died in this city May 4, 1908. He attended the Wyman Institute and afterwards went to a preparatory school at Lawrenceville, New Jersey. His collegiate studies were pursued at the Washington and Jefferson College in Pennsylvania. He obtained his degree of Doctor of Medicine from the Saint Louis Medical College in 1869, and almost immediately took up the work of a general practitioner, after a season however, he quit general practice and thenceforward—in fact to the day of his death—devoted himself exclusively to otology.

For many years Dr. Gamble was the Chief of the Otological Clinic of the Missouri Medical College and subsequently held the same position at the Washington University Hospital Dispensary. He was also Professor of Clinical Otology in the Medical School, a title conferred upon him in recognition of his ability as a teacher and his untiring devotion to the interests of the clinic, which he was largely concerned in establishing.

As to Dr. Gamble's knowledge of the branch of medicine to which he had consecrated his life, and his power to impart to others from the vast stores of his accumulated experience, hundreds of former students can testify; but those who worked side by side with him in the daily routine of the clinic best know his professional and personal worth. In a beautiful and touching memorial that has already been presented to the Faculty, the members, past and present, of the Otological Clinic of the University Hospital have expressed their love for the man and their appreciation of the teacher.

Dr. Gamble was one of the most modest and retiring of men. To the world he was known as a kindly and courteous gentleman; but to the few who had the privilege of his intimate friend-

ship, the sterling qualities of his admirable character—the simple faith, the unswerving loyalty, the steadfast purpose—were known as the world could not know them.

At a meeting of the Medical Faculty of the Washington University held May 11, it was unanimously resolved that a copy of this tribute of our esteem for Dr. Gamble should be sent with our respectful sympathy to his family, that a copy be published in the Medical Bulletin and that a record of these proceedings be inscribed in our book of minutes.

WM. A. HARDAWAY, *Chairman.*
H. N. SPENCER.
H. TUHOLSKE.
Committee.

The Alumni Association.

The Alumni Association of the Medical Department of Washington University with a deep sense of the loss that they have sustained in the death of their colleague, Doctor D. C. Gamble, take this means of expressing to his family and friends their heartfelt sympathy for them in their bereavement. All who came in contact with Doctor Gamble were endeared to him by his noble character and his many unusual lovable qualities.

His high sense of honor, loyalty and quiet demeanor made him more than physician to his patients, more than teacher to his pupils, and in the truest sense a friend. We who knew him well bear glad witness that the cause of purity and truth, in our own profession, was constantly and greatly furthered by his professional and personal life, which seemed often to stand out in contrast to the tendencies of modern times.

H. CLAY CREVELING, *Chairman.*
S. SPENCER.
F. C. SIMON.
Committee.

THE POST-GRADUATE STUDENT.

An Address Delivered at the Commencement Exercises of the Medical Department of the Washington University, St. Louis, May 28, 1908, BY William G. Spiller, M.D., *Professor of Neuropathology and Associate Professor of Neurology in the University of Pennsylvania.*

Mr. Chancellor of Washington University, Gentlemen of the Faculty, Doctors in Medicine of the Graduating Class, Ladies and Gentlemen:

Never in the history of the world has the young man had greater opportunity for advancement in medicine than at the present time. The discoveries to be made possibly are not so striking and far reaching as some of those of the past. The period of forty years is widely regarded as marking an important crisis in man's development, and yet I cannot but feel that in the acceptance of the teaching that the best work is done in youth, an error has crept in. It is doubtless true that Morgagni, Corrigan, Stokes, Laënnec and many others, accomplished most in early life; that Washington was a leader at nineteen; Hamilton a statesman at thirty-two, and Rush a graduate as a Bachelor of Arts from Princeton College in his fifteenth year. Only recently one of the United States senators from the south had just passed the age of thirty years. It does not follow however that the early years of a man alone are productive. Many of those who in early life have seen what others before them had not seen, or have thought what others had not thought have simply manifested their genius early, and frequently have carried out the application of their early teaching during many years of useful life. They did not cease their epoch-making work after one striking discovery. They were great in early life, but who can say that these same active minds under similar conditions would not have made equally valuable discoveries

if they had been held back in the pursuit of their studies a few years. Some men are born with powers of observation, others with equal vision fail to observe. Can anyone imagine that so striking a disease as acromegaly came into existence at the bidding of Pierre Marie?

No one can dispute that the brain is more receptive when it is developing. The child learns more readily than the adult, and the knowledge first acquired is often the longest retained. One may have mastered several languages and when a cerebral hemorrhage occurs all but the one he learned when he first began to lisp, and the impressions of which were deeply imbedded in his brain, may be forgotten. The youth is more active, he may be more inventive and may enter where older but possibly less wise men fear to tread. We can not however, deprive middle age and more advanced periods of the honors due them. The great intellect is interesting in early life; but it may be even more so in the period of maturity. We have known great men who had passed the crisis of forty years, but we do not cease to enjoy their mental power, and indeed in many instances we find more delight in such companionship than we could have done had we known them when their minds were forming.

The interesting and reliable study by Dorland of four hundred celebrities has shown that fifty is the average age for the performance of the masterwork, that for workers the average age is 47, and for thinkers, 52; the latter being also the average age for physicians and surgeons to accomplish something lasting. Dorland has found that some of the greatest achievements have been those of old men long past sixty. Truly no one can set a period to man's greatness. As Dorland puts it, not infrequently those mentalities that ripen the slowest last the longest, and often the history of great men shows a neglect by their fellows until forty or more years had passed.

It has been suggested that possibly in our present day methods the student is carried too far, has been taught during his for-

mative years too much of what is known at the present time, and sometimes even incorrectly held. This opinion seems to me fallacious. For purposes of expediency, possibly the course of tuition is too long, but for the mental development of the student it is not long enough. It is hardly probable that he has wasted his years of invention and discovery in studying the knowledge and possibly unrecognized ignorance of others, and indeed I question whether much incorrect instruction is given in our best medical schools. The man who has the power to see and think will do so all the better for a thorough grounding in medicine.

The investigating spirit is communicable. We need not expect the pupils of a great master to make so many important discoveries as their exemplar has done, but each in his own way often adds to the general store of knowledge. Can anyone doubt that when Charcot died his mantle fell on his pupils, and that the influence of this great master of neurology is felt until the present day? The Germans and French recognize the truth of this more clearly than we do. The German professor speaks proudly of the man under whom he received his instruction, and counts as the greatest honor of his life the privilege of early acquirement of knowledge from a master mind. It will usually be found that a man great in medicine in the German or French school has had a great teacher, and though there may have been many pupils, possibly only one or two have attained prominence. This, however, is the law of all life—the survival of the fittest. The Frenchman recognizes so fully the truth of the statement just made that he speaks of the one who guided his youthful steps as his maitre. The investigating spirit is infectious, and a scientific atmosphere is certainly most desirable if not absolutely necessary for the accomplishment of original work.

Most of you doubtless will go into general practice and will swell the great body of those whose life's effort is the healing

of the sick. Truly a noble calling. Far be it from me to lessen the importance of the general practitioner. His life is one of hard labor, with long hours and many interruptions and he occupies an important place in the community. To him, confessions often are made that no priest ever hears. A certain variety of physician, at one time common when the country was more sparsely settled than at present, is dying out. I refer to the man whose practice extended over miles of territory where the railroad did not penetrate, who at times was called to set a broken bone or see a case of measles when the journey extended over fifty miles or more, and required three days on horseback or driving, not infrequently necessitating repeated fording of streams. Such a practitioner I have recently had the pleasure of conversing with. He had been in his profession over fifty years, had lived in one town and one house most of that period, and enjoyed an unique position in the community. He was not only physician to three generations of the same families, but also friend, father confessor and judge. A life such as this is full of hardships, but full also of the rewards of duty well done and softened by the love and respect of one's associates.

The life of the original investigator when fruitful is of great value to a great number. One cannot read the life of Pasteur, for example, without realizing the truth of this remark. He taught others to heal, and his influence has been felt far and wide. The study of the cause of disease and of the best methods of its prevention and treatment is certainly praiseworthy. We look with admiration upon the sacrifice of men who use their own bodies for experiments aiming to relieve the sufferings of mankind or to add to our store of knowledge. In our time we have the division of two sensory nerves by Henry Head in his own arm, in order that he might study the changes in sensation; but what shall we say of Jenner, who in his attempt to overcome smallpox experimented on his own babes! That

hardness of heart and want of paternal affection were not the causes of this apparent rashness the noble life of Jenner clearly shows, and doubtless he felt convinced that his methods were reliable.

It has seemed to me that when the biography of Dr. Osler is written, the author will perforce dwell largely upon the influence exerted by this man upon others, and chiefly upon young minds, as one of his greatest characteristics. There are some born to be great by a discovery of vast importance; and there are others great in the stimulation and inspiration they give to those about them, and possibly the latter are more valuable than the former, though their influence is so quiet and even momentarily unrecognized that their greatness is not always appreciated. I think I have never had a conversation with Dr. S. Weir Mitchell without feeling that I was in the presence of a master mind, of an original thinker.

We as a nation are just developing along the lines of investigation, and as yet are hardly out of our swaddling clothes, but the infant is strong and will certainly grow to be a giant among nations. The future is full of promise. The American people are beginning to recognize that men are more valuable than bricks and mortar, that a great mind with all its originality and power of inspiration for others, is more than any building; that the strength of a university is its faculty. True indeed is Osler's statement: "The value of a really great student to the country is equal to half a dozen grain elevators or a new transcontinental railway," and yet we as a nation have not accepted this as a truth. How clearly it was demonstrated when Pasteur saved the silk industry of his country or worked with the patriotic resolve of making French beer equal to or better than German beer; and yet in the irony of fate the enemies of his country probably benefited by his experiments on beer more than did his own countrymen—a fact which shows that truth cannot be confined to a narrow body of men.

American investigators have not always had reason to feel themselves unduly complimented. The Scotchman, Sydney Smith, once said: "In the four quarters of the globe who reads an American book? What does the world yet owe to an American physician or surgeon?" In 1876 J. S. Billings wrote: "We have had and still have a very few men who love science for its own sake, whose chief pleasure is in original investigations, and to whom the practice of their profession is mainly, or only of interest as furnishing material for observation and comparison. . . . Of the highest grade of this class we have thus far produced no specimens; the John Hunter or Virchow of the United States has not yet given any sign of existence."

Our wealthy men are beginning to endow richly, institutions of investigation, and such as those given by Rockefeller and Carnegie afford great promise for the future of American science. A French physician recently after a visit to the larger of our medical schools acknowledged in conversation that the opportunities in this country were great, wished he could send his son here for his medical education, and added that in fifty years the tide would turn, and students would cease going to Europe and foreigners would seek America for their instruction. As one looks forward with prophetic eye he grows doubtful whether the fruition of this prophecy is so remote as fifty years. Already the complaint has been made that fewer American students are attending the great schools of the capitals of Europe, and the explanation is offered that the need of foreign instruction is yearly growing less.

There are two chief motives that inspire men in the pursuit of science, one the less noble is the desire of advertisement, the acquirement of wealth and honors; and all is done with these ends constantly in view. The other and by far the nobler, is the desire of penetrating nature's secrets, of enriching man's stock of knowledge, and to him who possesses these motives, reward of the highest kind comes. Few men are so

constituted that the applause of their fellows for work well done is distasteful to them, and honors that come are usually appreciated, but the spirit of the man makes the work different. Possibly the greatest boon in medicine was the discovery of surgical anesthesia, but we cannot read the sad story without feeling that a black cloud hangs over this discovery, although possibly in this we may judge too harshly.

We can hardly picture the horrors of the early days of surgery before anesthesia came into use. When the floor of the operating theatre of the old hospital at Canterbury, England, was torn up a few years ago, the rings were discovered through which were passed the cords for tying patients down on the operating table prior to the discovery of anesthetics. In the words of a physician who wrote to Sir James Simpson and described an amputation of a limb he had permitted to be performed upon himself, we have language that enables us to understand in part: "The particular pangs are now forgotten; but the blank whirlwind of emotion, the horror of great darkness, and the sensation of desertion by God and man, bordering close upon despair, which swept through my mind and overwhelmed my heart, I can never forget, however gladly I would do so. . . . I watched all that the surgeon did with a fascinated intensity. I still recall with unwelcome vividness the spreading out of the instruments, the twisting of the tourniquet, the first incision, the fingering of the sawed bone, the sponge pressed on the flap, the tying of the blood vessels, the stitching of the skin, and the bloody dismembered limb lying on the floor."

Not only are better facilities afforded us at home, but the class of students attending our medical schools is changing. It is within our memory when the medical student was regarded as a hardened sinner, supposedly capable of any ill deed, and hardly to be described as a gentleman; when terrors of the dissecting room were held over the head of the ignorant and

crediting negro, and any misdemeanor was perforce overlooked if committed by a medical student, provided it did not come too strictly under the law. All this has changed. In the University of Pennsylvania, of which I am best able to speak, and I am sure in your own University also, the medical student is as truly a man of refinement and culture as is the student of any other department; and pranks, if committed, are much more common in the more youthful men of the Department of Arts than in those belonging to the Department of Medicine.

In the early days of medical history in this country the stories of the dissecting room were sufficient to arouse much prejudice. Graves were robbed and bitter feeling was thus created. In 1788 what was known as the "Doctors' Mob" occurred. A boy peeping in at a window of the dissecting room was frightened by what he saw and told his tale to all who would listen. A crowd collected and tried to take possession of the building, and the students, followed by the mob, sought refuge in the jail.

In the middle ages, as Roswell Park has stated, the university was frequented by boys of thirteen and fifteen, and it is evident that the respect due the institution was sometimes lacking, as we read that punishments were inflicted if an attempt were made to throw a stone at a master, and that the fine was greater if the attempt were successful. It became necessary to make regulations against swearing, playing games of chance, being out after eight or nine o'clock in the evening, regulations which would not be tolerated by students of the present day.

The evolution of the surgeon from the barber occurred only about one hundred years ago, and previous to that time all operations, if such they might be called, were in the hands of ignorant men.

Students sometimes elected their teachers, and the unsuccessful professor occasionally found it desirable to seek another field. Salaries were not large, Versalius, the great anatomist,

received $1,000 with some additional fees. Students often begged or stole to get sufficient to pay for their tuition and support. Naturally, such practices engendered a great dislike and fear toward medical students which have not yet entirely disappeared. The English, as you know, still make distinctions between physicians and surgeons, in that the title of doctor is given only to the former.

The condition of the student in Russia even at the present day is far inferior to that of other civilized lands. A recent writer in the St. Petersburger Zeitung has declared that the universities of St. Petersburg and other large Russian towns are nurseries of rebellion, because of the poverty in which the students live. The Russian student, this writer asserts, is in most cases a beggar, and people regard such a condition as a matter of course. More than a thousand students are dropped from the University of St. Petersburg annually because they are unable to pay their fees. Such notices as the following are not uncommon: "A starving scholar asks for employment of any sort." "A student in utter destitution asks for work, even of the most menial character."

The requirements of the medical course are becoming constantly more severe, and men of higher ability than formerly are attracted to this work. Medical knowledge is growing so fast that the question of a fifth year is being seriously considered and it will surely come; it may be optional at first, but it has existed in England many years. In France the student to be properly equipped for his work must devote at least eight years to medical study.

Possibly some may regret that they have not received a large share of the world's wealth, and that investigation and observation for them is impossible, as the pressing needs of existence allow them no time for aught else than the winning of the daily bread. Great wealth is often a blight to a brilliant mind, and the history of the world shows that much of the lasting work

has been done under what has seemed unpropitious conditions. The effort to win one's daily bread is often the greatest stimulus to work with other aims, and we cannot despise the blessing of poverty, but it is a blessing of which we sometimes have too much.

The investigator in these days need not fear the ridicule of his colleagues. We have grown so accustomed to wonderful discoveries that our minds are open to almost anything new, unless it is clearly fallacious. How different it was in the time of Galvani, when the experiments of this original thinker with electricity earned for him the title of the "frog dancing master." Sometimes we are too open to conviction and accept new ideas without sufficient foundation. There are fads and fancies in medicine, and many new methods of treatment have but a fleeting existence. They are accepted for a time with unrestrained enthusiasm. How well we remember when Koch's tuberculin was supposed to be the unfailing remedy for tuberculosis. Now we know that this substance has its value although it is not that originally claimed for it.

A little hero worship will do us as a nation and as individuals, no harm. I have had opportunity to see the tribute paid by two nations, the French and the Austrian, at the burial of two men distinguished in medical work, Pasteur and Billroth. Funerals of scientific men with such marks of a nation's sorrow could not at present occur in our land.

This is a day of skepticism in medicine and of re-examination of long-accepted doctrines. What can be more striking than the unrest manifested regarding aphasia? For more than forty years no one has questioned the correctness of the teaching regarding Broca's area, and yet Marie, Broca's own pupil, has raised a storm of criticism with as yet only a moderate support, by his statement that this region has nothing to do with speech, and its destruction does not cause motor aphasia. Or still another example. Hysteria has been the scrap basket into

which has been thrown everything peculiar and not understood, unless positively shown to be organic. The teaching of Charcot covering a period of many years was, that hysteria has definite clinical manifestations. Babinski, one of Charcot's most distinguished pupils, has recently taken the stand that hysteria is a mental state in which the individual is more capable of receiving suggestion, and the symptoms are produced by suggestion, either from the patient himself or communicated to him by the examiner, and are removed by persuasion, a view radically different from that hitherto accepted.

It is well to state that the views of Babinski have gained many adherents, and that they are likely to alter our conception of one of the most common, possibly the most common disorder of humanity, and consequently our method of treatment. We hear much in these days from certain of the older, and alas! from some of the younger members of our profession that medicine is exhausted, that this or that method has been employed to its fullest extent, and its resources are drained, and there is little more to be learned. Do not, I beg of you, permit yourself to assume this blasé attitude. Such language is a reproach to us. No method of study is exhausted. It is true that one method may be more promising than another, but the man who discredits investigation with the plea that we are at a standstill, and are in face of an impenetrable wall, is himself, not medical science, dangerously near the limit of his resources.

To some of you the advantage of travel may be given, and if so it would be folly to neglect it. It is not that one cannot learn in America what is taught in England, France, Germany, Austria or other countries, but the mingling with men of other nationalities, the observation of how things are done in different lands, the acquiring of a new language, open a new world. If we learn by travel the ready use of German and French and nothing else, we have accomplished much; but no one stops with this. Medicine is taught in a very different manner in

different lands, and the student and professor in Germany is not like those of France. Many of the lectures of Paris are prepared with a thoroughness that permits publication of them without much alteration. A German professor once remarked to me in Paris that there were no lectures in Paris for undergraduate students, only for physicians. This, however, was merely making the truth somewhat elastic.

Recently in New York and Philadelphia the strange sight of a "prairie schooner" was presented, one of those old time wagons drawn by oxen. A year or more had been consumed in coming from the Pacific coast. Its owner had gone west in early manhood and in the twilight of life had desired to renew his early experience and retravel the road in his former manner. What more striking contrast could be offered than that between a "prairie schooner" and a Pullman train, and yet medicine of today has contrasts with medicine of an earlier period no less startling.

We are so accustomed to the methods of diagnosis in use and have so often percussed, palpated and auscultated the human body that we may not recognize that the discovery of these means of diagnosis is among the greatest in medicine. Auenbrugger in the eighteenth century discovered palpation and percussion and wrote a short paper on the subject, but it was reserved for Laënnec to teach auscultation about fifty years later. We are likewise so accustomed to applying pathological findings to the symptom-complex in seeking for the explanation of symptoms, that we hardly realize that this important method of study had its real origin in the fertile brain of Morgagni, whom Virchow acknowledged as the Father of Pathology.

It seems almost incredible to us in these days that there should have existed any serious objection to the establishment of a hospital a century and a half ago in this country. Such, however, was the case. When Dr. Thomas Bond returned to his native land, enthusiastic from his studies in Europe, and in

1751 attempted to introduce the hospital system he found many obstacles in his way. Some small institutions existed but nothing of the style of a large hospital. He was told that there was little chance of success in his undertaking, and was advised to see Franklin. Indeed it was owing to the sagacity and energy of the latter that the attempt succeeded. Franklin created a demand on the part of the public, which previously had not existed, and in this way the Pennsylvania Hospital came into existence in 1752.

It is a gratification to the medical profession to find that its members are now being honored by the public. There has recently been erected in the most conspicuous part of Philadelphia, the plaza of the City Hall, a bronze statue to Joseph Leidy. I look upon this, in connection with monuments to Gross and Rush, as a striking sign of the times, and as indicating that we, as a people, are beginning to honor men whose lives have been those of students, as worthy of the highest recognition. This statue of Leidy is striking in its simplicity. The noted scholar is represented in the sack coat he usually wore, and in the position of lecturing to a class. We who sat under him recognize the correctness of the pose and dress, and appreciate the wisdom that avoided the sweeping folds of the university gown which lend themselves so well to art, in order to produce a characteristic figure of the man.

In bringing this address to a close I quote from Robert Graves: "It is no light thing to have life intrusted into your hands; we are all liable to err, we all commit mistakes; the rules of our art are not invariably precise and certain; but they only are guilty who have not used every opportunity of acquiring practical knowledge; he is doubly guilty who, conscious of his neglect, embarks in practice and commences with the decision and boldness true experience alone can confer."

It is, indeed, no light thing to have life in our hands. The tendency is to grow callous from repeated contact with disease,

and to give advice in the enthusiasm for knowledge that may not be for the patient's best advantage. Far be it from me to say that this is a common fault among surgeons and physicians, but the tendency is sometimes present, and is powerless for evil in conscientious practitioners. Let me warn you, however, to keep your hearts warm and your heads cool in the pursuit of scientific medicine.

You will receive unlimited praise and unlimited blame in your profession. James Jackson, of Boston, in his "Letters to a Young Physician just entering upon Practice" wrote: "I have often remarked that though a physician is sometimes blamed very unjustly, it is quite as common for him to get more credit than he is justly entitled to; so that he has not, on the whole, any right to complain." We do not always, when smarting from a slight, look upon the matter in this philosophic light.

Few of us are geniuses, but all are capable of great accomplishment, and the secret of an useful and successful life is well-directed work. The men who have done most for the world have been those who in the scriptural injunction of the sweat of their brow have performed unceasingly and with enthusiasm their full measure of labor.

It seems almost as though the busiest are those who have the most time for additional work. The secret of this apparent contradiction lies in the fact that these men have learned the value of time, the value of the odd moments that are wasted by others, what Johann Müller called the "gold-dust of time."

Let me leave with you a remark made by Pasteur, on his seventieth anniversary: "Whether our efforts in life meet with success or failure, let us be able to say when we near the great goal, 'I have done what I could'." To this I would add one word, which means happiness to all who accept and adopt its teaching, the word "work." Never forget that you are members of a great, noble and unselfish profession, that while you

have a right to expect medicine to serve you, you are in duty bound to give it your best, to do whatever you can, however insufficient it may seem to you, to advance its aims.

REFERENCES:

"Makers of Modern Medicine," James J. Walsh, Fordham University Press, New York, 1907. "A Narrative of Medicine in America", James Gregory Mumford, J. B. Lippincott Co. 1903. Roswell Park, University of Pennsylvania Medical Bulletin, March 1902. W. A. N. Dorland, Century Magazine, 1908. "Aequanimitas with other Addresses to Medical Students, Nurses and Practitioners of Medicine," Wm. Osler, P. Blakiston's Son & Co., 1906. "The History of Medicine in the United States," F. R. Packard, J. B. Lippincott Co., 1901.

DEPARTMENT OF SURGERY.

Professor H. TUHOLSKE.

Clinical Professor ERNEST JONAS, Chief of Clinic.

WM. S. DEUTSCH, M.D., Associate Chief and Instructor in Clinical Surgery.

WM. M. ROBERTSON, M.D., Senior Assistant and Instructor in Genito-Urinary Surgery.

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Method of Instruction.

During the past semester the material of the surgical clinic at the Washington University Hospital has been used for the instruction of:

A. The Senior Class as a whole.
B. Sections of the Senior Class.
C. The Junior Class as a whole.

A. Once a week, on Friday, the entire senior class spends the afternoon hours at the Washington University Hospital, attending such surgical operations as have been especially

selected for their instruction. Almost all of these operations are performed on hospital cases—that is, on patients who are inmates of the hospital, being prepared for the operation. The cases for that day are—as far as their limited time permits—worked up by a small number of students of that section of the senior class which, at the time, does afternoon work at the Washington University Hospital every day except Wednesdays and Saturdays. (Just how the section work combines with class work will be seen more clearly in the description of section work which follows later.)

On this day then, the carefully written history of the case, including urinalysis, blood and all other usual laboratory examinations is read, an accurate description of the general and local condition is given, the preparatory treatment, surgical treatment, and post-operative treatment, and the prognosis of the case is discussed. The report serves the teaching surgeon as a basis for further elaboration on such points as seem especially important. The various methods of operation deemed suitable for the case being given, the method selected is accurately described in its different steps. Immediately thereafter, the operation is begun and the different steps are as far as possible, illustrated. Four members of the section (temporary internes) are invited to the table to witness the operation in its minutest details, and frequently, to serve as second assistants. Afterwards, as far as is possible, these cases are shown on clinic days to the class, or to one or more of the sections. In this way the students are enabled to watch the outcome of the cases.

B. Sections of the Senior Class.

The senior class is divided into sections of about sixteen students each. Each section, as such, works at the surgical clinic for about eight weeks. In order to enable its members to be active working members of the department, each section again is subdivided into four parts. These latter serve for two weeks as temporary internes of the surgical clinic.

During this time these internes have the privilege of visiting the patients of the department at any time, of dressing them under supervision of an instructor, and of making the necessary examinations—in short, they are practically in charge. These temporary internes are the students who report to the class on the general clinic day.

Each section (*i. e.*, each of the main sections) is occupied at the surgical clinic on Mondays, Tuesdays and Thursdays, from three to five. Monday is used for clinical instruction in genito-urinary diseases, Tuesday and Thursday for instruction in general surgical diseases. On these days the cases are turned over to the student, who, while under supervision, is to all purposes the physician in charge for the time. The student takes the history, examines, makes a diagnosis, and gives the surgical treatment indicated in the case. On these days most of the minor surgical operations are performed by the members of the section, after the method of operation has been discussed. The X-ray apparatus is made use of for the diagnosis, and during the treatment of fractures and dislocations, and for the discovery of foreign bodies, etc.

This section work is a valuable addition to the general class work, and its advantages cannot be overestimated.

The cases which have come under observation and care of the senior student have been abundant, illustrating a great many typical and not a few rare varieties of surgical disease. Of all these cases, especial mention is here made of three, which were under our care at the same time, and were presented to the students for demonstration of this field of surgery: (1) Incomplete external lateral fistula of the neck. (2) Complete lateral fistula of the neck. (3) Complete median cervical fistula. Very few surgical clinics, if any, have been able to demonstrate these three parallel classes of cases at one time. Case 3 is extremely rare and Case 2 of unusual occurrence.

CASE I. A baby girl six weeks old. On the right side of the neck, just above the sterno-clavicular joint, is a very small opening (pin-hole) which admits only the finest probe. On pressure a small drop of muco-purulent fluid is discharged. The probe can be introduced only for a distance of one centimeter. Peroxide of hydrogen injected into the opening does not appear in the mouth. Operation was refused.

CASE II. *Complete Lateral Fistula of the Neck.*

A young man, twenty years old, presented himself with the story that there has been, as long as he remembers, possibly since birth, a discharge of pus on the right side of the neck, from time to time. Occasionally he notices discharge of pus into his mouth. Several physicians had tried to cure this "abscess" without success. On examination there was found on the right side of the neck, about one centimeter above the sterno-clavicular joint, a fistulous opening, one-sixth of an inch in diameter. A fistulous canal could be felt, like a hard string, underneath the skin, frequently discharging a slimy fluid, sometimes clear, sometimes more pus-like. The amount of secretion was enough to annoy the patient. The lumen of the canal was of such size that a probe of moderate thickness could be passed through its whole length and be made visible in the region of the right tonsil. Solution of methylene blue and peroxide of hydrogen, injected into the external opening, could easily be seen running into the mouth. The patient had never noticed the passage of liquids from the mouth through the canal and external opening. The patient was told that he could be cured by a careful and complete excision of the fistulous canal, but he refused operation.

Such a canal passes through the subcutaneous tissue and platysma, and runs parallel to the sterno-mastoid on the deep fascia, above the sterno-hyoid, and sterno-thyroid muscles, to the great cornu of the hyoid, then over the beginning of the

internal carotid, between internal and external carotid, and finally under the digastric muscle, into the lateral wall of the pharynx. It is strongly adherent to the sheath of the great vessels. Before entering the pharyngeal muscles, it is crossed by the styloglossus and stylopharyngeus, the glossopharyngeal and hypoglossal nerves lying below.

CASE III. *Complete Median Cervical Fistula.*

A young man, twenty years old, presented himself at the clinic with a discharging fistula in the center of the neck, one and one-half inches above the jugulum. His mother had told him that, fifteen years before, a swelling had appeared in the middle line of the neck at the place of the present fistula. The swelling became painful and tender, and a physician incised it. Ever since then he had been more or less troubled with the pus-discharging sinus. Ten operations during the last fifteen years had proven unsuccessful, and had only changed the skin of the laryngeal and tracheal regions into scar-tissue. The above-mentioned opening is as large as a pinhead, pus-like fluid exuding from it. A canal admitting a probe of moderate size runs exactly in the middle line, over the incisura thyroidea and membrana thyrohyoidea, and can be traced to the hyoid bone. There it seemed to stop. However, when peroxide of hydrogen was injected, patient perceived the fluid in his mouth, and upon examination the peroxide was found coming out of the foramen caecum. This proved, like Dr. Tuholske's case, published a year ago, the existence of a complete cervical fistula, or pervious thyroglossal duct. Dr. Tuholske's case refused to be operated on; our clinical case submitted to the operation suggested, which, as explained to the patient, would have to be a complete dissection of the whole canal.

At the operation, at which several subdivisions of the lumen were encountered, the canal was easily traced over the incisura thyroidea and membrana thyrohyoidea to the hyoid

bone. It was in close relation to the posterior surface of the hyoid, and continued on to the root of the tongue (foramen caecum). The end nearest the tongue was twisted around a hemostat and jerked out. After thorough cleansing of the whole wound, it was sewed up completely except for a small opening at the lower end for drainage. The wound healed per primam. At present, four months after the operation, patient is entirely well.

C. The Junior Class.

The work of the junior class as a whole is in principle like the senior section work. While the senior sections are already making practical application of their knowledge, however, the juniors are just being initiated into clinical work. They are taught the practical application of the principles of asepsis, the taking of a history, the administration of anesthetics, methods of examination, the logical consideration of all evidence for the making of a diagnosis, bandaging, dressing, and, finally, operative details.

ERNEST JONAS.

ORTHOPEDIC SURGERY.

Professor A. J. STEELE.
NATHANIEL ALLISON, M.D., Clinical Lecturer and Chief of Clinic.
CHARLES A. STONE, M.D., Clinical Assistant.

The clinic for the treatment of joint diseases and deformities is held at the Washington University Hospital daily at 3:00 o'clock. The material of the clinic is used for teaching the students of the senior class the diagnosis and treatment of various orthopedic conditions. Once a week sections of the senior class report at the clinic, and are assigned cases from which they personally obtain the clinical history, make a complete physical examination and diagnosis, and confer with the chief of clinic as to the treatment to be instituted. Where operations are done, it is the object of the department to instruct the students in a general way the technic of orthopedic surgery. It has been found that this method of case-teaching has been of great value in that the student is afforded an opportunity of carefully examining the various forms of Paralysis and acute and chronic conditions, seeing for himself the necessity of supplying apparatus or operative treatment, and carrying the same into effectiveness. The clinic is of particular value in that a large number of adult cases report for treatment, presenting chronic spinal lesions, such as are known under the general head of Arthritis Deformans. Aside from these cases, many report who have acute infectious diseases of joints, such as Gonorrheal Arthritis. The less serious operations such as Osteotomy and Osteoclasis for knock-knee and bow-legs and the reduction of either congenital or old acquired dislocations are done at the clinic. It is the purpose of the department to give each student of the senior class a definite,

practical idea of the purpose and scope of orthopedic surgery, so that, when he engages himself in practice he will not overlook cases that might be benefited by the establishment of early and suitable treatment.*

NATHANIEL ALLISON.

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* It is regrettable that, because of an insufficient time-allowance, the report of some unusually interesting cases from this department could not appear in this number. They however, will be published in a later issue.—EDITOR.

DEPARTMENT OF MEDICINE.

Professor W. E. FISCHEL,
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The senior class receives considerable clinical instruction in the Washington University Hospital Medical Clinic. Sections of the class work four fore-noons a week in the first semester and three in the second semester. The mode of teaching is two-fold. The students accompany the instructor on his daily rounds in the hospital and receive bed-side instruction. Cases are also assigned to the students and are studied more or less independently, under the instructor's supervision. The students are taught to write complete histories and work up the cases thoroughly, both as regards physical diagnosis and in the clinical laboratory. For this purpose, cases in the hospital are used as far as possible, but where this does not suffice material from the clinic itself is drawn upon. Once a week, the entire senior class meets the professor in charge and cases studied by the students are presented for criticism and discussion.

It may be of interest briefly to report a few of the most interesting cases observed in the clinic during the past year.

Myelogenous Leucemia treated with the X-Rays. CASE I. C. O., white male, aged 41, came to the clinic May 17, 1906. His family and previous history were without interest and apparently had no bearing on his present illness. For some ten years he had been in bad health, suffering from more or less pronounced dyspeptic symptoms, dyspnea, cardiac palpitation on slight exertion, occipital headache, cough with muco-purulent expectoration, night-sweats, cramping pain in

feet and legs, impaired vision, progressive weakness and emaciation. During the past two years he had observed a mass in the left half of the abdomen slowly increasing in size, and during this time his loss of weight and strength as well as his other symptoms had increased more rapidly. For some months he had been quite unable to work. When the patient presented himself he was pale, emaciated and evidently very weak. The temperature was normal, pulse 80, weight 134 lbs. The thorax showed signs of diffuse bronchitis, high diaphragm and compression of the lung. Over the base of the heart a soft, systolic murmur was audible. The abdomen contained a hard mass extending from the 8th rib in the left axillary line to the crest of the ilium, filling the entire left half of the abdomen and, at the level of the umbilicus, extending 5½ c.m. to the right of the median line. It was distinctly notched and moved slightly with respiration. The blood count showed 50 per cent hemoglobin, 2,048,000 red cells, 507,500 white cells. The detailed study of the blood showed a typical picture of myelogenous leucemia, there being 38 per cent of myelocytes. The sputum was muco-purulent and free from tubercle bacilli; the urine had a sp. gr. of 1018, contained a trace of albumen and few granular casts.

As the patient had already undergone a thorough course of medicinal treatment without avail, a series of X-ray exposures was at once begun. The splenic area was exposed to a moderately hard tube three to four times weekly for ten treatments. Then, owing to the appearance of a dermatitis, the sittings were interrupted for a few weeks and resumed when the dermatitis had disappeared. The X-ray treatment was in charge of Dr. H. P. Wells. The patient's improvement was rapid and steady. Five days after beginning treatment the red blood count had risen to 3,382,000 and the leucocyte count had dropped to 370,000, with 34 per cent. myelocytes. A week later the leucocyte count was 270,000, and on June 8, 154,000. Mean-

while the patient improved subjectively in every way and the bronchitis cleared up. On June 18, the patient had resumed his work as a driver, the hemoglobin was 55 per cent, the red count 3,750,000 and the white 57,850. On July 6 his weight had increased to 140 lbs., his hemoglobin was 75 per cent., with over 4,000,000 red cells and 71,900 leucocytes. His spleen had shrunken to one centimeter below the level of the umbilicus. Except for some desquamation and pigmentation, the skin over the spleen showed no ill effects from the treatment. In August he reported himself at work and feeling well. His weight was 144 lbs., hemoglobin 70 per cent, red cells 4,800,000, white cells 12,000, with 2.7 per cent myelocytes, the normal neutrophils having risen to 79.9 per cent. His spleen extended only to 5 c.m. above the level of the umbilicus. He continued to gain in weight and strength, the blood picture showing insignificant fluctuations and his spleen steadily shrinking. Thus in February, 1907, he was feeling and looking perfectly well, weighed 160 lbs., the spleen extended only 2 c.m. below the costal margin, while his blood showed 80 per cent hemoglobin, 4,770,000 red cells and 19,800 white cells, with 2.2 per cent myelocytes. In April he weighed 170 lbs., but no blood count was made at that time. Thereafter he continued to feel well subjectively, but lost ground objectively during the summer. When last seen, on July 2, 1907, his blood contained 52,300 white cells, with 12 per cent myelocytes, and his spleen had somewhat enlarged. Since then he has not returned to the clinic, but his physician reports him as feeling well and continuing to work.

CASE II. C. C., male negro, aged 19, entered the hospital March 25, 1907. His family and past history were without special significance, in particular, none of his relatives seem to have suffered from hemophilia. He believed himself to have been well until July, 1906, when, after

the extraction of a molar tooth, he bled profusely and nearly continuously for nine days. His prostration was extreme and it was three months before he was able to return to his work as a laborer. Two months later he went through what apparently was a severe attack of acute articular rheumatism, which has recurred at intervals ever since, and has incapacitated him for work. Some three weeks before entering the hospital he awoke one morning to find his penis in a state of extreme erection and very painful when handled. Perhaps as a result of manipulation, the priapism grew worse and a bloody urethral discharge appeared. Otherwise he continued to feel well in every way. When first seen he appeared rather emaciated, weighing 130 lbs., mucous membranes pale, with an intermittent fever ranging from 97.6° to 101°. His thorax was normal except for the results of a high diaphragm. The abdomen was somewhat distended, the spleen extending from the seventh rib in the anterior axillary line not quite to the level of the umbilicus. The liver was not palpable, and only a few bullet-like post-cervical lymph nodes were indurated. The penis was in a state of extreme erection, extending to the umbilicus when laid upon the abdomen. Its length was 16 c.m. and its greater circumference 11.5 c.m. It was very tender to manipulation, and at intervals a trickle of blood oozed from the meatus. A soft swelling in the perineum suggested the presence there of a pus collection. The blood count showed 580,000 white cells, distributed as follows:

Polymorphonuclear neutrophils	46.8 per cent.
Lymphocytes	1.6 per cent.
Large mononuclears	0.4 per cent.
Eosinophils	4.4 per cent.
Mast cells	6.0 per cent.
Myelocytes	37.6 per cent.
Normoblasts	many.

A course of X-ray treatment was at once inaugurated, and the patient was given calcium carbonate 4 grams by mouth every four hours. The urethal bleeding, the priapism and the perineal swelling promptly disappeared, so that the patient again felt practically well. The blood picture, however, underwent no change. In view of the known resistance of negroes to X-ray burns, excessive exposures were tried. The spleen as well as the long bones were exposed daily to a moderately hard tube at a distance of 10 c.m. for from 10 to 17 minutes. There were no ill effects of any kind, but the blood picture was not essentially influenced. After five weeks of this treatment, the X-rays were discontinued and arsenic given in various ways: Fowler's solution and sodium cacodylate by mouth, and atoxyl hypodermically and intravenously, all without avail. Finally, towards the end of May, the patient left for his home in southern Missouri, with a leucocyte count of 485,000 and 40 per cent. myelocytes, the spleen as large as ever, but feeling well subjectively. He continued to be up and about until August 12, when edema of the legs set in, rapidly extending upwards and soon ending fatally.

CASE III. J. W., white male, aged 38, was first seen on September 23, 1905. His family and past history were without significance. For six months he had been losing weight and strength, and had been complaining of pain beneath both scapulae. Of late there had been some digestive disturbance, and for a month, severe night-sweats. There had been no cough and no hemoptysis. For about three weeks the sexual appetite had been failing. The patient appeared pale and languid, with a temperature of 99.6, pulse 96, and weight 143 lbs., a loss of 31 lbs. in ten months. His physician had told him he had consumption, and had ordered him West. The physical examination, in a word, showed a suspicious right apex and a hard spleen extending just beyond the navel. There was

no lymphatic tumefaction. A blood-spread showed typical myelogenous leucemia, and he was told to return for further examination. He was not however, seen again until April 14, 1906. He had been holding his own subjectively, but his spleen had greatly enlarged, extending from the sixth rib in the mammillary line to Poupart's ligament, and from the right flank to a point 6 c.m. beyond the middle line. His blood contained 65 per cent. hemoglobin, 3,850,000 red cells and 350,000 leucocytes, distributed as follows:

Polymorphonuclear neutrophils	52.6 per cent.
Myelocytes	40.8 per cent.
Lymphocytes	2.7 per cent.
Large mononuclears	2.6 per cent.
Eosinophils	1.3 per cent.
Mast cells	none found.
Normoblasts	many.

The patient went to Eureka Springs, Arkansas, where Dr. C. F. Ellis gave him a course of X-ray exposures. During his two months' residence there he received 53 exposures of ten minutes each, over the splenic area. His spleen began to shrink after the fourth exposure, and the patient rapidly gained in weight and strength. No medication was used, except once for an intercurrent diarrhoea. When seen again in July he felt and looked well. His spleen extended barely to the umbilicus and his blood contained 88 per cent. hemoglobin and 14,800 leucocytes, with 12 per cent. myelocytes. He returned to his work as a foreman in a factory, and continued to improve under moderate doses of Fowler's solution. In August, 1906, he felt absolutely well, weighed 147 lbs., and the spleen was barely palpable under the costal margin. His red blood count was 5,940,000, hemoglobin 80 per cent., and leucocytes 9,480, with 1.4 per cent. myelocytes. Thereafter he continued to feel well,

and his weight increased to 157 lbs., but his leucocyte count and the splenic tumor increased. In December, 1906, with a leucocytosis of 44,600 and a spleen extending to the level of the umbilicus, he was again subjected to a course of X-ray treatments, this time however, without avail. In the course of ten weeks he received 36 exposures over the spleen and the long bones by a physician especially skilled in this work. When in March, 1907, the treatment was discontinued, he felt much weaker, though he weighed 156 lbs. His blood contained 142,000 leucocytes, with 21 per cent. myelocytes, and his spleen extended well below the level of the umbilicus. During the next three months he received Fowler's solution by the mouth and atoxyl hypodermically, but lost ground steadily. Towards the end of June, 1907, he had had to quit work and apparently had not long to live. His spleen again extended below the crest of the ilium, having a length of 32 c.m. and a width of 24 c.m. His blood contained 247,000 leucocytes, with 37 per cent. of myelocytes. As a last resort, the X-rays were again applied, but this time in excessive dosage. At first every day and later several times weekly, exposures were made to the region of the spleen, through a rubber sheet, with a hard tube at a distance of never over 10 c.m. and a duration of from 15 to 20 minutes. Occasionally, when a burn seemed impending, the treatment was discontinued for a week. To our surprise, the improvement was prompt and rapid. His weight rose from 130 to 150 lbs., his strength increased correspondingly. The spleen steadily diminished in size until it barely extended below the level of the umbilicus. The white blood count fluctuated somewhat, but after July never rose above 70,000, being 18,200 in August, with 10 per cent. myelocytes, and 22,000 in October. In December the treatment was discontinued, with a leucocyte count of 47,000, and in January, 1908, with his condition unchanged, the patient went to California.

This case presents a number of features of interest. The

duration of the case is unusual, the patient being subjectively well and able to work nearly three years after the onset of the leucemia. Moreover, the fact that, of the three courses of X-ray treatment to which the patient was subjected, the first and last should have resulted in rapid and marked improvement, whereas the second was entirely unable to arrest the patient's change for the worse, is not easily explicable. As stated above, this second course of treatment was administered by a physician unusually expert in X-ray work. Finally, the fact that during his third course of treatment, an X-ray dosage, usually considered as never permissible, not only proved innocuous, but definitely life-saving, should be noted.

Conjunctival and cutaneous tuberculin tests. Both Calmette's and von Pirquet's new tuberculin tests have been used in the clinic on such cases as seemed suitable, on the whole, with satisfactory results. The number of cases so tested does not suffice for statistical tabulation, but with two exceptions all known tuberculous cases responded to the test, while definitely non-tuberculous individuals did not respond. The two exceptions were a case of acute miliary tuberculosis and one of advanced tuberculous peritonitis, both conditions which usually fail to respond to any of the tuberculin tests. Both patients ran high temperatures, so that tuberculin injections were not given. As an example of the value of the tests, the following case may be cited:

A colored boy, apparently in perfect health, came to the clinic complaining of "blood-spitting." There had never been any cough or indeed any other evidence of ill-health. A careful examination of the thorax revealed no lesion, temperature and pulse were normal and the blood, hawked rather than coughed up, contained no tubercle bacilli. It was thought that the blood must have come from the upper respiratory tract, but

this was absolutely contradicted by the laryngologist. The cutaneous tuberculin test was distinctly positive, thus rendering probable the diagnosis of incipient phthisis. The patient was thereupon given instructions regarding proper hygiene.

The determination of the acidity of the gastric contents. During the past year and a half, two of the clinicians investigated one of the fundamental assumptions underlying the usual methods for determining the acidity of the gastric contents.* They found that owing to the lack of homogeneity of the gastric contents, the portion obtained for analysis could not be assumed to represent in acidity the total contents of the stomach. This was true both for solid and for the usual liquid test-meals. It follows that unless certain precautions, not usually observed, are used, the quantitative determination of the acidity of the gastric contents is a waste of time.

ALBERT E. TAUSSIG.

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* The Clinical Importance of the Uneven Distribution of Hydrochloric Acid in the Gastric Contents. Boston Medical and Surgical Journal, 1908, No. 3.

A CASE OF PERFORATING GASTRIC CANCER.

By S. B. Abaza and A. J. Barter,
Senior Students.

As illustrating one of the dangers that attend the use of the stomach tube, the following case may prove instructive.

Mrs. ———, age 37, was admitted to the Washington University Hospital October 15, 1907, complaining of pain in the abdomen. Her family history was good. Besides the usual diseases of childhood, she had had one attack of typhoid fever and several of malaria and had made good recovery from each. One year ago she had what was called an inflammation of the ovaries, being in bed three days.

Her present illness began about six weeks before she entered the hospital, with a feeling of malaise. Her appetite became poor and she vomited every day or so for two weeks. Since then her appetite has improved and she has been able to eat light foods, but she still complained of pain in the epigastrium following meals, and in the rectum upon defecation. Two weeks ago she became jaundiced and has remained so. She has lost 32 lbs. during her present illness.

Physical Examination. The patient is jaundiced and emaciated; she is lying in bed but seems alert. Temperature 98, pulse 82, respiration 20. The scalp is normal, the sclera yellowish, the pupils react to light and accommodation. The action of the lids is good. The tongue is clean, the mucous membrane pale and yellowish, the cervical glands are not indurated. The thorax and its contents seem normal. The abdomen is much distended with gas; the abdominal veins are not enlarged. The lower border of the liver is palpable about three fingers' breadth below the free margin of the ribs. The liver surface is smooth. There is tenderness just below

the right margin of the ribs, and a little to the inner side of the right mammillary line.

Liver dullness extends from the lower border of the fifth rib in the right mammillary line to three fingers' breadth below free margin of ribs. The splenic dullness can not be percussed.

There is movable dullness in the flanks. The radial arteries are slightly sclerotic. No glandular induration. By vaginal examination the uterus is freely movable without pain. A nodular mass is felt posterior to the uterus. In the rectal examination this nodular mass is found to lie between the rectum and uterus.

The urine is dark amber color, acid, sp. gr. 1018, no albumen, much bile, no sugar, no casts.

The blood was examined and found to be normal.

Subjectively, the patient was improving, and on the morning of October 22, was inquiring when she might leave for home. She was sitting up and moving about the hospital. Arrangements were made for her to take a test meal the following morning, with a view to extracting the stomach contents for examination. She ate dinner at twelve and went to the toilet. She had supper at five.

After supper she complained of severe pain in the epigastric region, and at 6:30 P. M. vomited a large amount of undigested food, and complained of feeling chilly. An hour later Dr. Taussig was called and found the patient complaining of severe pain in epigastrium extending toward the left side. Her skin was cold and clammy, her pupils dilated, an anxious expression on her face, her pulse weak, and with a temperature of 98, pulse 120, and respiration rapid.

A diagnosis of a gastric or intestinal perforation was made, but operation seemed inadvisable, because a provisional diagnosis of carcinoma had been made. The patient gradually grew weaker; respiration and pulse continued rapid.

At 6 A. M., October 23, she vomited a very small amount of yellow fluid. She said it was hot and bitter. Patient died at 8:30. An autopsy was performed about two hours after death.

The abdomen contained about one gallon of turbid brown-yellow fluid, the intestines and liver were covered with a creamy yellow substance easily removed with the sponge, the intestines were very much distended with gas and contained nodular masses throughout the peritoneum.

There was a chronic peritonitis with many adhesions. A hard nodular mass was found between the rectum and uterus involving the right ovary. This mass was cystic and contained hemorrhagic fluid. The uterus was normal. The stomach showed a perforation, about half the diameter of a lead pencil, in the fundus. An incision was made along the lesser curvature. In the fundus was found a disk of cicatricial tissue about the size of a half dollar.

The edges were indurated, and at one border the perforation could be seen. Metastases were found in the omentum and lymphatic glands. The liver was very much enlarged but contained no nodules. The gall bladder was distended and contained a thin, syrupy fluid. The cystic duct was closed by an enlarged lymph gland.

Microscopical examination showed a scirrhous carcinoma of the stomach with metastases in omentum, lymph nodes and right ovary.

If the patient had not had the perforation when she did, we doubtless would have caused a perforation upon introducing the stomach tube, an accident which in this case could not have been foreseen. Nothing in the patient's condition gave warning of impending perforation. The case illustrates the fact that the routine use of the stomach tube is occasionally attended by dangers that cannot be foreseen.

DISEASES OF THE CHEST.

Clinical Professor, LOUIS H. BEHRENS, M.D., Chief of Clinic.
WM. L. CLAPPER, M.D., Clinical Assistant.
SAMUEL HERSKOVITZ, M.D., Clinical Assistant.

The clinic for Diseases of the Chest was created by our recently deceased Professor Wm. C. Glasgow, in the days of the Post-Graduate School of Medicine, and has remained as a distinct clinic since then, although it has often been thought that there was not adequate reason for its separate existence. However, each year witnesses a growth in its importance and need for the special work assigned to it; it is now recognized as a valuable and interesting department of Internal Medicine.

During 1906 and 1907 over 1,200 cases were received and seen each year, many of the most instructive, both male and female, were used for class work, such instruction being given to sections of the senior class, the number of students in each section being limited to a few in order to enable each student to individually examine the patients. In cases of extreme rarity and interest, the patient is brought before the section several times and new manifestations or changes observed. The beginning of the hours is devoted to quizzes on the cases seen at the previous hour and familiar points or what should be remembered, are dilated upon.

The junior class also receives one hour each week. The class is rather unwieldy because of its size and very few students at one time are able to personally examine patients; therefore cases are used more to divert the attention of the class from a strictly didactic lecture and just enough are exhibited to insure attention. Bringing the very weak or very sick chest case before a large class of pupils is a mistake, it excites the patient, many of the most interesting cases never return, much valuable material is thereby lost and the student receives instruction in a careless, haphazard way. It seems therefore in this department that few students to a section makes the work more interesting and instructive

through closer contact; the ambulatory case is to the student what the office patient is to the physician.

Unfortunately, the chest clinic is almost solely ambulatory, it is not often that a case can be gotten into the hospital, ours is a clinic without funds, its patients are the poorest and it is to be hoped that the day is not far distant when all such worthy and instructive cases may be sent to free beds to be used clinically. In many instances valuable post-mortem material could thus be obtained. Of course some cases are sent to the hospital, and the expenses are borne by the clinicians, which is often a hardship. In some instances relatives and friends of the patient aid in defraying such expenses.

During the past several years, this clinic has seen much of phthisis pulmonalis in its varying phases and surroundings, and today has the distinction of reporting more cases to the Health Department than any other clinic except the Special Clinic for Tuberculosis of the Health Department itself. The visiting nurses of the St. Louis Society for the Cure and Prevention of Tuberculosis aid in the home instruction, and lately one of the assistants of the chest clinic visits those who are unable to report regularly at the clinic. This is expected to become a valuable aid in keeping up clinical material.

During 1907, five cases of aneurism of the arch of the aorta presented themselves for treatment, all were well advanced and a fatal termination was imminent in each. In but one was it possible to demonstrate the condition post-mortem. The others went to the City's institutions or died at home, it being impossible to demonstrate but a few phases of the cases to the students. For all interesting cases of the chest, provision should be made for their free maintenance in the hospital.

The chest clinic still adheres to the one plain rule of Dr. Wm. C. Glasgow, that it is for the worthy poor alone that the clinic is open, all cases must be willing to appear before classes when asked, and refusal to do so means discharge at once.

LOUIS H. BEHRENS.

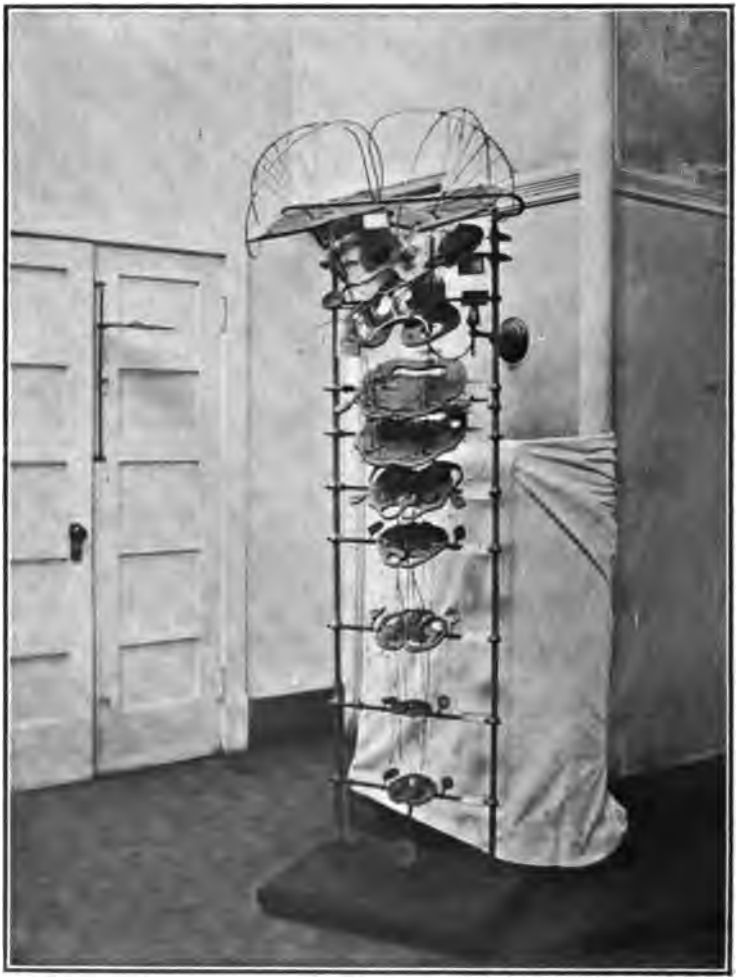
DEPARTMENT OF NEUROLOGY.

Clinical Professor GIVEN CAMPBELL, Chief of Clinic.
W. L. NELSON, M.D., Clinical Assistant.
PHIL. B. NEWCOMB, M.D., Clinical Assistant.

Plan of Instruction.

In teaching neurology to junior and senior medical students, this department has largely in view two ends, and recognizes one principal limitation. Both the ends and the limitation depend on the fact that these lectures are delivered to medical students and not to full-fledged neurologists, to men whose curriculum, already over-crowded, is too often burdened with a mass of technical detail in the specialties which cannot be sufficiently mastered to be of practical use. A sufficiency of such special work, chiefly of the more difficult operative kind, should be shown to impress on the student that such relief is open to his future patient, but the bulk of the students' time should be devoted to teaching such things as he himself will be able to use when he begins to practice medicine. In these courses it is not attempted to make neurologists of medical students, but to teach medical students neurology.

The ends then, are first to give the student as thoroughly as possible the underlying principles governing the action of the nervous system. A proper, comprehensive understanding of these principles will explain the physical signs peculiar to nervous diseases, and in which the student is thoroughly drilled, both as to the means of eliciting them and also as to the deductions to be drawn therefrom. It will be impressed on the student that the nervous system has a set of physical signs all its own; that these signs are just as definite and objective as



DR. CLARK'S MODEL.

are those having to do with diseases of the heart or lungs. To thoroughly comprehend the above, minute anatomy of the nervous system is briefly considered, and, where possible, structural arrangement is used as an aid to explain function. In a tissue where internal complexity is so largely the basis of functional activity, a clear idea of the interrelation of the cells and their processes, the nerve fibres, is considered very important, and to more clearly elucidate this relationship, reference is often made to the model devised by Dr. Clark, a photograph of which is here shown, in which the cell processes composing the nerve tracts are represented by bundles of different colored cords.

The second end kept constantly in view is to make the course practical. While rare diseases are frequently shown, the time is chiefly occupied in considering the more common ailments, and especial attention is directed to the diagnosis of conditions in which a failure on the part of the physician to promptly recognize the condition means much injury to the patient. Treatment is considered in all the detail possible, and the idea is discouraged that neurology is a specialty abounding in interesting cases but devoid of much therapeutic help to the patient.

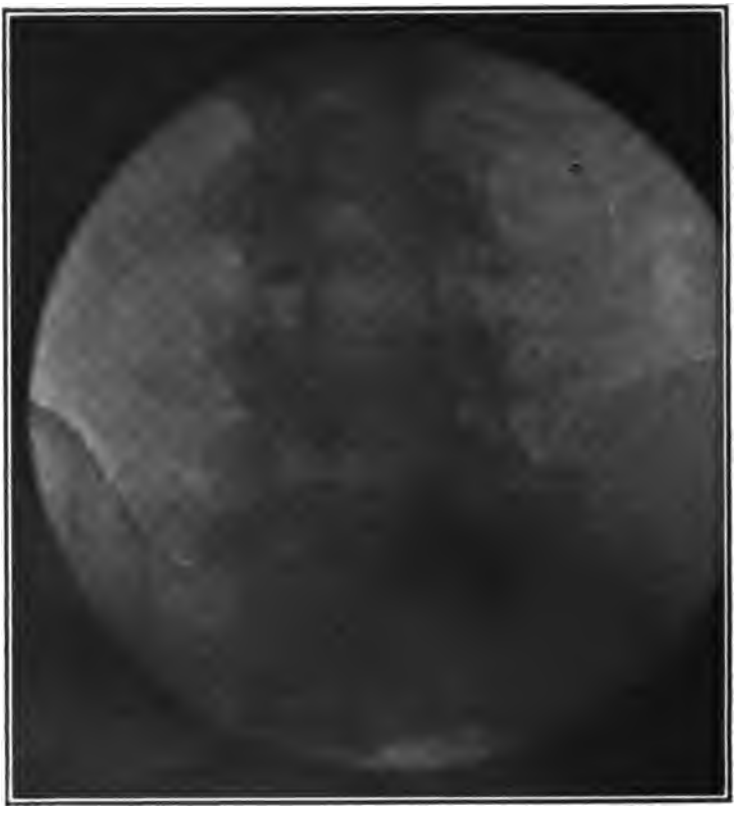
As illustrative of the material from which the teaching is done, a few of the cases which have been seen in the clinic during the past semester are appended.

CASE I. *Juvenile Paresis.* Willie N., age 16, American. Family history of excessive alcoholism in mother's father, mother's uncle insane, otherwise no history of neurotic, tubercular nor carcinomatous heredity. Can get no direct history of syphilis in the family, although patient and his sister show suspicious teeth and the girl had kerotitis. Patient was well

except for occasional migraine up to age of 14 years and 6 months, except that he was of a very sensitive temperament. He learned readily at school and was well behaved. In the Spring of 1906 he began to appear childish, did foolish things; but was sensitive to correction, however. Cried readily. During the last few months however, he does not seem to appreciate the gravity of his acts. Four years ago he began to use tobacco excessively, and has done so ever since, smoking six or eight strong cigars a day, and lately, after such excess, his nervous symptoms seem exaggerated. Never sexually precocious. Venereal intercourse once six months ago. Masturbation past eight months. January 8, 1908, had some kind of attack in which he fell and hurt head slightly, and after that became very pale and vomited.

Present condition. Physical examination reveals Argyle Robertson pupils, bat wing analgesia of face, marked ataxic tremor of tongue, face and hands. Knee-jerks rather lively. Rt. Babinski reflex, slight static ataxia, syllable stumbling and characteristic handwriting defect usual to paresis. Patient is distinctly demented and expansive. Feeling of *bein être* marked. When crossed is irritable and sometimes violent. Patient has enlarged post-cervical, post-mastoid and epitrochlear glands, but nothing further to suggest an active luetic process. On full doses of mercury he seems to have improved to some extent.

CASE II. *Paranoia, Hypochondriacal Type, with self-mutilation.* Chas. C. (colored), age 50. One uncle a dipsomaniac, one died insane. For past three years has had gradually amplifying delusions of the influence by spiritualists over his health. Claims he is so full of magnetism that incandescent electric bulbs pop when he has them in his pocket. Lights burn up and down when he is near. Feels waves of influence which cause him to stagger. Emotional tone unaffected, memory good, self-appreciation marked, orientation perfect,



FRACTURE OF SPINE IN CASE III.

misinterprets real sensory impressions, and has built up an elaborate scheme of delusions which are fairly well systematized. Has often worn iron weights on head and rubber insoles in shoes to insulate himself from the electricity with which his enemies were persecuting him. Feared his virility was being destroyed by magnetism acting on his penis, and to shield this organ from such influences slipped an iron ring and a heavy iron washer over male organ with the result shown in photo.* Rings were removed and penis again became normal.

CASE III. *Spinal Fracture. Marked recovery without operation.* Mr. W. S., November, 1907, while working as a coal miner had some slate fall on him. He was unconscious for 15 or 20 minutes, but on recovery discovered that he was anesthetic in feet and inner aspect of thighs. Outer aspect of thighs had normal sensation. Bladder and rectum paralyzed, and he was unable to walk, but could flex thigh on pelvis. He was seen at the Washington University Hospital late in December, when there was still much atony of bladder and rectum, with saddle cloth anesthesia of inner aspect of thighs high up, and much disability in such muscles as were supplied by the sacral segments of the cord.

An X-ray photograph of spine was made showing fracture, but as the patient had already greatly improved, it was decided to give him iodide of sodium and refrain from any operative interference as long as his improvement continued to progress satisfactorily. The result justified the decision, as he has greatly improved, and after several weeks was sent home with an almost completely competent bladder, and with the ability to walk with very little inconvenience. The X-ray photograph is shown.

GIVEN CAMPBELL.

* Because of a recent advice from postal authorities, concerning medical, scientific or other journals which are sent through the mails unsealed, this picture was specifically forbidden publication in this Bulletin.

DEPARTMENT OF GYNECOLOGY.

Professor H. S. CROSSEN.
FRED. J. TAUSSIG, M.D., Senior Assistant.
HERMAN HANSER, M.D., Senior Assistant.
C. O. C. MAX, M.D., Clinical Assistant.
W. L. CLAPPER, M.D., Clinical Assistant.
C. G. WRIGHT, M.D., Clinical Assistant.
G. O. GAUEN, M.D., Clinical Assistant.

Clinical Teaching in Gynecology.

The old-fashioned clinic where the extent of the student's activity was to sit back and get a long-range view of the instructor making an examination or giving a treatment, is a thing of the past in gynecologic teaching. In this department of medicine, as in every other, the methods and effectiveness of clinical instruction have been advancing rapidly. Now, each senior student is required to make a practical application of the knowledge he has gained, from lecture and from reading, by personally examining gynecologic patients and making the diagnosis and suggesting treatment.

In gynecologic teaching by this method however, some special hindrances are encountered and must be reckoned with. The two principal hindrances are (a) the natural objection of the patients to any general examining or exhibition, such as constitutes a valuable part of the teaching in general medical and surgical cases, and (b) the deep situation of the lesions in most of the serious diseases, for which reason their characteristics can be apprehended only by palpation and they can be palpated only by the finger-tips.

The way in which these difficulties have been overcome may

perhaps be best shown by a brief statement of the work of the student with the patients. This work is divided into two parts —the section work and the student interneship.

In the Section Work, one-fourth of the senior class comes for half a semester on stated days each week. At the Sections' first visit, the members are instructed briefly as to how to direct their study at home so as to get the most benefit from the clinic work, and then examination work is begun on a phantom pelvis (with the natural organs in normal position). The students' study at home should cover three points. First, he should study the gross anatomy and relations of the pelvic organs, so that he will have a clear idea as to where the various structures lie in the pelvis. Second, he should study the examination methods, so as to know how to proceed with the examination systematically and what to feel for in each step of the examination. Third, he should study the diagnostic signs and the treatment of the more common gynecologic diseases met with in the clinic from time to time. Such study at home, even though of limited extent, increases greatly the benefit the student derives from the clinic work. The phantom work is to train the examining fingers to appreciate the size, shape, consistency, mobility, etc., of structures caught between them. The normal uterus is carefully outlined, and then the cover of the pelvis is removed and the student is permitted to compare the object itself with his mental picture of it formed in palpation. Also, if time permits, the uterus is placed in retrodisplacement and further examination made, comparing the signs felt in this condition with those felt when the uterus was in normal position.

In the actual section work with the patients, most of the time is given to examination and diagnosis, for that is the foundation, upon which must be built any intelligent gynecologic work the physician may do. The history of the case is first read, then the patient is examined by two members of the section under the

direction of the instructor. Then the patient is removed, and the examiners are questioned closely as to their findings. Then they and the other members of the section are questioned as to the significance of the various signs found and as to the probable diagnosis. When the diagnosis is determined, then the treatment is considered. When each student has examined once, he is then required to make his diagnosis without much help and to sustain that diagnosis under criticism and to outline the treatment he would give the patient if she were consulting him in his own office. This makes the work practical and interesting and also causes the men to think for themselves, which after all is the main object of teaching.

The Student-Interneship gives each senior student a chance to work for a week in the clinic, as an assistant to the instructor —helping in the routine work of history-taking, diagnosis, treatment, care of instruments, preparation of materials, etc. I have divided the gynecologic clinic work at the Washington University Hospital into two equal departments, with a clinical instructor at the head of each. Each clinical instructor has his own history-room, his examination room, his clinical assistant and his student-interne. This gives accommodation for two student-internes at the same time. Each one works under the immediate direction of a clincial instructor, who is held responsible for the care of each patient coming into his department.

The plan of student-internes, which I inaugurated about three years ago, seemed at first rather risky for a gynecologic clinic and some of my friends predicted that it would not work because it would frighten the patients away. However, it has worked admirably. There has been no appreciable influence on the number of patients, and it has been of great benefit to the senior students—putting them in touch with the practical points which they need at once after graduation.

H. S. CROSSEN.

A CASE OF VESICO-CERVICO-VAGINAL FISTULA.

The difficulties that arise in the operative treatment of certain forms of urinary fistulae are well illustrated by the following case, in which the anterior lip of the cervix sloughed away after a difficult confinement, resulting in a vesico-cervico-vaginal fistula.

Following is the history of the patient:

Mrs. B——, 23 years of age, came to the Washington University Polyclinic September 3, 1907, with the complaint that since a childbirth on December 10, 1906, there had been a constant dribbling of urine. The confinement was the first one she had had. The labor was prolonged and the child died during the progress, so that a craniotomy finally proved necessary. A few days after delivery urine began to dribble from the vagina. A perineal tear extending into the rectum was sewed up after delivery, with good result. The patient was catheterized for two weeks after her confinement, but the fistula showed no tendency to close, and after the patient got up out of bed four weeks postpartum, all the urine passed out through the fistulous tract. She said that her physician had told her the fistula was caused by a slough. Within the next few months the urinary dribbling had caused superficial excoriations along the insides of both thighs, and external genitalia. Subsequent to the confinement her general condition was much run down so that she only weighed 62 pounds, but since that time there had again been a slight improvement.

Present condition. Rather pale and slender. Appetite moderate. No gastric disturbances. Bowels costive. Constant dribbling of urine. Burning and itching about the external genitals. Has no pain, but is rather despondent over her condition.

Physical examination. Abdominal examination negative.

Perineal body fairly strong but pelvic floor still relaxed as a result of old lacerations. About the external genitals and inner sides of the thighs are numerous superficial excoriations. The skin is markedly reddened and swollen slightly in these regions. On vaginal examination the cervix can be felt as a hard, fixed body lying anterior to its normal position. The external orifice can not be felt. The uterine body lies posterior and is adherent to the rectal peritoneum. The tubes and ovaries are not appreciably enlarged. The anterior vaginal wall and parametria contain a great deal of scar tissue binding the uterus latterly to the pelvic wall and anteriorly to the bladder. On specular examination it can be seen that the entire anterior lip of the cervix had sloughed away and that at this site a vesical fistula had arisen approximately one and a half c.m. in diameter. The opening into the cervical canal and the fistulous opening are but half a c.m. apart.

The patient entered the hospital the following day, and on September 7, a repair of the fistula was undertaken. The operation selected was the one described for this class of fistulae in Kelly and Noble's Gynecology and Abdominal Surgery. With the patient in the elevated Sim's position, the posterior lip of the cervix was caught with a vulscellum, and the scar tissue lying between the bladder and the cervix was then bisected laterally, so as to free the upper edge of the fistula from its attachment to the cervix. The next step was the denudation of the fistulous tract itself, including the excision of all scar tissue within this area. A catgut purse string suture was then taken through the vesical muscular coat surrounding the fistula, thereby approximating its edges. Five retention-sutures of silk worm gut, including both the vagina and bladder, were then inserted. A retention catheter was put in place.

For the first five days there was no leakage, but after that time a slight infection of the bladder having arisen, some portion of the urine passed through the fistula. On the 7th day

the catheter was removed, and on the 10th day the silk worm gut sutures were taken out. At this time it was observed that the entire fistula with the exception of a small opening one or two mm., in size, had closed. After two or three applications of silver nitrate for the stimulation of granulation tissue the remaining opening was occluded, and the patient enabled for the first time to void urine by the urethra.

As the patient left the city within three weeks after the operation, I did not get an opportunity to re-examine her after that time. From her sister however, I learned that the fistula remained permanently healed, and that the patient was enjoying the best of health.

In conclusion, I can only say that the accurate approximation necessary for the cure of these vesico-cervico-vaginal fistulae in conjunction with the scar-tissue fixation of their edges, and the deep position of the fistula in the vagina, make this operation one of the most difficult in Gynecology.

FRED J. TAUSSIG.

DEPARTMENT OF OBSTETRICS.

Professor HENRY SCHWARTZ.
R. H. FUHRMANN, M.D., Chief of Clinic.
A. G. SCHLOSSSTEIN, M.D., Associate Chief of Clinic.
G. D. ROYSTON, M.D., Physician in charge of Maternity.
WILLIAM KIRWIN, M.D., Physician in charge of Out-Clinic.

Method of Teaching.

Our method of teaching obstetrics may be of interest to many of our alumni, especially since the clinical material has grown to such large proportions.

With the didactic lectures profusely illustrated, and with ample opportunity for the student to witness many obstetrical cases, he can feel, upon the completion of his course, that he can creditably perform the duties that he may be called upon to assume.

Since the course covers two scholastic years, or four semesters, let us see what the student accomplishes in each particular one.

His first period of the third or junior year is devoted to a review of the work in embryology, and in addition, the anatomy, histology and physiology of the female pelvic organs. After this, the woman in the pregnant condition is thoroughly considered, first discussing pregnancy, and the changes incident to it in the maternal organism, and lastly her management throughout the various periods of gestation. Thus the lectures, with the aid of microscopical, macroscopical and lantern-slide illustrations projected by means of our epidiascope, serve to convey much information to the student.

During the second period of his junior year, the subject of

labor is taken up, its management, and discourses are now added on the first care of the new-born.

In his senior year, the work is more varied and is much more extensive. Here the student receives, in addition to the didactic lectures, individual instruction on the manikin, obstetrical conference work and quizzes, together with continued practical work in obstetrics. During the first semester of his senior year, he receives classroom lectures and demonstrations of the different obstetrical operations, while during the fourth period the pathological conditions of pregnancy and of the puerperium are discussed.

That the special work may be carried on satisfactorily, the class is divided into four sections, each section receiving manikin work for two hours each week, for eight weeks. In this time the student learns how to apply the forceps to the head in its different positions, delivers breech and footling presentations and performs embryotomy on the stillborn. During the same period of time, each section attends what are known as obstetrical conferences, where the cases which have been cared for by the different members present are discussed. Such cases have been attended either in connection with the out-clinic or the maternity departments. The senior class, in a body, attend what are known as obstetrical quizzes, given once a week, beginning several months before the close of the school, for the purpose of better preparing them for their coming examinations. These quizzes are, however, optional.

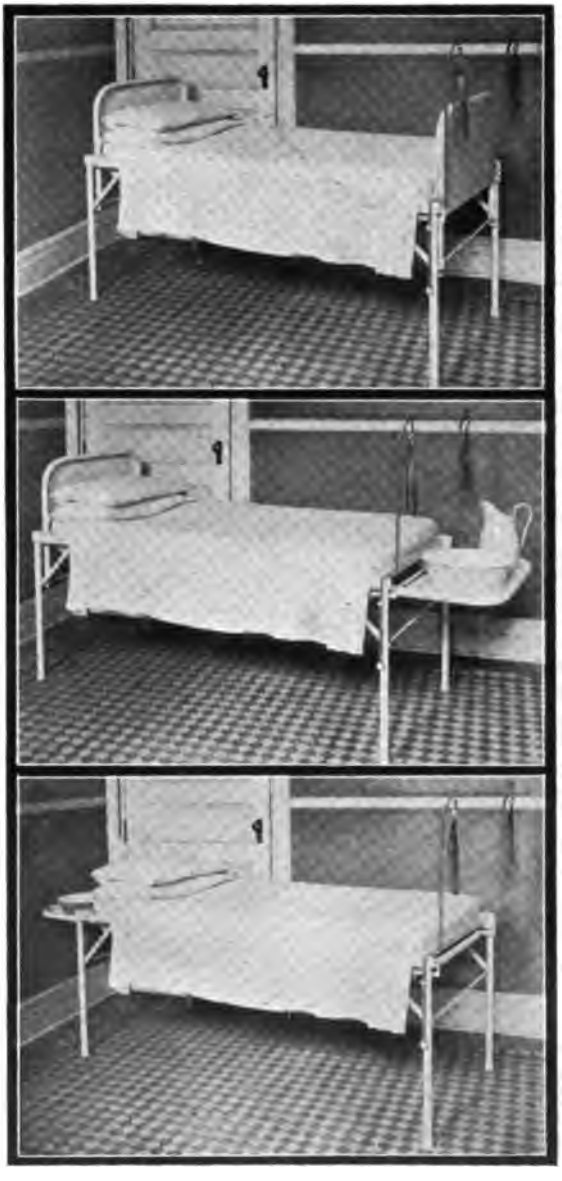
Until this year it was customary to start the juniors upon their practical work after the seniors had been graduated, but now each senior has been in attendance upon the requisite number of cases, that is, six, before the close of his senior year. Consequently this enables us to press the juniors into service much before the allotted time, and to accomplish so much more with them through their senior year. For those juniors who have done satisfactory work and are eligible to

the succeeding senior class, work in the out-clinic and at the maternity is open to them during the summer vacation period. Furthermore the student, by taking advantage of this is credited with the cases, and spared much time during his senior year.

A most commendable move and a worthy addition to our department, which was recently instituted, is that of visiting nurses. Members of our training school for nurses accompany the resident physicians on obstetrical cases, attend the patient during labor, and attend to the needs of the new-born for the first ten days of the puerperium. (In this connection, our department feels deeply indebted to the St. Louis Provident Association for the noble way in which it has cared for many of our cases.)

Before closing, it may be well to say just a few words and to present illustrations of the bed which we had constructed recently, and is now in use at our maternity. It is built so that it can be readily altered to meet the demands of either the patient or those of the obstetrician. The bed embraces a solid head and foot-piece, both of which are movable. The head-piece when lowered, may be used as an anesthetic stand, while the foot-piece can be utilized for different purposes—in the second stage as a support to the woman's legs when in the act of bearing down, and as a reception table for the child after its expulsion, and later, if reparation of a lacerated perineum becomes necessary, it may be pushed beneath the bed, leaving a free field for the operator.

R. H. FUHRMANN.



COMBINATION MATERNITY BED.

REPORT FROM MATERNITY AT HOSPITAL FOR THE FISCAL YEAR 1907–1908.

White Women	69	Breech	2
Colored Women	26	Boys	45
Primipara	68	Girls	44
Multipara	27	Students Attending	120
Normal	69	Total Cases	95
Instrumental	17	Youngest Primipara	14
Miscarriages	6	Oldest Primipara	43
Lacerations	9[3], 1[1]	Pathological Labors	[1] Puerperal Eclampsia [3] Partial Placenta Praevia
Vertex	87		

REPORT FROM OUT-CLINIC FOR THE FISCAL YEAR 1907–1908.

Month	Married	Single	Primipara	Multipara	White Women	Colored Women	Total Cases	Students Attending	Nativity	Normal	Instrumental	Vertex	Breech	Twins	Boys	Girls	Miscarriages*	Lacerations	Pathological Labors	Born before Physician Arrived
June	18	3	10	11	5	16	21	28	Americans, 290	18	0	12	2	2 Pr	11	8	3	3[1] 2[1]	Version Prolapse of Funis	5
July	22	1	7	16	4	19	23	33	Irish, 1	18	1	18	1	1 Pr	12	9	3	1[2]	Craniotomy	1
Aug	17	4	7	14	3	18	21	34	Germans, 5	16	4	17	1	....	11	8	4	3[1]	Prolapse of Funis	1
Sept	21	3	7	17	7	17	24	39	Roumanian, 1	17	4	17	....	....	10	9	4	4[1]	.....	1
Oct	20	6	6	20	12	14	26	41	Hungarian, 2	19	....	19	....	....	14	6	5	3[1]	Rupture of Uterus	1
Nov	16	2	4	14	8	10	18	31	Russian, 9	16	1	14	....	....	9	8	1	2[1]	.....	2
Dec	25	8	7	26	9	24	33	62	Saxon, 1	18	....	18	2	....	17	12	4	2[1]	.....	9
Jan	27	1	6	22	12	16	28	51	Swede, 1	22	3	22	3	1 Pr	19	9	5	4[1]	Version	1
Feb	28	4	7	25	12	20	32	57	Canadian, 1	19	3	21	2	1 Pr	16	10	3	4[1]	.....	3
Mar	25	1	9	17	5	21	26	48	.....	21	3	21	....	....	7	17	2	5[1]	.....	3
Apr	26	6	6	26	5	27	32	58	.....	20	....	22	....	....	11	15	5	5[1]	.....	3
May	23	4	12	15	8	19	27	35	.....	21	4	21	....	....	12	10	4	2[1] 1[2]	.....	2
Total	268	43	88	223	90	221	311	517		225	22	222	11	5 Pr	149	121	43	38[1] 3[2]	5	32

* Cases noted "miscarriages" include abortions, macerated and still-born foeti, in the various months of pregnancy.

DEPARTMENT OF PEDIATRICS.

Professor E. W. SAUNDERS.
Clinical Professor JOHN ZAHORSKY, Chief of Clinic.
M. J. LIPPE, M.D., Clinical Assistant and Instructor in Pediatrics.
A. S. BLEYER, M. D., Clinical Assistant.

Teaching the American Method of Infant Feeding.

Experience has conclusively shown that the average physician does not become sufficiently familiar with the principles of percentage feeding, the American method, to apply it successfully in practice. While the mathematical rules are simple, the combinations possible are almost infinite in number, and to utilize even a small series of variations in the percentages of the different milk ingredients requires considerable practice. The student also can not obtain the proper grasp of the subject from a few lectures. To memorize the few rules given in the text-books is not a difficult matter, but to apply these rules in individual cases at the bed-side requires skill. It is no wonder therefore, that many students after graduation prefer to use a few dilutions of "top-milk" as their entire dietetic armamentarium and do not bother themselves about the percentages. It is much easier to give a young infant top milk highly diluted and gradually increase the strength of the food than to worry about the exact composition.

In order to teach the student to think in percentages the subject must be drilled into him by repetition and by excluding the older methods of thinking.

In accordance with this principle, I have arranged a course on infant feeding during the sixth semester. The students are

taught by rule and repeated example how to prepare a milk mixture of any desired composition. Several hours are devoted to writing directions for preparing any food whose different ingredients are expressed in percentages. Before feeding any baby the student must learn accurately how to prepare any required mixture that may be needed.

Having learned the technic of preparing milk mixtures, the student begins the application to the individual case. At first hypothetical cases are given. The adjustment of the alimentation to the age of the infant as to quantity and quality must be learned, and can be done easily by assuming the presence of patients at various ages.

The greatest difficulty however, is adjusting the food to the requirements and digestive powers of the actual patient. Here the clinical material is utilized to its fullest extent.

I have also found it needful to teach the student how to calculate the calories present in their food-mixtures and thereby, supplement the method of percentage feeding, which takes only partial cognizance of the total quantity of food constituents. Whenever a food of a certain composition is prescribed and the daily quantity determined, it is usually very helpful to calculate the contained number of heat units; then, by knowing the actual requirements of the infant, the sufficiency of the alimentation is readily detected. Heubner's rule that the young infant should have about 100 calories to each kilo of weight still remains the standard, in spite of some opposition in certain quarters.

The age of the infant as a basis for quantity in infant feeding has obvious defects. The size of the infant must also be considered; hence, the utilization of the weight as a standard in estimating the daily amount is much more rational.

The use of the percentage method of feeding, and the calculation of the calories, (the determination of the energy-quotient) makes the modern method of infant feeding very complex,

and yet the learned physician should be able to wade through these intricacies without difficulty. Therefore, the student should be drilled thoroughly in the mathematical features of the subject, and this is the main object of the course in this semester.

JOHN ZAHORSKY.

Clinical Notes.

1. At the suggestion of Dr. Lippe, we have been using the oil of sandalwood internally in certain cases of *incontinence of urine* in which there is evidence of catarrhal inflammation of the bladder as shown by urinary examination. The treatment is often strikingly successful, and we intend to make some further experiments with this drug. The increased interest which has lately been shown in the urinary infections of children should stimulate research in finding reliable and harmless urinary antiseptics.

2. A recent case of *aortic regurgitation* in a little girl (8 years old) was rather puzzling to us for a time, in that the diastolic murmur was heard loudest along the left side of the sternum, especially in the place which is usually known as the pulmonary area. As a matter of fact the diastolic murmur of aortic regurgitation is often heard best to the left of the sternum in children and less distinctly on the right side in the aortic area.

3. We have had several cases of *nasal diphtheria* in the last few months. It is really surprising how often the disease is overlooked. The slow evolution of the disease is well known. In one case (R. D., age 8 years) a pseudomembranous rhinitis

persisted for one month after the throat cleaned up. Marked paralysis of the palate and some weakness of the legs had developed. This patient was not treated during the early attack, the mother having regarded it as a simple sore throat.

4. Considerable confusion still exists in regard to the different forms of *stomatitis*. In the case of A. S., who became suddenly ill with fever and sore mouth, inspection revealed numerous white patches on the tongue and gums. Clinically, the disease very much resembled ulcerative stomatitis, but the fetor was absent. The internal and local use of potassium chlorate resulted in prompt improvement. Microscopical examination did not show the fusiform bacillus or the spirillus. Evidently this was a case of so-called aphthous stomatitis, yet in its clinical features resembled ulcerative stomatitis. The aphthous form of inflammation is often mistaken for the herpetic form, but the former invariably involves the anterior part of the mouth, while the latter has its seat by preference in the posterior part.

5. Too little attention is given the subject of *urinary infection* in infants by practitioners. The rule that in every case of an obscure febrile condition the urine should be examined for the possible presence of pus has not received its much merited recognition. Many cases are treated for malaria, fortunately quinine seems to have a favorable effect on the disease in some cases. We have had quite a number of cases in the clinic during the last year. Some are forms of bacteriuria with little evidence that the mucous membrane lining the urinary tract is implicated; in other cases the presence of numerous vesical cells and pus corpuscles suggests some ulceration of the mucous membrane. Under the microscope a motile bacillus is usually found (colon bacillus?); in one case numerous chains of streptococci were found to be present in the urinary sediment.

6. The treatment of *urinary infections* is far from satisfactory. The administration of hexamethylenamine internally markedly diminishes the number of bacteria in the urine, but has little effect on an ulcerative process in the bladder or pelvis of the kidney. In fact, too large doses of this drug cause irritation of the urinary tract and consequent hematuria. In severe cases we usually prescribe the alkaline citrates, acetates or sodium benzoate. Time is the principal element in the cure in all severe urinary infections.

7. We are always alert to the possible development of *hereditary syphilis* in young infants showing ill-defined symptoms of malnutrition or general infection, and yet in the case of C. J. (aged 6 weeks, colored) we were thrown off our guard. He was brought to the clinic with an inflamed knee joint. A few days later, one hip joint became very tender and the rectal temperature was nearly 101 degrees. The diagnosis of acute rheumatism was made and sodium salicylate prescribed. A few days later some brownish spots that appeared on the legs, first gave us a clew to the possible presence of syphilis. He was immediately placed on gray powder, one-fourth grain three times a day.

JOHN ZAHORSKY.

8. *Acute cerebral lues* is an uncommon process; most usually a brain involvement is evidenced by persistent symptoms of somewhat stable character.

The termination of case referred to in note 7 is therefore of interest: After the true nature of the affection had been discovered in this case, the parents discontinued attendance, and nothing further was heard from the child until six weeks later when the mother appeared, to announce that the baby had suddenly become paralyzed during the night.

Examination revealed stupor, with great hyperesthesia and fixed pupils. Instead of paralysis, there was present a moderate spasticity of all the skeletal muscles, which could be overcome by manipulation, and disappeared in sleep, to return on the slightest excitation. Besides this, it was noted that the most trifling irritation, a finger touch, a sound or a ray of light, would induce rhythmical movements of both arms and both legs that would continue for a moment or two and gradually subside. These movements consisted of fairly complete arm and thigh flexions and extensions, working at first vigorously, and, after a dozen or a score of excursions, gradually subsiding. During the three days during which the child lived after this onset, the spasticity steadily increased and finally disappeared entirely. Unfortunately, autopsy was not obtained in this interesting case. It was found upon inquiry that the child had received practically none of the antiluetic medication prescribed for it six weeks before.

9. The significance of the urinary findings in cases of *pyelitis* can not be overestimated; they are absolutely essential to diagnosis, although the clinical history of a typical and moderately severe case, lasting over a period of ten days or more, will frequently give a close insight into the nature of the trouble. Routine urinary examinations at the clinic have revealed many cases of this disease that would otherwise have entirely escaped our notice. There are several points therefore in the significance of certain symptoms, in the course and termination of the disease, that demand elucidation.

For example, the significance of tailed cells remains unsettled. A case seen yesterday gives light on this point. The patient, Lorenzo R., a negro male child of twenty-two months, died of miliary tuberculosis. During the six weeks of attendance at the clinic, he had exhibited a bronchopneumonia and the usual findings of a cystopyelitis. At autopsy both kidneys were

found to be somewhat larger than normal. A swab from the mucous membrane of ureter showed a predominence of tailed and small round cells. A smear of seropurulent discharge found in pelvis of kidney showed a still greater predominence of small tailed cells and an admixture of various other forms.

There had not been any intense infection in this case, and the tailed cells were of a small variety. From this instructive finding it is reasonable to conclude that, although tailed and spindle and other shaped cells will occur in bladder infections that are severe enough to involve the deeper layers, that their existence where but a mild degree of inflammation obtains forces one to look to the pelvis of the kidney for the seat of the trouble.

The very erratic *course* observed in this disease inclines one to suspect that we are on the threshhold of dividing it into a number of clinical entities, to think that perhaps we have here a number of clinical entities that we refer to under a generic term "cystopyelitis" that must yet be dissected apart. The persistence of many epithelial cells of various shapes, many leucocytes and some bacteria, usually of the colon group, does not explain the periods of freedom from fever, the sudden and unlooked-for recurrences of high fever and the sudden disappearance again of all symptoms. The exact clinical course of pyelitis remains unknown.

The *termination* of the disease is another obscure question. It may occur within a few days of the onset of symptoms and be final; again it may be extremely protracted, a few recurrences may be noted during the course of a year. Most cases yield quickly to urinary antisepsis; again the simple exhibition of large quantities of water may effect a cure; but cases are seen in which neither agent seemingly has any effect in concluding the process. As Dr. Zahorsky has pointed out in note 6 (above), time seems to remain, at present, our chief therapeutic resource in cases of pyelitis.

10. It is unusual for the laryngeal involvement that precedes the rash in *measles* to cause alarming symptoms. A harsh, barking cough, with perhaps a slight dyspnea, is not infrequently present very early as well as late in the disease.

A rapidly increasing stridor, accompanied by a ringing, brassy cough, with marked dyspnea, was observed in the case of Willie B., a robust boy of five years, who was brought to the clinic on July 25, last.

The dyspnea had commenced after arising in the morning, and had increased so rapidly that at eleven o'clock, when he was brought to us, considerable effort was necessary for him to breathe at all. The child's face gave evidence of great distress and psychic depression, the wheezing stridor, both inspiratory and expiratory, could be heard at a considerable distance from him.

Throat examination revealed nothing besides a slight erythemia. Diphtheria antitoxin was immediately administered and the child sent home to bed, where he was placed under a tent for steaming, and expectorants administered. Improvement was noticed within the following hours, but normal breathing did not return until two days later when the rash of measles occurred. There was no return of the dyspnea, and the course of the disease was otherwise uneventful.

A. S. BLEYER.

DEPARTMENT OF OPHTHALMOLOGY.

Professor HENRY L. WOLFNER.
M. WIENER, M.D., Lecturer and Chief of Clinic.
F. E. WOODRUFF, M.D., Instructor and Clinical Assistant.
L. WILLIAMSON, M.D., Instructor and Clinical Assistant.
F. P. PARKER, M.D., Clinical Assistant.
W. C. OWEN, M.D., Clinical Assistant.

Method of Instruction.

The eye clinic of the Washington University Hospital Dispensary is the largest clinic in the college, and is probably the largest clinic in the West. It has a wealth of interesting material and an unusually large amount of operative work, which is fostered no doubt by its direct connection, since its establishment, with a hospital.

The clinic is conducted in three rooms; an operating and treatment room, a refraction room and a dark room, it also shares a large waiting room with the nose and throat clinic.

The operating room is 12 by 28 feet, tiled floor, glass wash-stand with foot pedals and appropriate accessories, instrument case, operating table, dressing tables and medicine case of metal-glass, large steam sterilizer and large Victor magnet. It is illuminated by one large north window and by three east windows and by an overhead electric reflector.

The refraction room is 12 by 28 feet, contains three marble-top oak tables, each with complete refraction sets, a Stevens phorometer, Worth-Black amblyoscope, Placido's disc and other accessories. There are also large cabinets for filing records, oak stools, chairs, etc. Two north windows illuminate

the room, and test cards are additionally illuminated by two Obrien straight-filament electric bulbs for each one.

The dark room is 8 by 22 feet, and contains Chambers-Inskeep ophthalmometer, Jennings' skioscope and two booths for ophthalmoscopic examination. A partition separates off a small office which contains a McHardy perimeter and a desk for the optician.

A nurse is in daily attendance, whose duty it is to prepare the room and patients on operating days, and to write histories and prescriptions, and to assist with dressings and bandages on other days. Records are kept on cards and filed alphabetically; a white card for the diagnosis, general description and treatment, with an additional pink card for the refraction record. Each year these cards are filed away in a large case, and are started anew in a small one.

It may be well to mention a few distinctive features or methods of treating or handling patients, wherein our clinic differs perhaps from the general run of eye clinics: Eye droppers are not used, applications of collyria or ointments being made by means of an applicator wrapped with a clean piece of cotton each time, thus greatly lessening the danger of infection from one patient to another. Nitrate of silver or the copper stick are seldom used, other stimulants less irritating, such as ichthyol, weak solutions of copper, zinc, etc., being preferred. In the average acute conjunctivitis, collyria are shunned, unless in cases where Morax-Axenfeld bacillus is found, where we have a specific in zinc. Instead, cold applications are ordered, with some soothing ointment for the lids. Sometimes argyrol or protargol is used by the patient at home, if the secretion is profuse. Chronic conjunctivitis cases are immediately sent to the refraction room. Almost every refraction case under forty years of age is examined under homatropine, and shadow tests are made in every case. In cases over forty, where the subjective test is unsatisfactory, euphthal-

mine is used. Cases of gonorrheal ophthalmia are refused treatment in the out-clinic, and are only treated when they consent to remain in the hospital, since experience has taught us that they will not be properly cared for at home. There has not been a single eye lost from gonorrheal infection in the last ten years, where the cornea was not already affected on admission.

The clinic is primarily for teaching purposes, and an attempt is made to use the material in a manner that will be of the most practical value to the students. The senior class is divided into four sections, each one attending eight consecutive weeks. Tuesdays and Thursdays are given to teaching, from two to three in the afternoon. The clinic on Tuesdays is devoted solely to surgery of the eye, Thursdays being reserved for examination of cases.

The patient is brought before the class, and a student is selected to come forward and describe the condition in which he finds the eyes of the patient before him. Observing first the general attitude and condition of the patient, he is asked to describe in detail, the width of the palpebral fissure, the condition of lids and lashes, conjunctivae (bulbar and palpebral), cornea, iris, pupil, pupillary reflexes, tension and the depth of the anterior chamber. The object is essentially to train his power of observation. The untrained student sees that an eye is red, but the careful examiner observes the area and locality of that redness. If all abnormal conditions are observed a diagnosis is easily made. An effort is made to present as many cases for examination as can be properly digested by the students, and treatment is lightly touched upon and in a general way. The value of the method of oblique illumination is emphasized.

On operating day (Tuesday) the patient is presented before the class, his condition noted and the indication for operation explained. The various methods for relieving this particular

condition are then briefly described and reasons given for the one employed in this case. The operation is then performed under the eyes of the class, the various steps being elucidated during the progress of the operation. Students are called upon, with the assistance of the instructor, to execute certain operations themselves, after having witnessed their performance. These include operation for chalazion and pterygium, certain lid operations, removal of foreign body from cornea or lid, and an occasional enucleation. They also apply dressings and bandages. Practical demonstrations are made of instilling collyria, everting and massaging the lids and examination of eyes of babies and refractory children. Students desiring to devote special study to ophthalmology are invited to attend the daily clinics when opportunity presents, and are given special instruction in refraction, use of ophthalmometer and skioscope and recording the field of vision.

MEYER WIENER.

DEPARTMENT OF OTOLOGY.

Professor H. N. SPENCER.
SELDEN SPENCER, M.D., Chief of Clinic and Instructor in Otology.
E. T. SENSENEY, M.D., Clinical Assistant.
F. C. SIMON. M.D., Clinical Assistant.

Method of Instruction.

Whatever the various methods of clinical teaching are, I shall mention two that I am familiar with: the one which we were formerly compelled to use for lack of proper equipment and the one now in use at our clinic. The old method consisted in giving the class a short lecture, or talk, on a certain ear condition, after which a case of this variety was exhibited to the class. In other words, there were clinical lectures with demonstrations before the class. A line of students was formed to pass by and have a look. The student was told what he was expected to see, and the question was asked, "Do you see it?" The answer was invariably "Yes." The fault with this method is that the student is too often led to say that he sees a thing when he does not, as the easiest way out of it. He fears that if he spends more time than the others think is reasonable, he will be looked on as a grind or one who is trying to make an impression on his instructor. The student's time is in this way limited, and it naturally influences his interest as well as his technic. The instructor's time is also limited by this method.

The method which we are now using places the students more on their own responsibility. We assume that their lecture course in the third year has prepared them to undertake more practical work in their clinical course. No general lecture is given to the section; all instruction is given individually.

This method differs principally from the one just described in that we turn the patients over to the students without comment on the condition and ask for a diagnosis. At the beginning of the course, but one or at most two patients are assigned to any one student in a clinical hour, but later in the term we are enabled, with the material at hand, to give each man an opportunity to see four or five. The student is expected to tell what condition he sees and what the significance of it is. The instructor is at hand to direct the examination and see that it is properly carried out. The understanding that all work will be carefully graded acts as a stimulus.

It is our aim in the undergraduate course in otology to turn out physicians who are able to make an intelligent inspection of the drumhead, the tympanic cavity and the entire otitic region. It is not our aim to turn out finished ear specialists. Particular stress is laid on diagnosis. The essential thing in any branch of medicine is diagnosis; manifestly we cannot institute proper treatment unless we are sure of the condition that we are handling and are familiar with it and its different stages. Students have opportunity to carry out the simpler methods of treatment, but the importance of diagnosis and methods of examination and technic are more particularly dwelt upon. Students are apt to insist on giving a good deal of time to therapeutics, and of course, we cannot neglect this important subject, but we feel that the short time allowed can be better used by devoting it to technic and examination, as being more constant and more difficult to obtain a working knowledge of through text-books. It is evident that in the time given it is not advisable or desirable to turn surgical cases over to the students, though we aim to make them familiar with the operations in use and to give them opportunity to see all major and minor operations which arise. Dressing of surgical cases is often referred to the students.

To be properly equipped to carry out these methods of

instruction, it was necessary to divide the clinic-room into a number of compartments or alcoves, so that each student might have his own compartment and be practically alone with his patient. These alcoves are completely equipped with a strong artificial light, instrument case, table, chairs for patient and physician, and with all the instruments necessary. A nurse is in constant attendance, and the necessity for asepsis is impressed on the students by being strictly enforced; all instruments are sterilized as soon as they have been used.

In his alcove the student is thrown on his own responsibility. He may question the patient at whatever length he deems necessary, and must, from the history and examination, reach his own conclusions. At the start the simplest cases are reserved for the students, but as time goes on they must be prepared for whatever comes their way. Instructors are always at hand and may always be referred to. After a student has had a reasonable time with a patient, he is asked what his diagnosis is. It is explained to him how to classify the pathological conditions, and how to go about finding out the nature of the patient's complaint. He is questioned at first in regard to normal conditions and is then asked how these conditions may be effected or changed. Of course at first, the novice is awkward and sees little or nothing, but as time goes on, his technic is improved and his knowledge of the subject in hand becomes visibly broadened. From the start his weaknesses are dwelt upon and corrected. At first he needs much help, but he handles each case somewhat better than he did the last. The advantages of this method must be obvious. It is possible to tell just whether or not the student is learning anything, not by an examination after a given interval, but at each clinical hour his progress can be watched. He himself becomes more self-reliant and more interested in his work. Under the demonstration method half the class or more, might go through the year without being able to see a drumhead. We feel that we

can safely say that as a result of this method no one leaves our course without being able, at least, to see the drumhead and recognize the simpler pathological conditions.

To properly carry out the course in this way is difficult because we must either have small sections or a large number of instructors. Fortunately, up to the present time, the sections have been small enough, so that the men have been able to receive individual attention.

SELDEN SPENCER.

DEPARTMENT OF DERMATOLOGY.

Professor W. A. HARDAWAY.
ROBERT H. DAVIS, M.D., Instructor and Senior Assistant.
A. H. FRIEDEBERG, Clinical Assistant.

Plan of Instruction.

The method of teaching in this department is as follows: The members of the junior class have a didactic lecture of one hour, once a week, by the professor, for the first half session. These lectures lay down the general principles of dermatology, and the most frequently seen diseases are discussed. The senior class visits the clinic, in sections, once weekly, during the entire session. Each section has an eight weeks' course. Cases are presented, but no comment is made, the students writing short papers on the objective and subjective symptoms, history, etc., finally giving their diagnoses, and line of treatment. About every four men are assigned a case each time. Appropriate papers are selected at the next meeting, read by some member of each subsection furnishing them, and commented on by the professor.

The advantages of subdividing the sections into small groups, and allowing the students to endeavor to make their own diagnoses (for which they have been in a measure prepared during the preceding year) are, that decidedly more interest is taken in the subject, the powers of observation are better trained, and the members of the class are taught self-reliance and responsibility.

Practically, the results are all that can be desired. Many of the papers are excellent in character. The diagnoses of simple cases are usually accurate, and the note-taking shows thought and care.

A case of Syphilis illustrating the Disadvantages of Over-Specific-Treatment and the Advantages of Milder Measures of Relief.

The following case is reported to again call attention to the fact that syphilis is so often overtreated.

The patient, Mr. D. M., entered the Polyclinic Hospital, on October 11, 1907. He presented severe luetic ulcerations of the face, the end of the nose being destroyed as far back as the nasal bones. The cartilaginous portion of the septum was also gone, the whole presenting, with a large part of the upper lip, a foul, discharging ulcer. The hard palate was affected, but not quite perforated. There were extensive scars of old lesions on the body and scalp. The disease was of four years' duration, and during much of this time, he had been under regular physicians. For the year previous to coming to the Polyclinic, he had been on mercury inunctions, with only occasional intermissions, when signs of mercurialism appeared. The dosage of iodide of potassium had been maintained for some months at 90 grains, three times daily, with no iodism. The ulcerations had been slowly progressive. The hands were cold, respiration normal, pulse 82, but jerky and of low tension. The appetite was good, and the patient slept well.

The potassium iodide and mercury were at once discontinued in the form and dosage given, and the following pill prescribed night and morning: ℞ hg. prot. grs., ss. pulv. opii. grs. ¼. After meals, the well-known "black tonic" was given, one teaspoonful t. i. d. (The formula of the "black tonic" is: ℞ potass-iodide ʒss, ferri et ammonii citratis ʒi, tr. nucis vom, ʒii, aquae ʒiss, tr. cinchon. comp. (detannated) q. s. ad ʒiv). It will be seen that, in this tonic mixture, the dose of KI per drachm is grs., viiss.

After a few days, ten drops of a staturated solution of KI were given after each meal in addition to the above.

Locally, xeroform was dusted on the ulcer, and ten per cent xeroform in ungt. vaselini plumbicum was applied. The stench of the discharge through the posterior nares was relieved by frequent rinsing of the mouth with chlorate of potash solution. After a few days, the xeroform was discontinued, as was the xeroform and ungt. v. p., and an ointment consisting of hydrarg ammon. grs., xv, vaselin ʒi was applied, several times daily instead. Decided improvement began in about 6 days from the beginning of the treatment, and the amount of mercury was increased by giving hg. prot. grs., ¼ after lunch, in addition to the night and morning pill before mentioned.

From this time on, the improvement was rapid and continuous, the ulcer healing completely. Occasionally slight ptyalism developed, whereupon the noonday pill, or occasionally all mercury, was discontinued for a day or two. Slight diarrhea was controlled with bismuth subnit. The KI was never increased above grs., xviiss t. i. d.

One month after his admission, the patient was allowed to return to his home in a distant State, all objective lesions being healed. He has since continued the same treatment, and reports satisfactory progress.

This case is reported as furnishing an instance of one which, under heroic treatment, had gone from bad to worse, until his attending physician at home expected an early death. The milder treatment, coupled with the tonic measures, produced a rapid change when the outlook seemed darkest.

ROBERT H. DAVIS.

THE ALUMNI REUNION.

During Commencement week of this year, a notable gathering of the alumni of the medical department, including those from the Missouri and the St. Louis Medical Colleges, took place in our city. The splendid clinical program that had been arranged by the Alumni Association attracted many visitors from even the remotest States of the Union.

That our school is in the front rank was again evidenced by the excellence and the abundance of the clinical material which was presented during this week. The opinion that the material as presented was equal to that of any of the large medical centers of America, was frequently remarked by those in attendance. Some of the lectures were especially well attended. Several of the clinicians were honored by an audience of sixty or more physicians.

Besides the professional side, the social program played no small part. Some individual classes held private meetings, and at these there were many incidents recalled which were of the greatest interest to those concerned.

The alumni banquet, held at the Jefferson Hotel on Wednesday, May 27, was the largest and best affair of its kind in the memories of even the oldest men. The enthusiasm displayed at this festive board will be long remembered by every one who had the good fortune of being present. The responses to the toasts were exceptionally good and the grouping together of a number of classes served to enliven the affair and to intensify the fraternal spirit.

The informal reception at Dr. Tuholske's residence on Friday following, was a most enjoyable occasion. There the mingling of the graduates at close range, brought out reminiscences, at times pathetic and sometimes amusing, without which the reunion would have been incomplete.

It is felt that all those who participated in the functions of the week are looking forward to more occasions of this kind.

BOOK REVIEWS.

The Diagnosis and Treatment of Diseases of Women.

Harry Sturgeon Crossen, M.D., Clinical Professor of Gynecology, Washington University; Gynecologist to Washington University Hospital and Chief of the Gynecological Clinic; Associate Gynecologist to the St. Louis Mullanphy Hospital; Consulting Gynecologist to Bethesda Hospital, St. Louis Female Hospital and St. Louis City Hospital; late Superintendent of the St. Louis Female Hospital, etc. With Seven Hundred Illustrations. Price, cloth, $6.00, Half Morocco, $7.50. C. V. Mosby Medical Book and Publishing Company, St. Louis. 1907.

This attractive volume of eight hundred pages has been written for the student principally, and forms the foundation for the diagnosis of diseases of women. The author adheres to his text throughout, presenting the important points in a clear and systematic manner, thereby enabling the student to understand and retain essential data on each subject considered. The experience of the author has convinced him that the two principal stumbling blocks encountered in the way of accurate gynecological work are, first, the difficulty of determining exactly the conditions present in the pelvis, and second, the lack of a clear understanding of the indications governing the selection of the particular treatment best adapted to each of the various classes of cases under each disease, hence the author has given these important phases of the subject special consideration.

Chapters I, II, and III are devoted to gynecologic examination methods, diagnosis and treatment. The author herein describes the various methods of examination, outlining clearly

just what the student is to look for, etc., and the various treatments. This portion of the book is of inestimable value to the student, and does much toward making the volume an ideal text-book.

Chapter IV, deals with the diseases of the external genitals and the vagina; chapter V, with the lacerations and fistulae of the pelvic floor, perineum, external genitals and vagina, while chapters VI, VII, VIII and IX, are devoted to a consideration of the diseases of the uterus. Chapter X, is an excellent chapter on pelvic inflammation. Chapter XI, deals with other affections of the fallopian tubes, peritoneum and connective tissue. Chapter XII, contains an accurate description of the diseases of the ovary and the parovarium, and chapter XIII, considers the malformations of the female genital organs.

Chapters XIV, XV and XVI, will be found of great value by the general practitioner as will chapter XVII, dealing with the medico-legal points in gynecology. Chapter XIV, describes the disturbances of function of the female genital organs, and the proper treatment. The chapter on the after-treatment of operative cases is of decided value to the gynecologist who operates only occasionally.

The appendix contains a complete formula, the index is excellent. All in all, the book thoroughly fills the needs of the student, and is one which will be of great value to the general practitioner. The numerous pictures cannot help but to impress the student with important data. A few typographical errors have crept in and will perhaps be eliminated when the book is revised. The paper is good, the type clear and the volume is neat and attractive.

E. A. BABLER.

A Handbook of Cutaneous Therapeutics, including special sections on the X-ray, high-frequency currents, opsonic methods and the minor surgery of the skin; by Wm. A. Hardaway, M.D., LL.D., Professor of Dermatology and Syphilis and Joseph Grindon, Ph.B., M.D., Professor of Clinical Dermatology and Syphilis, Washington University, St. Louis. Lea Brothers & Co., Philadelphia and New York. 1907. Price $2.75.

While the American school of dermatology has been prolific of text-books, this is the first production dealing especially with the therapeutics of the skin to appear on this side of the ocean.

Each of the joint-authors has published books on dermatology of more inclusive character and in Professor Hardaway's earlier book especially, a tendency to amplify the practical aspects of the subject is discernible. The latter work is therefore in many ways an outgrowth of its predecessor, as is stated in the preface. It is fortunate that Professor Hardaway followed this inclination, for he stands undoubtedly among the first American therapeutists in this branch of our art. He never loses sight of the fact that the aim of all medical science is the prevention and the cure of disease, or where this is impossible, the mitigation of its symptoms. This work accordingly includes much of the symptomatology and diagnosis of diseases of the skin and so makes the discussion on therapeutics readily available to the general practitioner.

Besides a full table of contents and index, the subheads appear in heavy-faced type which readily catch the eye, the same form of character is used in the text to draw attention to matters of especial importance. Besides an unusual wealth of formulas in the body of each article, there is appended a second list of selected prescriptions.

The book is divided into two parts. In the first, which is mainly the work of Professor Hardaway, the various diseases are

taken up in their order and the treatment of each is discussed. The articles on eczema and lupus exemplify the thoroughness with which these subjects are treated. In the article on epithelioma there is a detailed discussion of the technic employed in the recent methods of treating this disease, and much space is devoted here to the X-ray.

The second part of the book is largely from the pen of Professor Grindon and inverts the above order of dealing with the subjects. The various therapeutic methods are explained seriatim, with a statement of the conditions to which each method is applicable. The longest chapter deals with the X-ray and contains all the information necessary to enable a beginner to take up this method of treatment and to protect him from doing harm until he has acquired sufficient knowledge to use it successfully. The opsonic method, high-frequency currents, electrolysis etc., are explained so as to clearly set forth their principles and the indications for their use. The paper and type are excellent and reflect credit upon the publishers.

A. S. B.

A Practical Guide to the Examination of the Ear.

Selden Spencer, A.B., M.D. Instructor in Otology in Washington University; and Aural Surgeon to the Martha Parsons Free Hospital for Children. With an introductory Chapter by H. N. Spencer, M.D., LL.D. Price $1.00. C. V. Mosby Medical Book and Publishing Company, St. Louis. 1908.

The author has here attempted to supply among text-books on otology a place such as Klemperer's "Elements of Clinical Diagnosis" serves in clinical medicine. We know with what gratitude this little volume was received. The idea in Klemperer's book was not to produce an abbreviated treatise on

clinical medicine in which nothing should be left out, (which would be utterly without value) but rather to leave out everything that was not of instant and vital importance, and to state these latter facts with impressive brevity. It seems reasonable to anticipate that such books would be welcome in any of the specialties, they would constitute guides to their subjects.

Dr. Spencer's Guide to the Examination of the Ear, was written for his students and, he tells us, is intended for the undergraduate. This seems to have been a happy thought since in this field, general practitioners are as a rule, not very far removed from that class. It is not usual to find a man in general practice who is capable of making a thorough and productive examination of the ear, and it is altogether true that we do need instruction along these lines.

It is needless to say more than that this point has been most successfully kept in mind, the practical points are not overshadowed by detail but are brought out in a concise and instructive way; there is a pleasing absence of superfluity. A number of very beautiful and original plates add greatly to the value of the book. The binding is good and the general appearance is pleasing, there is apparent a little carelessness here and there in the type work.

A. S. B.