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BY

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New York.

For my presence here and the permission to address you, I am indebted to the kind invitation of your faculty. They have prompted me to speak to you, my fellow students, of medical education in my early days, of my contemporaries medical and lay, and some other subjects. Unfortunately, that theme demands that now and then I shall have casually to mention myself not as a co-operator, it is true, but as an interested looker-on, when great things happened and good and great men worked for the realization of what you in these days are harvesting as a spontaneous and legitimate heritage.

Indeed I have lived under the eyes of, and with great men and during the development of modern medicine. The history of these times should be known to every student of medicine and of social science. For truly as we cannot comprehend any country without the knowledge of its origin and the circumstances under which it grew, and of the men who thought and fought for it, so there is no way of understanding and appreciating modern medicine without a fair acquaintance with its annals.

What you are expected to learn in four years is a part of the results of previous labors performed during hundreds, ay, thousands of years, by legions of men of industry, honor, and sometimes genius. What any single generation of men has created, however, should be considered an episode only. Part of such an episode I shall, at the suggestion of the great and good men assembled on this platform, recall to your mind as belonging to our common history.

I began the study of medicine only fifty-eight years ago. Now, you have often noticed that in a clear atmosphere a distant height separated from you by ever so many extensive ridges and deep valleys that your weary feet have measured ever so often seems to you near by, almost within reach. Thus that early time appears to me, looking backward

these six decades replete with the exertions of persevering men working in the same direction, for the same ends, in different ways, it is true, in laboratories and clinics, all in behalf of the welfare—individual and collective—of mankind.

I studied medicine in the three universities of Greifswald, Göttingen, and Bonn from 1847-51; vegetated in Prussian prisons until 1853, and tried to practice medicine in Manchester, England. But old England and I did not get on very well with one another; at least I did not. Since the end of 1853 I have enjoyed the always generous hospitality of my second and kinder motherland, the United States of America. That is all there is of *me*.

Some of you may be interested, however, in learning why any young man should study in three universities, in place of one, as is the custom with us. Part of the German Universities date from the Middle Ages—those of Prague (1347) Vienna, (1365) Heidelberg (1346) Cologne, (1388) Erfurt (1392), both of the latter now extinct, from the fourteenth century. The more recent ones have readily adapted themselves to the inherited customs. The search of adventure, the eagerness to see distant or foreign parts, or the reputation of a famous teacher would draw hosts of young men away from their fireside and neighborhood. A personal instance of that I may be permitted to mention. When I left the "Gymnasium" I knew the world from books—that is, not at all. A few miles adjoining my village and my college town formed my actual horizon. So I selected a university on account of its distance from my home. Even in that respect, however, I could not satisfy my longings to their fullest extent; for the two ends would not meet, that is, the fare between my village and Königsberg was excessive compared with my means.

Now when I had been in Greifswald three semesters and had taken a birdseye view of what medicine might imply, I felt the necessity of studying more chemistry and pathological anatomy. You wonder, you men of the twentieth century, what I may mean. Now at that time there was no Adami in Greifswald; there were, alongside of Vienna where Rokitansky taught, only two places in all Germany in which pathological anatomy could be learned. One of them was Würzburg, there was Virchow; the other was Göttingen there was Frerichs. So to Göttingen I went in search of pathological anatomy. My notes of that year and my clumsy drawings I still esteem very highly. At the same time I looked for the advantages of chemical laboratory work under Wiggers and Wochler. You see, I have already mentioned names to you that will never disappear from the history of medicine. In Göttingen I remained a year only, on account of the inferiority of clinical instruction.

Our senior professor of clinical medicine for instance was never satisfied until he tortured out of every patient the admission that some time or other he had taken a drink of cold water. A "cold drink" was his universal etiology. In that respect he was worse than even Cotton Mather who, according to William Sydney Thayer's article in this September number of the Johns Hopkins Hospital Bulletin knew all about hell—for other people—and witches and something of medicine, and preached: "Never take water or anything else, cold, when you are hot with labor. There is death in the pot."

It is true Wilhelm Baum had come from Greifswald to take the chair of surgery, but I wanted modern methods of clinical diagnosis, such as Friedrich Nasse was teaching, guided by the French and the new Vienna School. So I went for my last three semesters to Bonn. This custom of changing universities had and has the disadvantage of precluding devotedness on the part of students to their alma mater and substituting, if anything at all, attachment to a revered and famous teacher.

Besides, in Germany all the Universities are Government institutions. There are no medical schools unconnected with a big State University, and there was and is no personal, no heartfelt interdependence between the student and his intellectual mother.

But for Germany this interchange of Universities may have had a good political influence though it was counteracted by the ambitions, greeds and jealous tyrannies of the hundreds of principalities finally overthrown by the first real Napoleon, a century ago, and of the thirty-eight territorially or mentally and morally inferior countries of my time. Even to-day, you know, they have not yet consolidated into a united Germany and never will until Germany will be a republic. Young men would congregate in a University from all parts of Germany and could not help being influenced by diversified intercourse. I have no doubt that in spite of the demoralizing influences of the absolutistic governments, the concourse of young men belonging to distant parts of the country must have exerted—when the time matured,—a unifying effect.

Let me now speak of medicine as it was in Germany a very few years before I commenced its study. Stieglitz, an old and learned practitioner, expressed himself in 1840 as follows: German medicine has sunk so low and is so emasculated as to require any sort of shaking up. Whatever gives it a new direction will be wholesome, though new errors or possibilities may result therefrom." And Paulus, a professor of theology at Heidelberg, is quoted by Kussmaul as having stated that the philos-

ophy of Schelling, so prevalent during almost half a century, was dangerous to medicine; its influence was "tragic", it amounted to "legerdemain;" medicine was injured by speculations evolved at the desk, and German medicine was inferior to that of France on account of its bad methods.

This bad method is characterized in a few words. Like Plato of old the Germans of several centuries, down to 1850, constructed their theories without a material basis; facts were disregarded or explained away a priori, new systems were constructed out of sheer imagination or on the strength of insufficient or distorted knowledge. One wanton system would follow another; not in Germany alone, however. Thus Van Helmont, Sylvius, iatromechanism with Paracelsus as its principal prophet, Fr. Hoffman, Stahl, the Solidarists, the Humoralists, John Brown, Rasori and his contrastimulus, animal magnetism, nature-philosophy, Hahnemann, Rademacher, Broussais and Bouillaud, all had to be outlived and overcome.

The actual progress of medicine began when the influence of mere theorizing was broken. Gradually the sterile nature-philosophy of Schelling and the equally unprofitable dialectic contortions of Hegel ceased to draw minds into the abysses of speculation, and German textbooks and monographs were no longer all written in hopelessly unintelligible language. The first part of the nineteenth century, however, belongs to France, its latter half only to Germany. That is why the terms "French medicine," and "German medicine," are unduly prominent in medical terminology. It is only now that we begin to speak of medicine without any regard to nationality. It has become international, cosmopolitan. The fraternization of mankind seems to grow its first roots in science; that, at least, has no Russia of its own to exterminate, or to revolutionize.

I am fortunate in having studied during an active period. Let me report to you what happened in those very few years, and congratulate you upon the wealth of scientific conquests laid at your feet without your co-operation. By so doing I may impress upon your minds the necessity of paying attention to the constantly increasing results of the work of this very year, of your year, of every year.

In 1847, my first medical year, Hermann von Helmholtz (1821-1894) published his address on the preservation of force; ether anaesthesia was used in obstetrical practice by Hammer of St. Louis (1818-78), in dentistry by Delabarre (1819-1878) of Paris; Justus von Liebig (1803-1873) published his researches on meat; prismatic glasses were employed by Kreke and Franz Cornelis Donders (1889) the great Dutch

ophthalmologist; ether and afterwards chloroform were introduced into Scotch obstetrics by James Young Simpson (1811-70) of Edinburgh. The scapula was removed by Sir Wm. Ferguson (1808-77); Faradization was recommended by Duchenne (1806-75) in that form of paralysis which has long been known by his name. Unstripped muscular fibres were described by Rudolph Kelliker (born 1817); Semmelweiss (1818-1865) discovered at the autopsy of Professor Kolletschka, (1803-1847) who died March 13, 1847, of sepsis contracted during an autopsy the same lesions that were found in puerperal fever. He also found that in the wards of puerperal women which were visited by the students who worked in the dissecting rooms, a larger percentage would die than in those accessible to the midwives only. They did not dissect. He reduced the mortality by more than two-thirds, by merely obliging the students to wash in calcium chloride before entering the sick wards. He learned from clinical observation what Lister learned from Pasteur. He established the contagious character of puerperal fever, like Oliver Wendell Holmes, who in 1843 wrote his immortal paper in the *New England Medical Monthly*. They shared a similar fate, with great differences, it is true. Holmes was on account of his observations ridiculed by Hodge and Meigs, the obstetrical sages of Philadelphia, until Hodge and Meigs found themselves alone with their prejudices and ignorant obstinacy,—and enjoyed smilingly the admiration and veneration of the English-speaking world fifty years afterwards. Semmelweiss was persecuted by Braun, Scanzoni and I am sorry to say by my friend Spaeth, who would not admit that their lack of methods had killed thousands of women and newly-born, was driven out of Vienna and angered into a lunatic asylum. Posterity had to come to the rescue. As a rule, the benefactors of mankind have been crucified or starved—all is considered corrected by a monument.

1848. Crusell (1810-58) expounded the indications of galvano-caustics, mainly in strictures, carcinomata, and ulcerations. (*Bull. Phys. Math. de l'Acad. Impér. des Sciences de St. Petersbourg*). He claimed chemical effects only, denying the vital action of galvanism.

The quantitative analysis of urea was taught by Robert Wilhelm Bunsen, (1811-1899) the same who afterwards, in co-operation with Kirchhoff founded spectral analysis.

Per Hendrik Malmsten (1811-1883) discovered the trichophyton tonsurans (*Hygeia VII*) and *balantidium coli*.

1849. J. Arnott (1794-1885) taught the employment of cold for the purpose of procuring anaesthesia.

Claude Bernard (1813-78) performed his "*pique*" of the fourth ventricle and caused diabetes.

Pollender, a veterinarian, discovered bacilli in the blood of animals infected with anthrax, preceding Brauell (1855) and Davaine, and Robert Koch (1876), (Ferd. Cohn, Beitr. Zur. Phys. d. Pflanzen).

Jos. C. Hutchinson (1827-1887) invented the spirometer.

Charles D. Meigs (1792-1869) found thrombosis in veins to be one of the causes of death in puerperal women.

Marion Sims (1813-83) cured a vesico-vaginal fistula.

In 1850 another American, William Detmold, of New York, (1808-1895), opened an abscess in the cranial cavity and was roundly abused for claiming an impossible thing, as an American swindler, in so high-toned a German magazine as the sixth volume of Virchow's Archives.

The velocity of nerve irritation was measured by Helmholtz.

J. Walker proved the infectious character of secondary syphilis.

In 1851 Helmholtz invented the ophthalmoscope and studied the duration and course of the induced current.

Virchow discovered the sheath of the cerebral vessels.

Bernard explained the vasomotor function of the sympathetic nerve.

Romberg (1795-1873) published his studies in *Tabes dorsalis*.

All this happened while I was a student. You recognize in my fragmentary enumeration facts of import. Very soon after my graduation in 1851, however, I was no longer in a position to follow the rapid current of events. I afterwards learned that within two years Helmholtz had measured accommodation, Cohn proved the vegetable nature of bacteria, Schröder demonstrated the bacterial nature of fermentation, as the glycogenic organ, Vierordt constructed his sphygmograph, Küchenmeister noted the connection of the tænia with the scolex found in pork, Bigelow performed the first resection of the neck of the femur, John Hughes Bennet coined the term leucocythæmia, and Moleschott had written his "circle of life"—"Kreislauf des Lebens," for a long time the bible of materialists. One of the most important discoveries was that of Funke (1852) and Lehmann (1853) who proved hæmoglobin to be a crystallisable unit capable both of binding and of eliminating oxygen.

Thus I found the world was progressing. Medicine had contrived to throw off the fetters of transcendentalism and had embarked irrevocably in its development as a part of biology with only one goal—to seek truth wherever it was, and with one ideal purpose viz. the benefaction it could bestow on mankind by curing or preventing disease.

There is a trinity of doctrines which have redeemed medicine and made it part of biology;—1st, *Experimental Physiology*. It was founded by the French, mainly Magendie, Flourens, Bernard, Fourget, and Paul

Broca. England furnished Charles Bell, Marshall Hall, and William Bowman; and Germany, Johannes Müller. 2nd. *Clinical Diagnosis based on Pathological Anatomy*, as developed by the Vienna School. It is represented by Rokitansky and Skoda. 3rd. *Experimental Pathology*, which found its spokesmen in Virchow and Traube of Berlin. That is why the names of Paris, Vienna, and Berlin are immortal in our science and art. I say, science and art. What I want you always to remember is that science and art should never be separated in the consciousness of a medical student and practitioner. Our science is biological; our art is therapeutic, that means preventive, dietetic, pharmacal, surgical, obstetrical; our profession exists for the purpose of therapy. The translation of "therapy" in its most comprehensive meaning, is service,—service to the individual or commonwealth. Cicero tells us: "nisi utile est quod faciamus, stulta est gloria"—unless there is some good in what we are doing the glory of it is sterile; and Benjamin Franklin seems to have translated it in the homely but impressive words: "What signifies philosophy that does not apply to some use."

The permanent regeneration of modern medicine originated in German Austria and in Germany about the fifth decade of the nineteenth century; that is the very period of European political and, in part, social revolutions. A philosopher would find ample opportunities to demonstrate the equable and contemporaneous growth of divers of manifold historical evolutions. Some of the men who participated in or directed the work, both political and scientific,—though in years I was an immature boy—were at that time, or afterwards, my comrades, or friends, or teachers. Of some I shall speak. Personal relations I had none, however, to Rokitansky and Skoda.

Carl Rokitansky (1804-1878) began his revolution of pathological anatomy in 1836 with a paper on intestinal obstruction. (*Medic. Jahrb. des K. K. Oesterr. Staats*). He published the first part of his special pathological anatomy in 1841, and his general pathology in 1846.

I wish you would study particulars in any great historical description of our science. You will then understand why pathological anatomy of the human body, as he taught it in all its stages of formation and retrogression—of hyperæmia, exudation, new-formation, and disintegration—was a revelation to the medical minds of the nation, and soon afterwards of the globe.

But even he was one-sided and human. He never could divest himself entirely of the influences of his bringing-up. Humoral pathology possessed him sufficiently to make him create the theory of crases

(blood-mixtures) which induced him, and still more his followers, to believe in a croupous crisis, which was subdivided into an α , β , γ class, and an albuminous, aphthous, exanthematous, and a puerperal crisis. His colleague, Engel, fought him; it took a Virchow, however, to annihilate him, and never was Robitansky greater than when he acknowledged his defeat by the young giant of Berlin.

Joseph Skoda (1805-81) published an essay on pericarditis in 1834, his first paper on percussion in 1836, and his monograph on percussion and auscultation in 1839. In his studies and methods he followed the great Frenchman Laennec. It is true he adopted the ontological character of Laennec's reasoning, even crises were accepted under the influence of Laennec and Rokitansky, but both Rokitansky and Skoda cut loose from the verbose ignorance and supercilious stolidity of German medicine. Helm the obstetrician, Kolletschka the pathologist, Schuh the surgeon, and Hebra the dermatologist were eager followers and co-operators. Thus you may well imagine that Vienna became the Mecca both of Germans and of foreigners.

Meanwhile criticism was not idle.

One of the involuntary jokers, a Dr. Philipps of Berlin, that had not yet been waked up by Virchow, made himself ridiculous by trying in 1845 to ridicule Skoda's work of 1839, and in the same year a Dr. Krüger-Hansen in "Praktische Fragmente" annihilated auscultation in the following way. Listen:

1. A chaste maiden would not submit to uncover her bosom to the inspection of a young Aesculapius who is a stranger to her or who may not enjoy the best reputation.

2. If auscultation were necessary deaf practitioners who all wish to continue their practice would be badly off.

3. It is impossible to express or to systematize by language, inadequate as it is, the sounds and murmurs inside the chest. Literally, he says: "Any scientist is hereby challenged to express in words the song or the din of birds."

4. It is only a hiding of practical ignorance "for the practitioner to apply his ear and to look learned as if sitting on the Delphian tripod."

5. Only such as have weakened eyes and ears should aid them by spectacles and stethoscopes.

6. "How great would be the expenditure for patients living in the country if it were necessary to call a doctor even for one's servants in order to establish an indication by means of a stethoscope."

7. But "if one would send such an instrument into the country and ask for a report; how would an uncouth workman who is used to the flail manage the thing, and what sort of nonsense would be his report?"

8. Auscultating doctors cannot prove that more and speedier recoveries result from the treatment; "if they mean to prove the correctness of their diagnosis, they must first have their patient on the autopsy table."

Remember that was only 60 years ago, twenty-five years after Laennec's publication, six years after Skoda's book appeared, and only two years before I began the study of medicine.

Still the waking was rapid. In 1841 Wunderlich, with whose name you are familiar, as that of the popularizer of clinical thermometry in his journal and afterwards in his book of 1868, wrote a pamphlet on French medicine and the young Vienna school, and its fertilizing and reforming effects; influential new journals were started by him and Roser, by Henle and Pflüger, by the faculty of the University of Prague, and one for pathological anatomy by Florian Heller (1813-1871); Good text-books made their appearance, such as Hoesle's "The Microscope at the Sick Bed," and Gaal and Heller's "Clinical and Chemical Diagnosis," not to speak of Constatt's handbook in four volumes on Pathology and Therapeutics.

Meanwhile, what became of therapy? Rokitansky's occasional therapeutic suggestions could not possibly mean much; Skoda, who directed the clinical hospital, made a number of poorly managed experiments with drugs which convinced him whose attention was taken up with diagnosis, that therapeutics was a hopeless problem. The Vienna nihilism had no more outspoken prophet however than Joseph Dietl (1804-78); professor in Krakow. Says he, as late as 1851; "Our practical work does not compare with the amount of our knowledge. Our ancestors laid much stress on the success of their treatment of the sick; we, on the result of our investigations. Our tendency is purely scientific. The Physician should be judged by the extent of his knowledge and not by the number of his cures. It is the investigator, not the healer, that is to be appreciated in the physician. As long as medicine is art it will not be science. As long as there are successful physicians, so long are there no scientific physicians. Our power is in knowledge, not in deeds."

Indeed there were hosts of medical men who never thought of their diseased patients, but only of the ontologic "disease," and looked upon the doctors who wished to save their patients as weak characters and mediocrities.

The upshot of all this was that the patient who you may think in your innocent minds had the pardonable wish to get well, had nothing to do but—

1st. To be percussed and auscultated by Skoda;

2nd. To be autopsied by Rokitansky;

3rd. To see to it that the diagnosis and the result of the autopsy agreed. This however he could not conveniently do, though he was permitted to be present.

And another result was that the public was compelled to apply to homoeopaths, dealers in animal magnetism, water-cures, masseurs, gymnastics, or to Johann Gottfried Rademacher (1772-1849) who about the same time elaborated a system taken from Paracelsus according to which all diseases were classified according to whether they were curable by sodium nitrate, or by iron, or by copper. That is, all diseases were subsumed under the three heads: Saltpetre diseases, iron diseases, and copper diseases. His big book was published between 1842 and 1849.

All these either misguided or down-right quackish men held out some hope to the suffering and offered some more attractive proposition than merely the autopsy table of the scientist. But the times were greater than they, and the wheel of history moved rapidly. One of the few men who knew his mind and that of medicine, and had his hand on the pulse of mankind, was Oppolzer.*

In his inaugural address at Leipzig (1848) he expressed himself in the following words: "Those are greatly mistaken who believe that a modern physician is he who examines a patient most carefully, auscultates and percusses, and is satisfied when the autopsy corresponds with his diagnosis. Such a medical man does not comprehend that the most sublime aim of all medical service is the healing of the sick." I remember the time quite well. It was during my third semester in Greifswald, when the German revolution of 1848 spread over the land like a wild-fire, burning in the hearts of many of us, unfortunately, however, unable to burn the tottering thrones. The magazine containing Oppolzer's address had just arrived, an older fellow-student jumped on a table, waved the paper, and cried out: "Here is another revolution, a real declaration of independence. Hurrah for the revolution in medicine!" Never before had any man united like Oppolzer science and practice, never was diagnosis made anatomical or therapy based on indications as by him. Gradually even the patient became dissatisfied unless they were examined and their cases diagnosed. Luckily for them they are still of the same mind.

To account for my selecting Göttingen as my second university, I spoke of my search after chemistry and pathological anatomy. Friedrich Wochler (1800-82) was a teacher in the Technical school in Berlin before he became a professor in Göttingen. It was in Berlin that he

* (From Prague he was called to Leipzig in 1848; thence in 1850 to Vienna, where he died in 1871.)

synthetically compounded urca and thereby became the founder of organic chemistry and the originator of an interminable number of discoveries. As I worked under him several months in succession, I took the liberty one day to ask him whether he thought he would some day be able to construct more organic matter out of inorganic substances, for evidently he had proven there was no boundary line between the organic and the inorganic world. The big bright eyes and the wrinkled face of the little man smiled and he said: "Just wait and ask me again Christmas day—in the year 2000." He did not wait long enough but still he saw a small part of his teaching put into practice by his pupil Fr. Hofman, the unselfish discoverer of the anilin dyes and other coal tar products which are now utilized in industry and in medicine.

Theodor Frerichs (1819-85) was one of the most many-sided medical scholars I have known. He was at that time adjunct professor and appointed to teach pathological anatomy. Being a thorough chemist, he also delivered courses in which chemistry and pathological anatomy were treated in their relation to clinical medicine. In those young years of his, he performed his epoch-making labors for Wagner's Handbook of Physiology. He was a man of few words all his lifetime, slow, deliberate, every word with a meaning and a purpose, both when he talked and when he wrote. Our first conversation was as follows: "New student? which semester?" Fourth. "Where from?" Greifswald. "What are you looking for in Göttingen?" Pathological anatomy. "Nothing else?" Whatever is going, but there is no pathological anatomy in Greifswald. "All right, the laboratory will be open for you all day." What about Sundays? "Did you have Sundays in Greifswald?" He became Professor and director of the clinic in Kiel, in Breslau, and in Berlin. We know him best by his remarkable contributions to the Handbook, by his "Bright's Disease of the Kidneys," (1857) his "Klinik of the Diseases of the Liver," (1858) and his writings on uræmia, on diabetes (1884), and his discovery of leucin and tyrosin in the urine of the yellow atrophy of the liver.

In Göttingen, however, I found more than I had looked for.

Hermann Lotze (1817-1881) must have had a great influence on the youthful minds of those who listened to him during his long professorship. I attended his lectures in the winter following the German revolution of 1848, and was fully prepared to accept anything revolutionary in the field of science. Moreover, he gave the lie to those who claim that an eloquent lecturer is rarely an efficient teacher. He was both; the sickly looking man warmed your heart while he added to your mental stores. I was fully prepared to appreciate him, for the prerevolutionary

time had made me acquainted with the materialistic tendency of many parts of philosophical literature. The iatro-mechanic school of the renaissance—that of Paracelsus, Helmont, and Sylvius—looked upon the human body as a purely physical organism; with René Descartes (Cartesius) (1596-1650) I was somewhat familiar, and La Mettrie's "L'homme machine" (1709-51), the product of encyclopedistic France, had been my gospel. Thus it happened that I was greatly struck with Lotze who both in his book on "General Pathology and Therapy Considered as Mechanical Natural Sciences," (1842, 2nd edition, 1848) and in his lectures taught the ascendancy of a mechanical legality in all organic and inorganic life. Still he would happily clothe these views with his inborn idealism and look for connections with the principles enunciated by Spinoza and by Leibnitz, which many years later he published in the three volumes of his famous "Mikrokosmos." (1856-64). Thus his materialism was of an idealistic and refined sort. Altogether I warn you not to scoff at materialism as pulpits do and not to consider it a system or a dogma, but a principle which may be evolved out of the great modern discoveries in chemistry, physics, and physiology. According to their results, we know of no force or function which is independent of matter. For the naturalist, the separation between function and organ does not exist. We have no dealings with those who will force orthodox religious disputes into our studies and laboratories. For theology and science may and must travel their separate roads, and toil in their special fields. Otherwise, they do not necessarily exclude or always antagonize one another. Indeed, in the German Association of naturalists and physicians at Innsbruck, in 1869, I met Carl Vogt, the iconoclast, and a number of Catholic priests who were proficient entomologists and botanists, working at the same table. It is from that point of view that Huxley declares "atheism untenable. Where we know nothing, we can neither affirm nor deny with propriety." That is why he invented the appropriate term "agnosticism" and "agnostic." The question how much we or our successors may know about the intricate question of the existence of a mind or soul independent of the brain and body, or one that is absolutely connected with, or rather dependent on, organic anatomy, are moot questions we may safely leave to posterity to answer. Indeed, the world is filled with many more problems half solved or unsolved, and every new truth opens a vista of things unknown.

Surely when a physiologist like Emil du Bois Raymond in his discussion on such topics declared before his peers of the great meeting of Leipzig in 1872, "ignorabimus"—we shall not know—"and here are the boundaries of the knowledge of nature," it looked like theological bold-

ness coupled with senile indolence. At all events, modern psychology is not afraid of studying with biologic methods the questions connected with the organs of thinking. Psychophysics is part of psychology. Gustav Theodor Fechner (1801-1887) of Leipzig, should be considered its founder, but Wilhelm Wundt (born 1832) is now recognized as the most exact investigator of cerebral—so-called mental—functions, and the recognized head of the laboratory school of psychologists all over the world. They do no longer fear to apply their intellect to the study of their intellect. They are not even afraid of attacking problems left untouched by Julius Robert von Mayer (1814-1878), the author of the theory of the preservation of force. This theory, or rather this "law of the preservation of force", which is generally recognized, has become indispensable for biological research. It has finally annihilated the vitalistic theory, that is, the assumption of a special vital force; and has proven the sufficiency of chemistry and physics for the purpose of explaining the phenomena of biology and pathology.* Thus, on his lines, Robert Mayer has accomplished as much as Charles Darwin in his great books of 1859, 1868, 1871, and 1872 for biology, history, and archæology. Robert Mayer's name will be immortal on account of what he has achieved, and should not suffer because there are things he left undone, and truths he left unuttered. In regard to the latter he is, perhaps, slightly guilty.

Indeed, I was present when, in 1869, he delivered an address: "On the Necessary Consequences and Inconsistencies of the Mechanical Theory of Heat," in which, possibly overawed by many attacks by the always militant clergy, he postulated that in the world of intellect the laws of the preservation of force were not necessarily so valid as in the physical organism. Verily he was a queer example of greatness and mediocrity. He was a medical officer in the Dutch navy, and later a practitioner in a small South German town. Under the equator he noticed the altered metabolism of the sailors and the change in the color of the blood during venesection. That was enough to awaken his interest and to lead to results as great as the gravitation theory of Isaac Newton which is attributed to the falling apple. But he was an indifferent writer. His first publication of 1842 was hardly noticed, only that of 1845, under the title "Organic Motion in its Connection with Metabolism," (*Die Organische Bewegung in ihren Zusammenhang mit den Stoffwechsel*) made his name and his theory famous. I found his utterances halting and unimpressive, both in private conversation and in public, and he did not improve even in his fights for priority.

Nearest to him in line and in the results of his thinking came James

* Cf. Julius Pagel, *Gesch. d. Medicin*, Berlin 1898.

Prescott Joule (1818-1889) of Salford who delivered in the Section for Mathematics and Physics of the British Medical Association, 1843, an address "On the Calorific Effects of Magneto-electricity and the Mechanical Value of Heat," and Hermann von Helmholtz (1821-94). The latter's address on "The Preservation of Force," was delivered in 1847 before The Physical Society of Berlin. Both Mayer and Helmholtz must be credited with the elaboration and the final acceptance by the world of the great teaching. It is true that what they taught had been imagined or even asserted before. Titus Lucretius Carus said nearly 2000 years ago: "New things will always arise from the disintegration of others." Marriotte has the following: "La nature ne fait rien de rien, et la nature ne se perd point". Leibnitz formulated the doctrine of the preservation of force mathematically in 1686; the Marquise du Chatelet expressed cognate views in 1742; and Lavoisier taught the indestructibility of matter. But the world had after all to wait for Mayer and Helmholtz before previous suggestions were generally welcomed and adopted. In connection with all this you might learn one thing, my young friends, you should not forget. You need not be attached to a big laboratory or live in a town counting its inhabitants by millions to become famous and a benefactor to mankind. Robert Mayer was a physician in a small town in South Germany, like McDowell and Marion Sims in America.

Conrad Martin Johann Langenbeck (1776-1851) was professor of anatomy, surgery, and ophthalmology. He extirpated the uterus several times, improved the technique of amputations, of ligatures, of lithotomy, of cataract, and pupil operations. Of all these clinical feats I saw specimens in his clinic. It must strike you that there are men alive to-day who antedate antisepsis and asepsis, and you wonder at the kind of results obtained by men who worked in the anatomical and the surgical theatre the same day, and every day. What at those times you could have seen all over the world, however, I participated in myself. For when I was professor of the diseases of children in the New York Medical College, 1860-64, my surgical colleague was John Murray Carnochan (1817-1887). I admired him much, both on account of his learning and his dexterity. In one respect only we disagreed. I saw forty-five years ago a great many cases of diphtheritic croup and performed numerous tracheotomies. It was nearly thirty years before the era of intubation. Once in a faculty meeting, he enquired: "Does Jacobi not cut too many throats?" Still, he was a great surgeon indeed, who ligated (1851) the femoral artery for elephantiasis, excised (1850) the second branch of the tri-facial nerve centrally from Meckel's ganglion, resected the ulna (1853),

wrote on hip joint luxation, on lithotomy and lithotripsy, and on congenital luxations (1850). Carnochan dissected the dead body and operated on the living in the same amphitheatre, on the same table, in the same purple gown, on the very same day.

Now, to return. When I arrived in Göttingen, 1848, the story was told of an English surgeon who was a guest of Langenbeck's. A femur was to be amputated, the patient on the table; Langenbeck took the knife and the Englishman his spectacles to adjust them. When he was ready to look on, the thigh was in the basket. Rapidity at that time stood as high as safety at present, indeed, rapidity was demanded for safety. Remember, however, there are those at present who assert that safety would be greater to-day also if the temptation of losing time over anæsthetising and operating—mainly the former—were not so great, and the respect for myocardial degeneration and for the jeopardy of the splanchnic nerve not quite so small.

As it was my object to make you acquainted with really great men only, whose memory should be greatly preserved by all who are interested in the progressive history of medicine, I turn to my final three semesters which I passed at Bonn.

Freidrich Nasse was more than a kind, humane, and pious physician and teacher; he was one of the few—indeed, the first—German clinician who introduced the findings of Laennec and Skoda into German medical instruction. You see how fortunate I was. Born in 1778, he could never, it is true, divest himself entirely of the influence of Schelling's so-called "nature-philosophy" and of Mesmer's animal magnetism. Indeed, in 1850, while I worked in his clinic, he wanted me to go to Holland to magnetize a hysterical young lady. She had to get along, however, without my ministrations. For many years he had been intimately connected with Ennemoser, who explained the relations of Adam and Eve to be founded on animal magnetism, and taught the method of magnetizing the trees in the field and the child within the maternal womb. As I have mentioned, the first forty years of the eighteenth century were the period of the greatest humiliation of German medicine. Most of its literature was steeped in gross obscurantism and its teaching and language were mostly unintelligible. In spite of all this, Nasse, who was first a practitioner in a small city, before in 1818 he became professor in Bonn, recommended the use of the thermometer in scarlet fever as early as 1811,—it was introduced and popularized by Wunderlich half a century later—published experiments on the processes of elimination in connection with the changes of the blood caused by respiration in 1816, and on combustion and respiration in 1846, on regeneration of nerves and occasional restitution

of their functions in 1839, and many essays on the physical causes of mental diseases.

To us he was a paramount blessing in this way. Until the middle of the nineteenth century the diagnoses were mostly symptomatic. For instance, it was generally claimed that "gastricismus"—perhaps you would call it dyspepsia now—would change into gastric fever, gastric fever into typhoid; pneumonia and pleurisy were chest diseases; endoperi-myocarditis were simply carditis; and cyanosis, fever, dropsy, jaundice, constipation, diarrhoea, apoplexy, and paralysis were recognized as full-fledged and scientific diagnoses. Indeed, we have not altogether worked away from this self-satisfied indefiniteness; for our successors will have to correct us for still making the diagnoses of rheumatism, of myasthenia, of neurasthenia, and of epilepsy, and for coupling with the names of writers a disease or a complex of symptoms,—such as Friedreich or Addison, Basedow or Graves, or even Banti, and for believing that we have thus accomplished the quintessence of sound and scientific diagnoses.

Nasse taught us to avoid such names and such symptomatic diagnoses. They were permitted as denominations for a class or complex of symptoms, but he insisted upon the finding of anatomical causes; that is why nobody was a more regular attendant on autopsies than our revered teacher. But his principal method was the early adoption of auscultation and percussion as taught by Laennec. Indeed, this great Frenchman credited him with being one of the few Germans who introduced the new gospel into his country. For hours, daily, during the three semesters I was in Bonn, he drilled us personally in percussion and auscultation. With the exception of Krukenberg in Halle, he was between 1830 and 1840 the only public teacher of clinical medicine who treated it as a part of natural science. He died in 1851. I was one of the last two of his young men whom he graduated.

The clinical advantages we had in Bonn were probably superior to those enjoyed in any other university; for the professor of surgery and of obstetrics imitated the example given by Nasse. As the medical school was but small, our relations to the professors and the patients in the hospital—which contained about eighty beds—became quite close. Large classes cannot enjoy such advantages. The amphitheatre teaching in Berlin, Vienna, New York, Philadelphia, and other large cities, afford but insufficient opportunities. That is why so many small practical classes have to be formed there, under assistants and adjuncts. A moderate number of patients thoroughly studied outweigh by far a large number of cases counted, but slurred. A hundred students driven along by a hundred bedsides, unable to examine personally, un-

able perhaps to see, will develop into a hundred doctors who will have to attain their knowledge from a future practice or a cemetery of their own. They may learn at the expense of their patients, or may make the same mistakes a hundred times. One hundred mistakes are then called experience. The facilities I had and the methods I learned at Bonn more than a half century ago are still superior to those of nearly all our present American medical schools, and were the models I introduced into my teaching when I became connected with American institutions. Not only did I for the first time in America specialize the teaching of the diseases of children, but the first real, active bedside-instruction was exhibited under the very roof of the New York Medical College, with which I was connected from 1860 to 1864 at the expense of the enthusiastic faculty and some of our friends. In that year, 1864, the College closed its doors.

Karl Wilhelm Wutzer (1789-1858) was professor of surgery and ophthalmology.* Before he knew anything about Marion Sims' efforts and achievements, or those of his predecessor, Mettauer, whose history Ben. Johnson has lately written with a loving hand for the American Surgical Association, he operated for vesico-vaginal fistula, with more or less favourable results. When I assisted him in 1850, chloroform had been introduced and facilitated the operation which, the instruments being clumsy and the methods defective, lasted many hours sometimes and had to be repeated. Jobert de Lamballe was in Europe his only example to follow. Wutzer was, like Fournier and Erb after him—perhaps even more so than they—a great believer in the ubiquity of syphilis. With twinkling eyes he would look up to us suggesting that "everybody is a little syphilitic."

Moritz Ernst Naumann lectured on general pathology. He had written a big book on that subject in six volumes. But he was a religious and kind-hearted gentleman; that is why he did not expect us to read them.

They were not all of that turn of mind. The Professor of *Materia Medica*, Christian Heinrich Bischoff, having threatened me and promised himself to "pluck" me, forced me to spite him and to learn by heart his formidable old-fashioned and unintelligible text-book. Two factors came to my aid. At that time I had a good memory, even for incomprehensible things; and, secondly, the examination took place in the presence of the whole faculty, who knew of the disturbed diplomatic relations between the professor and the student.

Another more illustrious man—a fellow student and a real friend—

* He wrote on anatomical and ophthalmological subjects, hernia, tenotomy, ligatures, and injuries of the skull.

whose name should not be forgotten in the history of Medicine, was Carl Otto Weber (1827-67). He passed his whole student life in Bonn, and was by far the most accomplished man in a wide circle,—a good anatomist, clinician, botanist, mineralogist, and musician. He died very young, 1867, while Professor of Surgery in Heidelberg. There he succeeded Gustav Simon (1824-76), whose name should be familiar to all of us on account of his priority in extirpation of the kidney. Carl Otto Weber wrote authoritatively on diseases of the tissues, of the skin, connective tissue, blood and lymph vessels, nerves, the face, on enchondroma, epithelioma, and the diseases of the joints. He died a medical martyr. Performing tracheotomy on a croup child, he prevented suffocation by sucking out the trachea filled with blood and diphtheritic membrane. He saved the child, he destroyed himself, and with himself the hopes of the medical world.

Foremost among the good and great men whose friendship and assistance I enjoyed at that time and ever since, was Dr., now Sir Hermann Weber. He was Nasse's chief of clinic, and was entrusted with the principal hospital work and the out-door practice amongst the poor. Under his guidance I had a good deal of practical work. At another occasion I have reported the case of an old man of 78 years whom I had thus to treat in 1850, for his bilateral pneumonia. At that time the internal treatment of pneumonia consisted mainly in the administration of large doses of tartar emetic. Venesections were still made frequently; after a while they were unduly neglected and abandoned, so that nowadays you sometimes find a practitioner who does not know how to perform one without the fear of cutting into the brachial artery. So I made two venesections, attended him all the way through, and still he got entirely well. The case may teach you two things: 1st, that even a seriously ill man of 78 need not be despaired of; 2nd, that you are, however, under no obligation to make serious mistakes, fashionable or not. Dr. Weber emigrated to London in 1851. He advised me of that step in the last letter I received from anybody for several years during which the Prussians were taking me for a political star of dangerous magnitude, and dragged me from one of their dungeons to another. After years I met him in London as a house physician in a hospital. Then he embarked in a successful consultation practice, became a much respected and admired authority on subjects connected with climatology, mineral springs, and tuberculosis, was knighted, and practices successfully what he preaches. His address, published two years ago, on the means for the prolongation of life contains the teaching which has made him a joyful and youthful gentleman at present of eighty-two years. He is the only medical friend of those distant years

still left to me. If he will promise to continue the genial youthfulness of his heart and brain, I hope he will survive me for a generation. If, however, he would insist upon it, I should not object to keeping him company.

I hope, gentlemen, that many of you, as he did, will go into general practice. It is true there is more reputation in narrowing one's self down in a specialty, but remember for a few only; more money for some; a narrow horizon nearly amounting to actual blindness for almost all. If there be any here preparing to embark in a specialty immediately after graduating, I sympathize with them, for they condemn themselves to carry blinders all their lives, and to lead the lives of medical hermits. Whoever expects to be great in a specialty should arrive at its portals through the gates of general practice. Whoever without ample and wide clinical experience limits his field of vision to the nasal, or rectal, or laryngeal cavity, acquires and deserves all the darkness of the gloomy regions of his choice, and whoever is one of those who like to misunderstand, and to censure Jacobi for hating specialties and disapproving of specialists, are merely enjoying their misapprehension.

I am certain I shall not be misunderstood here. No science or art can improve without specialistic work. Great investigators must concentrate their efforts to find new facts for us; many of them have become benefactors only by becoming unselfish martyrs. What I object to is the flippancy of young practitioners which tempts them to look upon the human organism as a mechanism whose parts they may separate and treat like the wheel in an engine. On the other hand, I admit that our personal attitude to the question of practical specialism may become just a trifle strained and look overdone. I will give you my personal experience:

Fifty years ago it was my greatest ambition, and the aim worked out for myself and dimly seen in my mind's eye, to live long enough to develop the study and the teaching of physiology and the diseases of infancy and childhood to such an extent as to be mentioned among the pediatricists of America, or perhaps even of the world. I knew my Seneca and remembered "*Patet omnibus veritas, nondum est occupata*—truth is open to all, it is not occupied." In a long life views and aims may change, however, or at least be modified. I have become more sensitive, I believe, certainly I do not like to be called names, least of all "specialist." When I got out of my intellectual teens, that is, when I grew up to be fifty or sixty, or seventy-five for that matter, I lost my taste, if ever I had it, for being labelled with a trade mark, like the German *Kinderarzt*, or *Frauenarzt*, or *Nervenarzt*, or what not, displayed on their shingles. A hundred times strangers would call

at my office and ask: We understand you are a children's specialist, and I would say: Specialist? No such thing. If I am not good enough as a doctor, go somewhere else. And somewhere else they would go—sometimes to my own college clinic.

A specimen of what has often been called a specialist was Carl Gerhardt (1833-1902), since 1871, when I met him first, my friend until he died three years ago. He published, in and after 1861, several editions of a wonderfully learned, at the same time practical and concise text-book on the diseases of children. He was the editor of the great manual of diseases of children which appeared in 7 volumes, 1877, and during a course of nearly twenty years, and placed pediatrics in Germany on a sound footing. Thus he was the predecessor of Keating in America and Grancher and Comby in France. If anybody could be called a specialist in the diseases of children, his was the claim. But he was the general clinician in Jena, in Würzburg, where he succeeded Bamberger, and in Berlin in the chair vacated by the death of Frerichs. He wrote on the location of the diaphragm, the diseases of the pleura, and of the larynx, on croup, and many other subjects. One of the best books on auscultation and percussion in any language is his. He was, perhaps, the most expert laryngologist of Germany, and was the first to diagnose, while an extermination was still possible, the cancer in the larynx of the unfortunate Crown Prince of Germany. He was a perfect chemist; the iron chloride test of glycosuria is named for him, not by him—for he had the righteous simplicity characteristic of a really great man—and was none of the strenuous gasometers replete with pompousness, promises, and inconsistencies, whom we cannot avoid meeting in society or in politics. He was a physician looking for the ends of medicine, which is the cure and prevention of disease. The recommendation of sodium borate for adiposity—gentler and less dangerous than the much abused thyroid preparations—is among his last publications. Facing the preface of my *Therapeutics of Infancy and Childhood* there is this dictum of Gerhardt's: "Healing is a fruit that grows on the tree of knowledge. No rational therapy without diagnosis. First examine, then judge, then treat." He was the ideal scientific physician and teacher. It is true, gentlemen, there is, perhaps, nobody here who will ever be a Gerhardt, but there is no one who should be without the highest ideal. Ideals are not for those only whose heads tower above ours, and the very soles of whose feet seem to walk over the clouds, but for all of us who take pride in admiring great examples and trying to follow them.

The same year (1902) which deprived the world and me of Gerhardt, removed three other great physicians. Adolf Kussmaul, I never met personally; Hugo von Ziemssen I knew when a student in Greifswald

and met from time to time in later life. Perhaps he is most widely known by his editorship of a great cyclopædia, viz., that which preceded those of Eulenburg and of Nothnagel (Thompson Holmes, 20th edition). A still more important achievement of his is the powerful aid he gave to the regeneration of the Munich University and its change from what was a clergy-ridden and mediæval prison of the intellect, into a modern school of thought, and of science and art. So if Gerhardt was the benefactor of clinical medicine in all its special branches, entitled by his accomplishments to the place of a specialist in each, Ziemssen, while being a great teacher and original writer, added to these merits of his the delivery of a great institution from the fetters of ultramontaniam.

The greatest, however, of all the gigantic intellects, and at the same time a humanitarian of a world-wide horizon, was Rudolf Virchow. We all have lost in him a friend, for he was a friend and benefactor of mankind. His is a new era, that era created mainly by him. You know about his hundreds of epoch-making writings, about his tumours, his cellular pathology, and his Archives, which has reached its one hundred and eightieth volume. In the history of our profession, aye, in that of mankind, there is no man in whom a vast intellect was blended with a warm heart to the same degree. There never was so great a statesman in our ranks. At the age of twenty-eight years the Prussian Government sent him to upper Silesia to study the petechial typhus which was devastating the country. In his report he pictured the nosology and pathological anatomy as it had never been done before, but also its etiology, viz.,—the governmental neglect of the inhabitants which extended over centuries; their poverty, ignorance, filth, the moral and intellectual tyranny of the Catholic hierarchy, the economic subjugation both of the Prussian bureaucracy and of the effete feudalism. He urged medication and sanitation, but more eagerly social reforms, culture, liberty and comfort, unlimited democracy, education in public schools, agricultural institutions, care and education of the numerous orphans, building of roads, and the general recognition of the fact that, as he expressed himself, "our century is the beginning of a new social era." What happened? Was he applauded? decorated? rewarded? In accordance with Prussian methods, he was deprived of most of his public positions! Then in the first number of a new journal he said: "The physicians are the natural attorneys of the poor, and the social problems should largely be solved by them;" and in the last: "The medical reform we contemplated was to be a reform of science and of society." With this early programme he filled his rich life. Whatever concerned men, present and past, that he studied and revealed,—the sick, the dead, man both historical and prehistorical, man as a social

animal, in the municipium, in the state, on the globe. Modern anthropology has no more fertile contributor and founder; archæology was greatly benefited by his studies and travels. The contemporaneous human bee-hives of the whole world roused his warmest interest. He addressed hundreds of popular meetings, edited a thousand popular essays, looked after the sanitation of schools and civic and military hospitals, made Berlin a healthy city, and in parliament aided the liberal movement in Germany. There never was a man who more than he deserved the hatred of a few scoffers,—amongst them of the coarse, brow-beating Bismarck,—and the admiration and gratitude of his native land and all mankind.

This greatest of all pathologists, archæologists, anthropologists, was a statesman in this also—that he recognized and proclaimed the aims of medicine to be scientific healing. It may not be generally known that for a long time he directed a ward in the Charité hôpital. His handbook on pathology and therapeutics, written by himself and a small number of select men, 1854-1862, contains in its volumes everything that was known half a century ago, and much more than was new, and much that will stand for all times. He was the biological seer, knowing all and predicting more. His like we shall not see again, perhaps need not see again, because men endowed with high talents will do enough when building on the foundations. If there be anything I am proudest of in my comparatively humble life, it is the honour of his friendship which I enjoyed these last twenty years.

Amongst those whose personal acquaintance I enjoyed, was Billroth, the great and original surgeon, at the same time an educator of high rank, and a popular member and leader of musical and classical society. Amongst my reminiscences, I treasure the following: In one of the instructive reports of his clinic, a third of a century ago—it was that of Zurich, long before he was called to Vienna—he spoke of tracheotomy in children as being to him the most formidable of all operations. He was terrified by the struggles of the child that suffered not only from the strangling croup, but from its fears and pain, and anguish and agony. Evidently he never used chloroform in this operation. Indeed, some authors were of the opinion, resulting from nothing but lack of experience, that anæsthetics increased the orthopnœa and anguish. I wrote to him about my own experience with chloroform, and that I feared the final termination but not the operation. A few years after I met him at a Congress. He laughingly said: “Thank you so much, I am no longer afraid.” I replied: “That is what people say of you anyhow.” A good handshake was my reward.

I shall still mention Nothnagel, who died lately, much younger than

I, and a warm friend—one of the born knights. His position in the world of medical letters you are intimate with. What you may not know is that all the reactionaries, all the obscurantists, and the whole rabble of antisemitic millions in the Austrian monarchy honoured him with their hatred, and spiteful persecution. As there was sunlight in his head, so there was warmth in his heart; that glowed for all that were down, all that were oppressed, rich and poor, without regard to colour, race, or previous conditions of servitude.

Gentlemen, I have kept you long, but I like to talk to the young. If, however, you are of the opinion of Cicero, who said that old age makes loquacious, "senectus loquax" please remember that I had to wait seventy-five years before I had this opportunity. Therefore you can afford to give me another minute for a few aphoristic conclusions that may be drawn from my kaleidoscopic review of past times. You have seen that great times make men, but men contribute to making history. That of medicine extends over thousands of years, but never attained actual scientific progress until it was studied as part of biology and founded on facts either clinically observed or based on experimentation. From our time on the teaching of Hippocrates will always be correct: "Whoever looks for a new road or believes he has found a new scheme is either a deceiver or deceived."

The few men I have presented to you in brief sketches, dear to me for more reasons than one, should be so to you because they moulded part of our common records. Their labours, their very existence, meant an active advance for medicine. They deserve our gratitude, and they teach us modesty, for there may not be many amongst us whose achievements will reach theirs. You will have noticed that much valuable work has been done long, long ago. If you will study history you will acquire a proper regard for our ancestors. If their writings were properly scrutinized and remembered there would be no such deluge of ephemeral rediscoveries of facts that your fathers knew or even learned from a previous generation. By examining the past you will save yourself much repetition and labour, and will improve your opportunities for real original work. For what the dead, or we the old, could not accomplish is a debt than you and your contemporaries should be anxious to pay. If you get into the habit of earnest scientific work you will never be older than the questionable forty or sixty, and there is at no time a metaphorical chloroform for you. But remember three thousand years' old Hesiod: "The immortal gods planted sweat before virtue; the path leading to the heights is long and steep." Also remember our good and great, and genial William Osler's master-word, which is: Work.

Most of the men of whom I have spoken to you were more than medical men only. The mere tradesman in the profession is a "med-

ical man"; the gentleman in the profession is more, he becomes a physician—but he only. In the lowliest practice there is many a case that no medicine will cure, but the medicus. You may be ever so learned, and yet an inefficient doctor. We doctors of the United States and the Government of the United States knew everything about typhoid and dysentery and their prevention, but Chickamauga and Montauk killed ever so many hundreds of young fellow creatures and made thousands of life-long invalids. Before the so-called Spanish-American war to each 2 men killed or mortally wounded in battle 10 would die of disease, and according to Dr. Louis L. Seaman in the Japanese army 1; in that of the United States 28. So-called civilized government can be as ruthless and savage as nature herself in her cruellest moods. That will always be so until the physician is accorded the controlling place in society demanded for him by the sages of all ages—Socrates, Kant, and Gladstone. Yours is the duty to work for that blissful future. While being citizens in the profession, be citizens in the community, in the state. You should be pathologists and therapists to the individual patient, you should, like Oppolzer, be the practical humanitarians. Still therapy, you understand, is not drug therapy only; but prevention and sanitation, and diet. But do not forget that the misanthropic disbelief in drug medication is the result of only ignorance or indolence. I never knew a surgeon to disbelieve in his knife when he knew its virtues and applications. I never knew a drug to do harm when not misused, or accomplish aught but good when its property was understood and the indication for its administration correct. The knowledge of your case and your drug, and the sympathy with the sick, will give you courage and patience; it is ignorance or callousness only that causes cowardice or negligence. Read your Hippocrates, my young friends. He tells us that "the art of medicine leads to piety towards the gods, and to love of man. Where love of your art is," he says, "there is love of mankind." Combine science and art and humanitarianism in private and public life. If you do so, you will be the good and blessed, and great physician and citizen. We may not be counted among the immortals, neither you nor I, but the good we do is not mortal, for there's no force but is preserved, and no active life is spent in vain. You are young, and young your ideals. The best men whose pictures I have showed you preserved their young ideals to their dying hours. Thus their lives exhibit examples of singleness, harmony and power. They were apostles of medicine who transmitted their gospel to their successors. All their great heritage is ours, is yours. In the science and art of medicine much is given us; and from us, from you, much will be demanded.

RECENT VIEWS ON THE THERAPEUTIC VALUE OF ALCOHOL.

BY

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On a subject about which so much has been written during the past few years, an apology is due the Association for speaking at all, especially as I must frankly at the outset admit that I have no new or original work to place before it, but, as the position of alcohol in therapeutics has been of late so seriously questioned, a critical *resumé* of the more recent views concerning its action may not prove altogether uninteresting.

The indictment which is now brought against the use of alcohol in medicine may be stated as follows: It does not stimulate the heart nor raise blood pressure. On the nervous system it is not a stimulant but a depressant and narcotic. It has no value as an antipyretic; it lessens the natural protective powers of the organism against infection and thus increases the tendency to bacterial invasion. It has no real food value. Its continued employment gives rise to a disturbance of metabolism, favouring the retention of waste products in the system. Briefly, it is asserted that alcohol fulfils no important indications in the treatment of disease; that its employment favours degenerative changes in the tissues, and there are weighty social reasons why the profession should no longer countenance its use.

The use of alcohol as a remedial agent comes down to us from very hoary antiquity, and has in the past been recognized as of considerable value by a long array of the most careful clinical observers that our profession has produced. Most of us have from the very beginning of our medical career been taught to regard alcohol as a rapidly diffusible stimulant, affecting both heart and nervous centres, easily appropriated by the organism and leaving on the whole few injurious after effects. An indictment like the above strikes at the foundation of our therapeutic faith, and calls for careful investigation.

At the outset let me say, as a pharmacologist, that on no other drug in the pharmacopeia has such an enormous amount of patient, careful work been expended as has during the past twenty years been given to the elucidation of the above questions, and, although on some points knowledge is still defective, pharmacologists of the present day feel able to speak on the main question with confidence.

Taking up the several points seriatim, let us enquire first into the action of alcohol *on the heart and circulation*. Careful experimental

work on animals done in Germany, England, and America proves, I think incontestably, that alcohol in moderate doses does not perceptibly increase the efficiency of the heart action. There is sometimes a slight initial acceleration due to reflex action from the stomach. There is also a slight and transitory action on the heart muscle as on all the muscles of the body; this however, passes off quickly—about 30 minutes, and is followed by a depressant action which more than outweighs the temporary stimulation. On the blood vessels alcohol produces a dilatation of the superficial arteries with some evidence of a constriction of the vessels in the interior of the body; recent investigations refer this constriction to the area supplied by the splanchnic nerves. Blood pressure is not raised. A large and toxic dose acts as a direct depressant to the heart muscle and to the arterial system, and produces a notable fall in blood pressure. Numerous observations on healthy men have shown that alcohol in ordinary doses produces no appreciable change in the pulse rate or in the blood pressure of subjects when placed in bed or in some unchanging environment. To the finger the pulse may feel fuller, but the sphygmograph shows tracings of a similar type to those seen in aortic regurgitation. The results so uniformly obtained in the laboratory have been completely corroborated by observations at the bedside. Cabot, in the wards of the Massachusetts General Hospital, took more than a thousand observations on the blood pressure, temperature, pulse and respiration of patients, chiefly typhoids, before, during, and after the administration of alcohol in varying therapeutic doses, and found that neither the maximum nor the minimum blood pressure showed any variation that could reasonably be referred to the action of the alcohol; neither was the temperature, pulse rate, or respiration affected by it as judged by an additional series of observations on 309 other patients suffering from a variety of diseases. Dr. Cabot's conclusion was that so far as could be measured by the instruments at our disposal at present, the action of alcohol upon the circulation was nil.

Dr. Crile, of Cleveland, also as the result of most carefully conducted experiments, concluded that alcohol had no effect on the circulation so far as can be judged by an estimation of the pulse and blood pressure, either of normal animals or those in a state of shock. In cases in which a similar investigation was carried out in the wards of the Montreal General Hospital by my Assistant, Dr. R. J. Patterson, similar results were obtained. I think, therefore, that the conclusion is inevitable that the action of alcohol upon the heart is too slight and indefinite to be depended upon in therapeutics.

The effect of alcohol on the respiratory system may be summed up in a similar way; in moderate doses it has little therapeutic value as a respiratory stimulant.

The action of alcohol on the nervous system is a more complex one, and on men its apparent effects often vary considerably in different individuals. The first effect is generally one of apparent stimulation, with indications of increased mental and motor activity. This effect, physiologists affirm, is not due to the direct action of alcohol on the centres controlling this activity but to a depressing action on the higher inhibitory centres. Cushny illustrates the character of this action as follows: A person observing a sudden increase in the speed of an engine, may attribute the increase to more steam on the piston; it may, however, only be due to the removal of the brakes. It is noteworthy that this apparent stimulation is rarely seen in the sick, but becomes very noticeable when the action of alcohol is associated with the stimulation arising from good company, brilliant lights, and stimulating viands. *The true effect of alcohol is a depressing one*, manifesting itself first on the highest and last acquired centres of judgment discrimination and self-control; these are paralyzed, with the result that the centres of thought and motion which, under ordinary circumstances would be inhibited and retarded by these higher faculties, act now with increased freedom. In the result the increased blood supply to the brain arising from dilatation of the cerebral arteries may take some part.

Furthermore, the studies of Kraepelin and many others who have since corroborated his work, indicate clearly that alcohol does not increase either the mental functions, or the activity of the motor centres of the brain, or of the centres for associated action in the cord. On the contrary, it distinctly lessens their capacity for work, even when the doses are small, while with full doses the benumbing effect becomes very prominent.

This action of alcohol, however, is not in conflict with its clinical use. If alcohol were a true cerebral stimulant, how seldom could we employ it to advantage in medicine, especially in acute disease in which our great object is to secure rest for irritated nerve centres. The great objection against the use of caffeine in therapeutics is its stimulating action on the cerebrum, inducing wakefulness and mental and motor activity. In contrast to such an action physicians in practice find the benumbing narcotic influence of alcohol on the mental, motor and sensory centres can frequently be employed with considerable advantage.

The effect of alcohol on the power of the organism to resist bacterial invasion is a subject on which much experimental work has been done. Binz, in his lectures published in 1885 writes: "The opinion of our clinical teachers may in general terms be expressed as follows: Alcohol

in large doses increases in the organism in an extraordinary manner the power of resistance to septic poison. This view he corroborated by an experiment carried out on two dogs; but, as the experiment was never repeated, much value cannot be placed upon it. Shortly afterwards, Thomas experimented with rabbits, giving some of them for several consecutive days 5 cc. of alcohol per kilo. of body weight, and then injected them with several forms of septic material. He found that animals which had received no alcohol withstood a much larger dose of infection than those who had received alcohol previously.

Laitenen made a long series of similar experiments, using 342 animals of different kinds. Abbott in this country also carried out a similar investigation. Both arrived at the same conclusion as Thomas. The objection which was urged against these experiments was the large and almost poisonous doses in which the alcohol was employed, 5 cc. per kilogram of weight being the equivalent in a man of ordinary size of 13 oz. of pure alcohol. More recently new series of experiments have been undertaken, using alcohol in considerably smaller amounts. The results obtained from these indicate that while alcohol in small doses did not influence the course and severity of infection, in large doses it reduced the hæmolytic complement in the blood of those to whom it had been administered, thus lessening the resisting power of the organism. It also brought about a reduction in the number of free specific receptors in the blood of a rabbit artificially immunized against alien blood, thus lessening the immunity. In other instances alcohol in full doses reduced the temperature, but increased the duration and the severity of the intoxication. It may be urged against these investigations that even the small doses of some of the investigators would be considered large by clinicians of the present day; and that (in the experiments) instead of giving the alcohol as we do clinically in small and repeated doses, the total daily dose was administered in one or two potions; it is also contended that the result of studies on animals cannot be used as evidence of its action on sick men. Such considerations may influence our judgment to some extent, but view the experiments as we may, to my mind they speak very emphatically against the lavish use of spirits in every form of bacterial invasion. They also, I think, make it probable that the results obtained by many excellent physicians who have in the past treated successfully cases of septic and other infection using large and sometimes heroic doses of alcohol have been due more to their treatment in other ways than to the large doses of alcohol employed.

Of the value of alcohol as a food, I think we can speak at the present fairly positively. The recent experiments of Atwater in this

country, and Rosemann in Germany, with which you are doubtless familiar, have been lately corroborated in an excellent piece of research work carried out by Goddard in England. I shall not take the time of this assembly with the details of his experiments, which have recently been published, but only deal with his conclusions. When alcohol is given to the amount of 1-750 part of the body weight to fasting dogs, 95 per cent. of it is burnt up in the system, the balance passing off chiefly in the respired air and through the kidneys. If the law of the conservation of energy obtains in the living organism as we have every reason to believe that it does, the potential energy of alcohol must be transformed into kinetic energy in the body, and if the conditions which are true of the dog can be applied to human beings, an average man of 160 lbs., if fasting can burn up in his tissues about 3 ozs. of alcohol or 6 ozs. strong whisky in 5 or 6 hours, representing a food value equivalent to about $5\frac{1}{2}$ ozs. of pure sugar or starch. It is therefore a fair inference that to this extent at least alcohol can be utilized in the body as a source of energy in conditions when other food can with difficulty be taken, digested, or absorbed. In thus acting as a food alcohol conserves proteid metabolism. Not only has alcohol this definite food value, but it has properties which, to my mind, enhance its value in conditions of exhaustion. It is a food that requires no digestion; but is promptly absorbed from the stomach, very little of it reaching the small intestines. Still further it promotes increased secretion from the gastric follicles, thus favouring the digestion of other foods; a fact which may be of inestimable value in those conditions of diminished or altered secretion associated with pyrexia and profound exhaustion.

It must be borne in mind however, that the effects of alcohol vary in different individuals, and that its action in the stomach is, to some extent, dependant upon variable conditions of the gastric mucous membrane and portal circulation.

With these facts before us, permit me very briefly to summarize what I consider to be the present position of alcohol in therapeutics.

1. Alcohol is not an efficient cardiac or respiratory stimulant, but when administered in frequently repeated small doses its action on the circulation may be regarded as favourable. In some conditions with a determination of blood to the interior of the body as indicated by cold extremities, livid skin, small pulse, scanty urine and high rectal temperature, a condition which has been described as bleeding into the splanchnic area, the administration of alcohol by dilating the superficial vessels and equalizing the circulation may be of considerable service. Alcohol may also be of value when given to counteract the

contraction of the peripheral vessels in the chill or rigor often associated with the onset of disease.

2. Alcohol is not a stimulant to the nervous system. Its action is that of a narcotic, benumbing sensation including that of fatigue, allaying subjective symptoms, relieving nervous strain and promoting rest. No other narcotic can be used so freely with so few injurious by-effects.

3. Alcohol in disease is a valuable food replacing carbohydrates, and, as a general rule, saving proteid metabolism. It places no tax on the digestive organs; on the contrary, if used intelligently, it increases their secretion, thus in low and asthenic conditions assisting the digestion and favouring the absorption of other foods. In such conditions it may also have a favourable action on the hepatic cells, stimulating them to increased activity.

In infections of all forms alcohol should be used cautiously. In such cases it may be of value to the system either as a food itself or as favouring the digestion and absorption of other foods, but in large amounts it may and probably will do harm by destroying the resisting powers of the organism.

As clinicians we have to recognize that the effect of alcohol varies much with the individual and that its employment demands much discrimination and careful and frequent observation. We should also bear in mind that its prolonged use is liable to lead to degenerative changes in the heart, blood vessels, and secretory organs.

ON THE RADICAL MASTOID OPERATION AND THE INDICATIONS FOR ITS EMPLOYMENT.

BY

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Every practitioner of medicine is aware of the numerous grave consequences which may follow chronic suppurative otitis media; but he rarely realizes the insidious nature of this condition. There exists, in fact, a strange apathy in the profession in regard to suppuration in the middle ear. Practitioners who would take instant steps to arrest suppurative processes in what might be termed "safe" areas of the body will yet allow a discharge to continue indefinitely from the middle ear, a space bounded at every point by structures of a vital character.

This apathy is doubtless attributable to the peculiarly grave dangers attending operations in and about the ear; but, while pardonable to

a certain extent in the past, it finds no justification at the present time. Thanks especially to German workers, we have now at hand operative procedures for the complete eradication of suppurative processes in the temporal bone, which take rank among the most brilliant achievements of modern surgery.

But all cases of chronic suppurative otitis media are not equally dangerous; and all cases of discharge from the middle ear by no means call for operative interference. The object of this paper is to describe some modern surgical measures for the relief of chronic suppurative otitis media and certain of its complications within the temporal bone; and to sketch briefly the indications for their employment. A brief consideration of the local, anatomical and pathological changes will help us in this endeavour.

The middle ear is divisible into a lower part, the "atrium," and an upper part, the "attic." The attic, which is defined by drawing an imaginary line inwards through the upper level of Shrapnell's membrane (see fig. 1 and text) to the inner wall of the inner ear, is in turn divided into an inner portion, which is called the inner attic, and an outer portion, which is called the outer attic. The inner attic stands in free communication with the middle ear proper; but the outer attic forms an almost completely closed cavity by itself. For above, this space is bounded by the tegmen tympani separating it from the dura mater and the temporo-sphenoidal lobe of the brain. Outwards is the bony projection which extends downwards from the external auditory canal to the membrana tympani. Inwards, the bodies of the hammer and the incus, and a delicate process of mucous membrane, which extends from these structures to the tegmen tympani and anterior and posterior walls of the middle ear, cut it off from the inner attic; while below, the axial band of Helmholtz, that is, the anterior, posterior, and external ligaments of the malleus, forms a more or less impassable floor. The outer attic stands in communication behind with the mastoid antrum.

The floor of the outer attic forms the roof of Prussak's space, a tiny cavity bounded above as stated; outwards by Shrapnell's membrane; below by the short process of the malleus; and inwards by the neck of the hammer. Occasionally the external ligament of the hammer is inserted directly into Shrapnell's membrane instead of the margo tympanicus; and under these circumstances the outer attic communicates directly with Prussak's space.

The outer attic is the most dangerous area of the middle ear. Suppurations in the tympanum proper or atrium and the inner attic may

be comparatively harmless; drainage is dependent and commonly so free through perforations of the *membrana tympani* that tension and necrosis are not set up to any considerable extent. But the case is different with the outer attic. Here we have to do with a cavity at times entirely self-contained as a normal condition, and commonly completely shut off during the course of a chronic inflammation, when any existing interstices are occluded by swelling of the mucous membrane present within its cavity. Suppurations in this space, which may be primary, but are much more commonly secondary to or concomitant with inflammation of the atrium, and in a variety of ways.

First, one may have destruction of the floor of the attic and a discharge of pus into the external auditory canal through a perforation in Shrapnell's membrane. Commonly associated with this condition there may be caries of the bony plate forming the outer wall of the attic with more or less extensive exposure of the hammer and incus. (See fig. 4.) These outcomes are to be looked upon as favourable, because drainage occurs in a proper direction, and may be sufficient, if free, to bring about a subsidence of the discharge. But the inflammation may attack the soft cancellous tissue of the *tegmen tympani*; producing a local necrosis, a local pachy-meningitis and eventually a *temporo-sphenoidal* abscess. This is one of the most common results of suppuration in this region. The external attic stands in free communication with the mastoid antrum; and clinical and pathological experience has shown that with inflammation of the one cavity there almost always co-exists inflammation of the other. Therefore, as another result, one may have an inflammation of the mastoid antrum going on to disease of the mastoid cells, and the production of a mastoiditis; and, through further extension of this inflammation, involvement of the lateral sinus with the production of a *peri-sinus* abscess, phlebitis, thrombosis, and eventually septicæmia or pyæmia from the entrance of septic material into the general circulation. Or, perforation may take place through that portion of the internal surface of the temporal bone, which bounds the cerebellar fossa and a cerebellar abscess be produced.

Another process which must always be taken into account in treating cases of chronic suppurative otitis media is that known as cholesteatomatous formation. It frequently happens that the epidermal cells of the external auditory canal proliferate and extend through a perforation of the *membrana tympani* to the interior of the tympanum. This process is very probably in the first instance a reparative one on the part of Nature; but it frequently happens that the underlying tissues are not in a proper state to receive the proliferated epidermal cells,

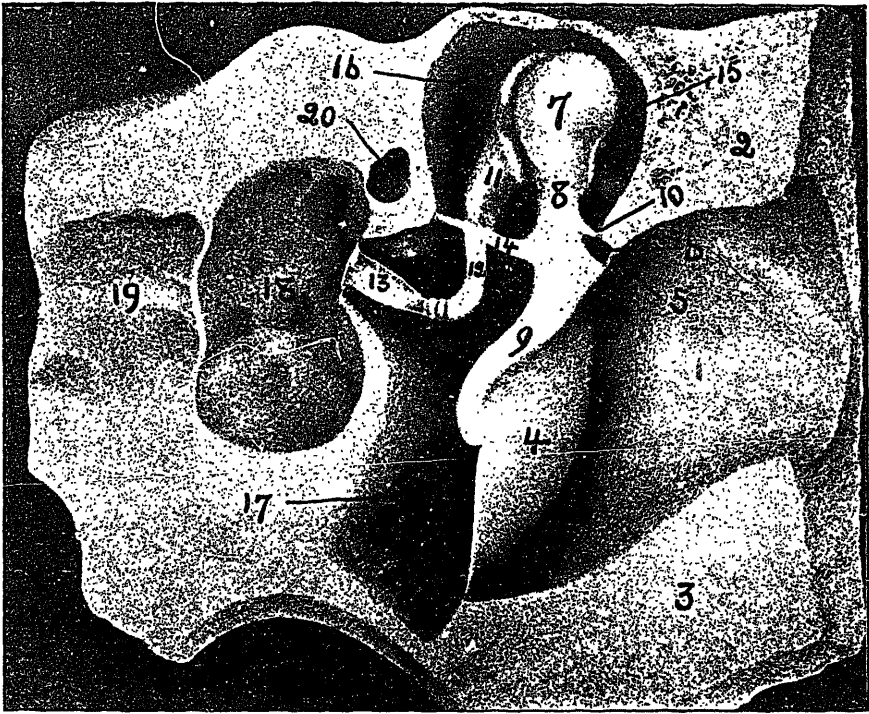


FIG. I. Section through the external, middle and internal ears. (Politzer.) 1, inner end of external auditory canal ; 2, section through superior wall of external auditory canal ; 3, ditto through inferior wall ; 4, membrana vibrans or membrana tympani proper ; 5, membrana flaccida or Shrapnell's membrane ; 6, Prussak's space ; 7, 8, 9, head, neck, and long process of malleus ; 10, external ligament of malleus and margo tympanicus ; 11 and 12, body and long process of incus ; 13, stapes ; 14, tensor tympani muscle ; 15, outer attic ; 16, inner attic ; 17, atrium ; 18, vestibule with openings of semicircular canals ; 19, cochlea ; 20, facial canal.

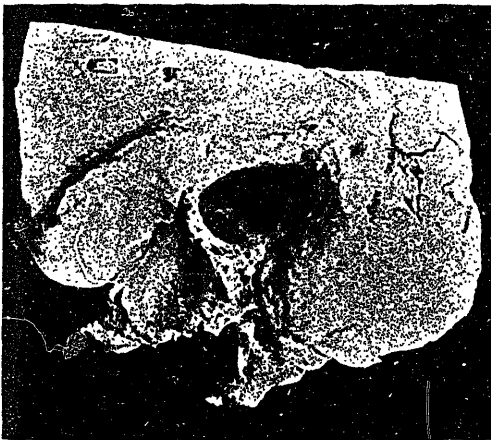


FIG. II. Temporal bone showing the dissection in cases of chronic suppurative otitis media. Only the cells over the mastoid antrum have been removed.



FIG. III. Temporal bone showing the dissection sometimes necessary in cases of chronic suppurative otitis media, complicated by mastoiditis. Practically all the mastoid cells have been removed.

and, as a result they undergo degeneration. In this way is produced a mass of dead material favourable to the growth of organisms, and liable still further to stimulate necrotic changes.

Now, if drainage be imperfect and cannot be satisfactorily established, it is easy to understand how serious a matter it is to allow an inflammation to continue for any length of time in this highly dangerous area. To prevent the most disastrous results the attic and the adjacent mastoid antrum must be freely laid open; and, in fact, every particle of diseased tissue in this region must be taken away to secure perfect immunity from danger. The object of the newer operative methods is to open up, clean, and heal these spaces when it is impossible to thoroughly drain them by the ordinary methods. A description of the so-called radical operation of Zaufal will illustrate what modern otology is accomplishing in this field.

Zaufal's Operation.

An incision is made immediately behind the auricle and is carried from its upper insertion to the tip of the mastoid process. The skin and periosteum are pushed freely aside, and the surface of the mastoid process is laid bare. The surface-marks are the same as for the ordinary operation; the mastoid antrum is held to lie beneath an area which is bounded by lines drawn tangent to the superior and posterior walls of the auditory canal and that portion of the circumference of the external auditory canal which is included between those lines. Chiselling is begun in the ordinary way, but the dissection includes as well the upper part of the posterior bony wall of the external auditory canal. One does not at first go higher than the *linea temporalis*, nor further back than 15 mm. from the external auditory canal, in order to avoid wounding the *dura mater* and lateral sinus respectively. The chiselling is also done at first from above downwards and from before backwards for the same reason. At a depth usually of about 15 mm. the mastoid antrum is opened; and after carefully wiping away all pus and granulation tissue one generally sees a slightly-raised, whitish eminence standing out against the surrounding congested background. This is the horizontal semicircular canal, and its immediate recognition is of the first importance. To wound the horizontal semicircular canal means to open up a channel for septic material to pass directly into the internal ear and intracranial cavity; or, at best to cause the patient weeks of extreme vertigo, nausea and lateral nystagmus. Besides this, it is an important landmark for the facial nerve, which lies immediately in front.

When the mastoid antrum is freely opened there remains a neck of bone which separates this structure from the external auditory canal, and is in direct continuation with the outer wall of the outer attic. This is next removed, great care being taken to avoid wounding the facial nerve, which descends immediately beneath it to the stylo-mastoid foramen. A careless or ignorant operator is very liable to produce facial paralysis at this juncture. The neck of bone and the outer wall of the attic dealt with, one next removes what remains of the incus, hammer and membrana tympani; and care is taken at this time as well as afterwards to carefully avoid injury of the stapes, as here again rupture of the structures filling the foramen ovale would produce a point of entrance to the internal ear and intracranial cavity. One

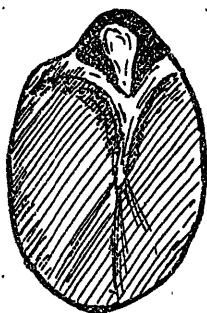


FIG. IV. "Dangerous" perforation indicative of disease of the outer attic. Shrapnell's membrane completely destroyed, and the head of the malleus exposed through caries of the outer wall of the attic. See Fig. 1., 10.

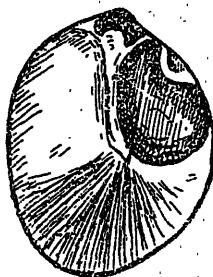


FIG. V. "Dangerous" perforation of the posterior-superior quadrant of the membrana vibrans in association with a perforation of Shrapnell's membrane.

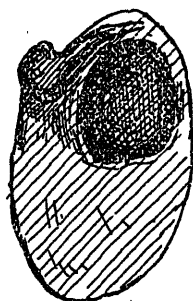


FIG. VI. Type of "non-dangerous" perforation in the posterior-superior quadrant of the membrana tympani.

has now a large, irregular cavity composed of the middle ear, the attic, the mastoid antrum and as many mastoid cells as were found diseased and removed. This space is thoroughly cleared of granulation tissue and inflammatory products and is enlarged at every point into sound bony tissue.

The last step consists in preparing flaps for the epidermization of the cavity above described. The knife is entered from behind forwards at the junction of the auricle with the membranous canal and is made to appear at the external meatus. The incision is then carried downwards and upwards, so that on again bending the auricle forwards one has a somewhat oval aperture in the posterior wall of the canal. Finally, another incision is made at right angles to the one described and throughout the whole length of the canal. In this way one pro-

duces a superior and inferior flap which are applied to the exposed bony cavity and held in position by means of gauze packed through the retro-auricular opening or through the external auditory meatus, the former having been closed from the outset by means of sutures.

The first dressing is done about the eighth day, and after this the wound requires daily attention until recovery is complete. Granulation tissue gradually arises and covers the whole of the exposed bony surface; and, following this, occurs a growth of epidermal tissue which in favourable cases forms a clean, dry lining at the end of eight or ten weeks.

The effect on the hearing of patients who show normal conditions in the nervous apparatus of the ear previous to operation has been found by Grossmann to be as follows: The hearing improves in 50 per cent. of the cases. This is due to the increased mobility of the stapes. It remains unchanged in 20 per cent. of the cases; and is made worse in about 30 per cent. On the whole, the outlook is rather favourable as regards hearing, especially if great care is taken not to interfere with the integrity of the stapes.

Stacke's Operation.

In those cases, where the inflammation is thought to be strictly confined to the attic and adjacent aditus and antrum, certain surgeons prefer to obtain drainage by means of Stacke's procedure. An incision is made behind the auricle; the skin and periosteum are pushed forward; the membranous portion of the external auditory canal is separated as deeply as possible from its attachments, pulled from the canal, and held at one side. In this way a clear view of the structures at the innermost part of the external auditory canal is obtained. What remains of the hammer and the membrana tympani is now removed, and the outer wall of the attic is taken away by means of special chisels, a protector being used to guard against injury to the facial nerve and other structures in the inner wall of the middle ear. The chiseling is continued backwards, if necessary, until the mastoid antrum and as many of the mastoid cells as are diseased are removed. Finally, the membranous portion of the canal is replaced, and is used for the purpose of lining the cavities so created in much the same manner as in the operation of Zaufal. The Stacke procedure has the disadvantage of a very small field of operation; but it has two very special indications for its adoption. The one is in those cases in which, as the result of sclerosing changes in the mastoid, the mastoid antrum is so small that it cannot be found through an ordinary opening without grave danger of wounding the facial nerve. The other indication presents itself when the lateral sinus lies so far forward that it is

impossible to enter the mastoid antrum through the mastoid process without injury to this structure. In both of these cases the danger can be avoided by removing the outer wall of the attic, and entering the mastoid antrum in this direction.

To-day, however, the majority of otologists prefer the Zaufal to the Stacke operation, once the necessity of a radical operation has been definitely decided upon, as the former procedure offers a wider field of operation and a greater certainty of removing all the cells which may be found diseased in the vicinity of the mastoid antrum.

Indications for the Operation.

In discussing the indications for the radical mastoid operation it must be admitted at the outset that some of our ideas touching this phase of the procedure are still in process of evolution. Unanimity of opinion prevails amongst aurists in regard to the necessity of the operation in several different diseased states in the temporal bone consequent upon suppurative otitis media; but the views of the authorities are more divergent when we come to the question of its application in suppurative otitis media as an isolated condition.

It is perfectly clear that in those cases where the attic has been already involved for some time, and cerebral conditions are threatening—as evidenced by pain, headache and vertigo—operative measures are imperatively and instantly demanded; and it is also clear that, once intra-cranial or sinus mischief has been set up by direct extension, nothing short of a radical operation will thoroughly clean up the local condition, and leave a free field for the work of the general surgeon. So too in those cases of chronic suppurative otitis media where the inflammation has extended from the attic to the antrum and mastoid cells the only procedure that can be successful is one which attempts not only to establish drainage as in the ordinary mastoid operation, but to remove as well all carious bone and inflammatory debris from the diseased temporal bone. And finally in those cases of acute mastoiditis which do not subside after the ordinary operation, but lapse into a chronic condition, it is advisable to thoroughly clean up the field by a radical operation.

Difficulty arises only when we come to the surgical treatment of chronic suppurative otitis media pure and simple. Some surgeons operate in every case, once a diagnosis of chronic suppurative otitis media has been established, and there is much to be said in favour of this attitude. But the majority of otologists are inclined to be more conservative; since it is perfectly true that the majority of cases of chronic discharge from the ear can be brought to a standstill by much

simpler methods. It is only in a certain few cases which resist treatment, or cannot be kept under close observation, that surgical intervention is indicated; and those are especially to be feared, in which the attic is more or less certainly involved. A perforation in Shrapnell's membrane, with or without caries of the outer wall of the attic, is positive proof of disease of this area; and we can be sure of disease of the attic and adjoining aditus and antrum when, with a perforation of the posterior-superior quadrant of the "dangerous" type, the pus is seen to come from behind and above on mopping away the secretion. Cases of this character, when accompanied by signs of advanced bony necrosis, call for radical and energetic measures in the absence of an immediate and marked improvement under the simpler methods commonly employed.

But in numerous other cases the question of the advisability of an operation is more difficult, and many factors have to be carefully considered before a proper judgment can be formed. In this endeavour, the character, size, and situation of the opening in the membrana tympani is helpful. Perforations of the drum membrane are classed as dangerous or non-dangerous, according, as they do, or do not touch upon the bony tissue. In fig VI. the type of a "non-dangerous" perforation, the opening is everywhere bounded by tympanic membrane. In figs IV and V, which represent "dangerous" perforations, a portion of the confines of the openings is formed by bony tissue. The inference is that in perforations of the dangerous type the inflammation has extended to the contiguous annulus tympanicus and set up there a necrotic process. With small perforations, and with perforations situated high up, the danger is obviously greater than with those of larger size, or with those situated lower down in the tympanic membrane. As a further aid to the detection of necrosing bone a delicate probe carefully handled gives valuable information; and accompanying necrosis the discharge has often a thin watery consistency, and a peculiarly foul odour which are characteristic to the aural surgeon.

The presence of cholesteatomatous material in the discharge, as indicated by characteristic whitish flakes, or caseating masses of a peculiar odour reveals another condition which always calls for serious consideration. The cholesteatomatous process has a very especial tendency to invade out-of-the-way cells which are difficult, or impossible, to reach by the ordinary channels. It tends directly by the pressure of its own growth, and indirectly by the stimulus it gives to the development of bacteria, to produce bony necrosis; and often it is insidious in its progress. While, therefore, there are exceptions to the rule, the un-

doubted presence of cholesteatomatous formation is another strong reason in favour of operative interference, and often of interference of a very extensive character, because of the widespread nature of the condition, and its well known tendency to recur unless every diseased cell is removed. Naturally, of course, the state of the patient's general health is another factor which can never be left out of consideration.

Eventually, however, the question comes to be in every case one of expediency. The surgeon must decide how long it is safe to allow any given ear to continue to discharge, and this can only be done by close observation of the case and a careful consideration of the factors enumerated above.

Finally, in brief, the indications for the radical mastoid operation may be summarized in part as follows: (1) Cases of chronic suppurative otitis media in which cerebral complications are threatening or have been already established; (2) Mastoiditis secondary to chronic suppurative otitis media; (3) Cholesteatomatous formation; (4) Cases of chronic suppurative otitis media not yielding to milder measures.

BALZAC, THE HERO OF "OVERWORK."

BY

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Philadelphia.

Men talk of the victims of wars and epidemics, but who considers the battlefields of arts, science, and letters, and the dead and dying that fierce struggles for success pile upon them?. Balzac.

Speaking as an expert craftsman, Henry James pronounces Balzac "the master of us all." "So far as we do move, we move round him; every road comes back to him." No other is comparable to him in the objectivation and vivification of his characters; they live by the inhering power of their own souls, which seem to have been given them by nature, not by the novelist. This creative instinct is the final seal of literary greatness, and by it one judges of its permanency. Balzac's characters, like those of Shakespere, have freedom, and their creator respects their liberty; "Balzac loves his Valeric," said Taine, and the truth is applicable to most of his characters. For quality and intensity therefore none approaches him. The wonder that a man could beget something like 2,000 such children of the spirit in less than 20 years is indeed a miracle which amazes those who have deepest studied Balzac's work. One is really dazed by the phenomenon when he overlooks the record of the amount of work done. His acknowledged writ-

ings begin in 1829, and end in 1849. In these 20 years his bibliography of separate and finished works gives the following number of titles:—

1829..	3	1839..	11
1830..	71	1840..	11
1831..	77	1841..	10
1832..	44	1842..	9
1833..	13	1843..	9
1834..	8	1844..	7
1835..	8	1845..	4
1836..	12	1846..	4
1837..	7	1847..	2
1838..	6	1848..	3
Total..		319	
Posthumous works..		6	
Correspondence..		2	
Inedited..		2	
Titles announced but never published		95	

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I have added the last item to direct attention to the inexhaustible imaginative ability, the creative spirit outrunning the possibilities of execution, even in one with almost miraculous powers. Nor should we forget that before he was 21 he had written a tragedy, spending 15 months in a garret to perform the task, and thereby was "reduced in health and strength." Before 1829, he had written ten novels in 40 volumes, not one of which he ever allowed to appear under his name. In 1835, Balzac (always self-conscious and well aware of what he was doing, of its results to himself and the world) says of himself:—

... think of those seventeen volumes manufactured by me without help; compute that that makes three hundred *feuilles* (4,800 octavo pages), each read more than ten times, and that makes 48,000, besides the conception and the writing.

Some essayist has made a calculation that during his years of literary labor he wrote in average over 600 words a day. Compare that with the half a dozen or more lines a day of Darwin, Parkman, Carlyle, and others.

At least partially equalizing the difference in research and imaginative work must go the fact indicated in the foregoing excerpt: Balzac had a magnificent conscientiousness in the quality of his writings. It is literally true that he compelled the printers and publishers to furnish as many revises as ten, sometimes at his own expense, so that often not a line of the original remained in the published pages. When one considers that all this time Balzac was deluged with his enormous and disgusting financial worries, his literary conscience must be writ large on the credit side of his account-book of heroism. In reply to an urgent publisher he wrote:—

I am ready to send you the copy on the 15th, but it will be the most infamous murder of a book that was ever committed. There is in me a feeling, I don't know what it is, which prevents me from consciously doing wrong. The question here is the future of the book,—am I to make it unworthy trash, or a work for the shelves of a library?

One is lost in wonder at the power of concentrated and persistent effort required to carry out the awful labor. For the greater part of these 20 years the man actually worked from 16 to 20 hours a day. A hundred quotations could be made in support of this; a few may suffice:—

I work now 22 hours daily. (1834).

Last week I took in all but 10 hours' sleep. (1834).

Père Goriot was done in 40 days, during which I did not sleep 80 hours. But I must triumph. (1835).

I am working 24 hours running. Then I sleep five hours, which gives me 21½ hours to work a day. (1835).

I don't know that brain, pen, and hand have ever done such a feat of triumph. (1835).

For 25 days I have only slept a few hours. (1837).

Such an abuse of the physiologic machine must finally produce disease; that it took Balzac 20 years to kill himself is only explainable by the fact that he had a physique of remarkably exceptional perfection. In the famous statue Rodin has brought this out with the insight of genius.* Nature and heredity had seemingly conspired to produce an organism superbly fitted to withstand the peculiar kind of abuse to which Balzac forced it. The brain, the magnificent organ that never failed to answer command, that never succumbed to disease no matter

* What then was this "Balzac" which was so much detested, and about which the most abusive and extraordinary things were written? Merely the image of the great writer, draped in a dressing-gown, with empty, hanging sleeves; he has risen in the night and is walking up and down, disturbed and sleepless, pursuing an idea that has suddenly presented itself. He is bent forward, his head thrown back, the eyes deep-set, and the mouth contracted in a smile of challenge. The powerful neck—the neck indeed of a bull—emerges from the open wrapper. Rodin made use of various daguerreotypes, and especially of a celebrated portrait of Balzac, that shows him in shirt-sleeves, with one brace, and folded arms. The enormous proportions of the head, the amazing strength of the thorax, the monstrous and leonine character of the face are all exact. "His was the countenance of an element," said Lamartine of Balzac, "with a torso that was joined at the head of an enormous neck, short legs and short arms." These words absolutely justify the statue. Rodin has made studies for it in the nude (there are some fine clay models of the subject in his study), then clothed it with a gown (or, to be more exact, with a bath-wrap, for that is what Balzac's famous monk's robe was), and proceeded to simplify the folds until he had left only the two or three essential ones. The result thus obtained with the disappropriation of body and legs, led Rodin to hide the short, ugly, useless arms under the drapery, and the figure thus assumed pretty much the appearance of a mummy, of a sort of monolith, from which nothing stood out but the one point of interest, the savage and magnifying animality of the head, with its darkened gaze and the bitterly curved mouth. (M. Maclair. From *Current Literature*, August, 1905.)

what was commanded, was fed through a short and massive neck* by the heart and lungs of the "amazing thorax." Had there been any sort of pity of the organism by its tyrant, the digestive and eliminative organs below might have permitted Balzac to work 25 or 30 years longer, as did those of Goethe, Humboldt, Gladstone, and others. Alas! There was the most absolute lack of pity, and at the last, despite his magnificent powers of regeneration, the eyes and kidneys had to cry out, "We cannot longer: you have demanded the impossible."

The history of the incapacities and rebellion of Balzac's body began with the beginnings of his reckless demands upon it. One of his biographers thus writes:—

"'When I was quite a young man,' Balzac writes, 'I had an illness from which persons do not recover; nineteen out of twenty die.' Dr. Nacquart said, 'If he gets well now he may live a hundred years.' . . . He frequently alludes to the fact that Dr. Nacquart saved his life. This illness, doubtless the heart disease which he mentions to George Sand in 1831, and to which his sister alludes as the result of a great mental shock, must have occurred during the first of these years of which there is no record."

This pompous nonsense however has its explication, and a natural one:—At the Vendome College, where he had been sent at seven years of age, he had not had a single holiday for seven entire years. At the end of this pedagogical barbarism "he was attacked with a sort of coma"; as he was accounted an idle boy his superiors could not understand it, and like the physicians of all later times, they rushed to "pathology" and "heredity" for reasons. It was a peculiar "affection of the brain." Honoré was thin and puny, he was in a state of semi-somnambulism, scarcely hearing, unable to reply to questions. In later years Balzac explained this and similar states as due to "a sort of congestion of ideas," — at least he did not fly to the theory of "disease of the cerebrum," "organic, or inherited." The rationale of its origin is plain when it finally comes out that the "idle" boy of 14 had composed "treatises on the will," and, unknown to the professors, had read "the greater part of the rich library of the College which had been formed by the learned Oratorian founders and proprietors of this vast institution!" Returned to his home by the perspicuous educators, the grandmother wisely remarked: "See how a college returns to us the blooming children we trust to it!" Health, love of life, and activity, soon returned to the boy at home.

From this time we have little trustworthy or suggestive history until

* My brother used to say, laughingly, in allusion to his want of height, that "great men were nearly always short: probably because the head should be near the heart, so that the two powers which govern the organization should work in harmony." (Honoré de Balzac, page 255.)

at the age of 34 the human machine begins to cry out against the outrages thrust upon it. The real nature of the hurts can be only guessed at in the following quotations from Balzac's letters:—

Yesterday I had an inflammation of the brain, in consequence of my too hard work; but, by the merest chance, I was with my mother, who had a phial of *balm tranquil*, and bathed my head with it. I suffered horribly for nine or ten hours. I am better to-day. The doctor wants me to travel for two months. (1834).

My cold is precisely the same. (1835).

I am a prey to the horrible spasmodic cough I had at Geneva, and which, since then, returns every year at the same time. Dr. Nacquart declares that I ought to pay attention to it, and that I got something which he does not define, in crossing the Jura. The good doctor is going to study my lungs. This year I suffer more than usual. (1836).

. . . . speaking literally, I *am* killing myself. Physical strength is beginning to fail me. (1836).

My forces are being exhausted in this struggle; it is lasting too long; it is wearing me out. (1836).

. . . . A nervous sanguineous attack. I was at death's door for a whole day. (1836).

All the mucous membranes are violently inflamed; I cannot digest without horrible suffering. (1836).

I entered the garret where I am with the conviction that I should die exhausted with my work. I thought that I should bear it better than I do. It is now a month that I have risen at midnight and gone to bed at six; I have compelled myself to the least amount of food that will keep us alive, so as not to drive the fatigue of digestion to the brain. Well, not only do I feel weaknesses that I cannot describe, but so much life communicated to the brain has brought strange troubles. Sometimes I lose the sense of verticality, which is in the cerebellum. Even in bed my head seems to fall to right or left, and when I rise I am impelled by an enormous weight that is in my head. I understand how Pascal's absolute continuance and his immense labour led him to see an abyss around him, so that he could not do without two chairs, one on each side of him. (1836).

I have been ill the whole time. Finally I had what I seemed to have been in search of, an inflammation of the bowels, which is quieted to-day. I still suffer, but that is a small matter. I have had constant suffering; and I greatly feared an inflammation for my poor brain after so painful a year, painful in so many ways, hard in toil, and cruel in emotions, full of distresses. There was nothing surprising in such an illness. However, though I can, as yet, digest only milk, all is well and I resume my work. (1837).

Nearly the whole of my month of January was taken up by an attack of very intense cholera, which deprived me of all energy and all faculties. Then, after getting over that semiridiculous illness, I was seized by the grippe, which kept me ten days in bed. (1837).

This illness has made me lose six irreparable weeks. (1837).

I ended by getting an inflammation of the lungs, and I came to Touraine by order of the doctor, who advised me not to work, but to amuse myself, and walk about. To amuse myself is impossible. Nothing but travel can counterbalance my work. As for working; that is impossible; even the writing of these few lines has given me an intolerable pain in the back between the shoulders; and, as for walking, that is still more impossible; for I cough so agedly that I fear to check the perspiration it causes by passing from warm to cool spots and breezy openings. I thought Touraine would do me good. But my illness has increased. The whole left lung is involved, and I return to Paris to submit to a fresh examination. But as I must, no matter what state I am in, resume my work and leave a mild

and milky regimen for that of stimulants, I feel that toil will carry me off. (1837).

I hasten to tell you that the inflammation, which turned into bronchitis, is now cured. (1837).

I am a little better, that is all. I have been ill of a malady that love abhors, caused by the quality of the drinking water, which contained calcareous deposits. Hence, complete dissolution of my brain forces. (1838).

I left my bed to-day for the first time in ten days. My illness, which is nearly over, was an attack of cerebral neuralgia, caused by a draught in a railway carriage, which, combined with the mental condition in which I was, gave me a horrible fever, which I had, and the atrocious sufferings of neuralgia. (1840).

It is now twenty days that I have suffered much with a species of cholera, or inflammation of the bowels, (1840).

I am very lonely when my brain ceases to work, or lies down to rest. There is something humiliating in the thought that a trifling inflammation of insignificant viscera prevents the exercise of our highest powers. (1840).

I have had a species of congestion of the head. (1841).

If the colic, as Lord Byron says, puts love to flight it certainly knocks down imagination; not only have I suffered, but my brain has been as if velled. Last night was dreadful, and the waking not pleasant. (1844).

When I do not suffer in my head I suffer in the intestines, and I have at all times a little fever; nevertheless, this morning, at the moment of writing to you, I am well, or, rather, I feel better. (1844).

I have a severe lumbago and fever; I feel all kneaded and broken. I went beyond my strength. (1845).

I should have been dressed differently and so escaped my cold. (1846).

Till now, I have not felt the baneful effects of the Asiatic climate. It is fearful. I have headaches all the time. Heat and cold are both excessive. Asia sends us winds charged with elements quite other than those of European atmospheres. (1849).

I took a cold at Kiev, which has made me suffer long and cruelly. The treatment I have been undergoing for my heart and lung trouble are uninterrupted, for I had no strength for it. I have reached the stage of absolute muscular weakness in those two organs, which causes suffocation for no cause at all,—a slight noise, a word spoken loudly. However, this last cold is getting better, and they are going to try and remedy the muscular exhaustion; otherwise, the journey home would be very difficult. I have had to get a valet,—being unable to lift a package, or make any movement at all violent. (1849).

I have had what the doctor calls an intermittent cephalalgic fever. It was horrible. It lasted thirty-four days. I am as thin as I was in 1819; (1849).

I took the most dreadful cold I have had in my life. (1850).

"Simple hypertrophy." (1850).

Profound albuminuria. (1850).

The principal definite illnesses or symptoms thus indicated are therefore seen to be:—

1. "Inflammation of the brain."*
2. "Horrible spasmodic cough."
3. Failing physical strength; lassitude; exhaustion.
4. "Nervous sanguineous attack."
5. Loss of sense of verticality (dizziness); the head heavy, etc.
6. "Inflammation of the bowels."
7. "Inflammation of the lungs," "the left lung involved," turning out to be "bronchitis."

* In almost every biography or series of letters one will find suggestive allusions to the sufferings of others. In 1844 Balzac wrote:—

Frederick Lemaitre was in fear of a cerebral congestion; I found him yesterday at midday in bed; he had just plunged into a mustard bath up to his knees. Twice the night before he lost his eyesight.

8. "Inflammation of the blood."
9. "Coagulation of the blood."
10. "Cerebral neuralgia," "horrible fever," "atrocious neuralgia."
11. "Intense cholerae."
12. Severe suffering of head alternating with that of intestines.
13. "Colds," and again, and still again "colds."
14. "Severe lumbago and fever."
15. Muscular Exhaustion.
16. Heat.
17. "Intermittent cephalalgic fever."
18. "Simple (cardiac) hypertrophy." "Heart disease."
19. Albuminuria. ("Profound albuminuria.")

With the last symptom we have the indication of the organic disease, nephritis, that caused the death. The modern physician sees in the others only functional affections—the symptoms of a constantly acting cause of reflex mischief, attacking successively and unsuccessfully one set of organs after another which were able to rid themselves of the "insult" (speaking at once physically, medically, and morally) until, at last, one was found which was compelled to succumb. The graft of Tourainian devil-may-care upon French extremism exaggerated Balzac's neglect of his health so that when his exhausted eyes and brain, and jaded vital powers compelled him to sit and stare at his paper in blank apathy and asthenia, he was still obedient to the ceaseless inner cry which relentlessly commanded him to "go on."

The excerpts hitherto made do not show that there was another suffering organ which bore the insult at first with wonderful success, but which, being the most abused of all, was finally forced to renounce. This is illustrated in these citations.

Every evening an inflammation of the eyes warns me that I have gone beyond my strength. (1836).

I risked an ophthalmia on Mt. Cenis. (1838).

I am beginning to have trouble with my eyes, and that grieves me; I shall have to cease working at night. (1839).

His head was apt to lean to one side. Biography.

... work fatigues me, the symptoms that happiness and the joys of this year drove away are returning. My eyes throb, the temples also, and I feel weary. I have had to buy a candelabrum for five candles; three were no longer enough, my eyes pained me. (1845).

A letter for me, you see, is not only money, but an hour of sleep and a drop of blood. (*Letter to his Mother.*)

I can hardly see to read and write. I have some trouble in my eyes which prevents either reading or writing. It comes from a draught of air, and the present medical treatment. The doctor is not alarmed. . . .

Oh, my poor eyes,—once so good! (1850).

I can no longer read or write.* (1850).

His eyes, once clear and far sighted, were covered with a film or veil. (Dr. Macquart, in 1850).

* I have kept that sorrowful line,—the last, probably, that the author of the *Comédie Humaine* ever wrote. It was, although I did not comprehend it at the time, the supreme cry of the thinker and the worker: "*It is finished!*" (Balzac's sister).

In the treatises and case-histories, "migraine" is noteworthy as presenting rapid changes in the symptoms, quick transfers of the morbid reflex from one set of organs to another. This has been the rule in the biographic clinics of the 16 patients I have previously reported. It is especially so with Balzac who was so happily constituted that all parts of his system were equally strong and resistant to the derouted reflex. The citations I have made illustrate this. Similarly the fact is evident of the sudden and seemingly inexplicable alterations of abject wretchedness and suffering with perfect health, strength, and spirits. For centuries this has been a well-known characteristic of "migraine." Balsac's case also shows it, and it also illustrates the other old-fashioned fact that the manifold diseases or symptoms depend absolutely upon the amount of ocular labor done, and the immediate relief, the re-established health, in all the early stages of the disease and, (except where the outrage has been insane) from ocular rest, disguised under the name of travel and recreation:—*

I was worn out with the labour of writing *Louis Lambert*; I had sat up many nights and so abused the use of coffee that I suffered pains in my stomach which amounted to cramp. (1834).

After the "Absolu," Dr. Nacquart thought me so debilitated that, not wishing (as he said in his flattering way) that I should die on the last step of the ladder, he ordered me my native air, and told me to write nothing, read nothing, do nothing, and think nothing—if I could, he said, laughing. (1834).

I will write a little more regularly in future. The doctors have obtained that I should change my way of life. (1834).

Last week I took in all but ten hours' sleep. So that yesterday and to-day I have been like a poor foundered horse on his side,—in my bed, not able to do anything, or hear anything. (1834).

I began to work eighteen hours a day. I stood it for fifteen days, from the last letter till December 31; then I risked an insomnia; and I am now waking from a sleep of seventeen hours, taken at intervals, which has saved me. (1835).

... horrible pain which rent me during the ten days I rested after "Père Goriot." (1835).

The finishing of "Seraphita" kills me, crushes me. I have fever every day. (1835).

Yes, I am altogether better. I have recovered from the fatigues of the journey. (1835).

Since I wrote you I have been very ill. All these distresses, discussions, toils, and fatigues, produced, at Saché, a nervous, sanguineous attack. I was at death's door for one whole day. But much sleep and the woods of Saché put me right in three days. (1836).

I am ordered to go to Touraine for a month to recover life and health. (1836).

* An occasional exception occurs when students and writers take their books with them, and keep up the ocular labour only a little less strenuously than when at home.

How, despite his intense occupation with his literary work, Balzac was compelled to travel, is illustrated by the journeys he took. In 1831 he was at Nemours; in 1833 at Nemours, Augoulême, Lyons, Switzerland, and again at Augoulême, Neuchatel; in 1834 in Switzerland; in 1835 at Vienna; in 1838 in Sardinia; in 1837 through Italy and Austria, etc.

I must submit to physicians, humbly, or I shall quickly be destroyed. (1836).

Touraine has given me back some health. (1836).

None but myself know the good Switzerland does. (1837).

The moment the publication of the last part of the "Etudes de Moeurs" was over, my strength suddenly collapsed. I had to distract my mind; and I foresee it will be so every fourth or fifth month. My health is detestable, disquieting; but I tell this only to you. My mind feels the effect of it. (1837).

Those two months, so precious, I have just spent, you will tell me, in travel. Yes, but I started only because I was without ideas, without strength, my brain exhausted, my soul dejected, worn-out with my last struggles, which, believe me, were dreadful, horrible! (1837).

Here I am, back in Paris. My health is perfect, and my brain so much refreshed that it seems as though I had never written anything. (1837).

This journey, in refreshing my brain, rejuvenated me, and gave me back my force. (1837).

I travel when it is impossible to rouse my broken-down brain. When I return, I shut myself up and work night and day until death comes—of the brain, be it understood, though a man may die of work. (1837).

. if there is success, success will come too late. I feel myself decidedly ill. I should have done better to go and pass six months at Wierzohovnia than to stay on the battlefield where I shall end by being knocked over. (1837).

. I sit down, palpitating, and saddened for days. Such fevers, such starts, shaken by inward convulsions, break me, crush me. (1838).

. I am perfectly well without aches or pains, in my young house. (1838).

My situation is more painful than it has ever been. Doctor Nacquart preaches vehemently a journey of six weeks. (1840).

I fell ill. I had to travel. (1844).

. spent the rest of the month in taking baths of three hours to quell the inflammation that threatened me and in following a debilitating regimen. No more work, not the slightest strength, and I continued till the beginning of the present month in the agreeable condition of an oyster. At last, Dr. Nacquart being satisfied, I began to write again (1841).

I am well in spite of a slight grippe. (1844).

Yesterday I consulted M. Roux (Dupuytren's successor, alas!), and he strongly advised me that a journey on foot was the only means of arresting the inclination of cerebral organs to inflame. (1844).

I had yesterday, after writing to you a violent rush of blood to the head. From three in the morning till three in the afternoon I corrected without pausing the folios of *La Comédie Humaine*. (1844).

This work, which was equivalent to writing in twelve hours an 8vo. volume, brought on the attack. My nose bled from yesterday until this morning. But I feel myself more relieved than weakened by this little natural bleeding,—beneficial, I make no doubt. (1844).

All is well; the neuralgia pains have disappeared as if by magic. (1844).

This interruption, dear, is the result of the doctor's prescriptions. I have not left my bed; leeches were necessary and blisters for three or four days; but this morning the symptoms and the atrocious pain of this inflammation have ceased. In three days, at the latest, I can resume my work. (1844).

I am perfectly well again and have gone back to work. (1844).

I have recovered my faculties, more brilliant than ever. (1845).

My ability to work only lasted two days. I am seized by spleen. (1845).

My health is excellent, and my talent—oh! I have recovered it in all its bloom. (1846).

I am very much better: the doctor was a prophet; in two days all was over and restored in good order; I am still dieting, but to-morrow I can resume my usual food and my work. (1846).

I am now only a man without strength, food, or appetite. But the

intestines are all right again, I believe; and next week I shall finish with the "Constitutionnel." (1846).

I feel young, full of energy and of talent before new difficulties. (1846).

Dr. Nacquart scolded me well when he found me at my table writing, after all he had said to me about it. Neither he nor any of his friends the doctors can conceive how a man should subject his brain to such excesses. He said to me and repeated his words with a threatening air; that harm would come of it. He entreated me to at least put some interval of time between "the debauches of the brain," as he called them. The efforts on "Cousine Bette," improvised in a week, especially alarmed him. He said, "This will necessarily end in something fatal."

The fact is, I feel myself in some degree affected: sometimes in conversation I search, and often very painfully, for nouns. My memory for names fails me. It is true that I ought to rest. (1846).

Readers of the clinical biographies of Carlyle, Wagner, and others have been struck by the fact that prolonged literary labor, when eye-strain exists, is peculiarly prone to produce some times exaltation, more commonly profound depression, "nameless suffering," "indescribable torture," not seldom deep gloom, melancholy, and despair. At times and in some cases there is simply an astonishing inhibition of cerebral activity, resulting in inability to make the mind work, however spurred, and the patient sits before his task in complete empty mindedness. All phases, as one would expect, are illustrated, in Balzac:—

I have the weakness and the species of physical melancholy that comes from abuse of toil. (1834).

finding myself so changed by toil, there come moments of Lassitude, efforts, tension, headaches, weariness, all go on (1835).

I have now been at home eight days, and for eight days I have been making vain efforts to resume my work. My head refuses to give myself to any intellectual labour; I feel it to be full of ideas, but nothing comes out. I am incapable of fixing my thought; of compelling it to consider a subject under all aspects and deciding the march. I don't know when this imbecility will cease. (1837).

After writing this letter I must take a bath, not without terror, for I am afraid of relaxing the fibres which are strung up to the highest tension. (1837).

I don't know anything more wearying than to sit a whole night, from midnight till eight o'clock, beneath the light of shaded candles, before blank paper, unable to find thoughts (1837).

I am now at a moment of extreme depression. Coffee does nothing for me; it does not bring to the surface the inner man, who stays in his prison of flesh and bones. (1837).

I do not believe in what they call my talent. I spend nights in despairing. (1837).

I am not well in body or in mind. I feel a horrible lassitude, which, in regard to my head, is not without danger. I have no longer force or courage. (1838).

I am frightened at a species of interior old age which has come upon me. (1840).

You will never know until I explain it to you verbally, the courage I display in writing to you. This morning I stayed till eleven o'clock in bed, unable to get up. It is horrible suffering which has its seat nowhere; which cannot be described: which attacks both heart and brain. I feel stupid, and the further I go, the worse the malady becomes. (1843).

I don't know whether it is a phase of the brain, but I have no continuity

of will. I plot, I conceive books, but when it comes to execution, all escapes me. (1844).

. . . . my ability to work only lasted two days. I am again seized by spleen, complicated with nostalgia, or, if you like, by an ennui I never felt before. Yes, this is *true ennui*; nothing amuses me, nothing distracts me, nothing enlivens me; it is a death of the soul, a death of the will, the collapse of the whole being. (1845).

. . . . in spite of this heat my health gets better and better; nourishment no longer distresses me; and the intestines are coming back to a normal state. The doctor says my illness came only from heat, which is to me what it is to you. One must cling to doing one's duty, as I do, in order to work under this physical dissolution. (1846).

In passing it may be advisable to notice that with one or two exceptions—that of overwork, and carelessness as to food, Balzac's illnesses were not due to unhygienic or immoral life. He was probably as chaste as any Frenchman that ever lived. His heroic self-sacrifice in work, for that, left him little or no time, even for a minimum of social life. He never smoked, and he drank little or no alcoholic liquors. His chief hygienic sins were carelessness about food, and reliance upon coffee to supply its place, and of course his lack of exercise, coupled with inordinately continuous literary labor, and consequent loss of sleep.

My sobriety and regularity of life can alone save me under the ardent work I have to complete to win that liberty so longed for. It is now twenty days that I have risen at midnight and gone to bed at six o'clock. (1835).

If (in spite of a regimen prescribed by doctors who have traced me a manner of living so that I may struggle without danger through my work), if I fall ill. (1835).

My health is extremely bad. Coffee no longer produces me mental force. (1836).

The time during which the inspiration of coffee lasts is lessening. It now excites my brain for only fifteen days consecutively,—fatal excitement, too, for it gives me horrible pains in the stomach. (1836).

She only divined that I had eaten nothing for days. (1837).

. . . . for twenty-five days I have only slept a few hours; that I have been within an ace of apoplexy; that I shall never again undertake such a feat of strength. . . . (1837).

As I had been twenty-five days without sleep, I have now been a month employed in sleeping sixteen hours a day and in doing nothing the other eight. I am renewing my brain to spend it again immediately. (1838).

Yes, there have been days when I proudly ate a roll of bread on the boulevard. (1840).

That Balzac had not insomnia, the common symptom of "an over-taxed brain," of "migraine," etc., is evidence of the marvelous perfection and resistance of his cerebral and nervous system. Probably no one ever forced himself so habitually to go without sleep. The quotations given illustrate this. Even in 1842 he speaks of allowing himself only two hours of sleep a night. In 1846 he writes of a continual fever of inspiration and insomnia, by which word he evidently means pervigilium or enforced wakefulness. In 1838 he says he went 25 days with-

out sleep (undoubtedly an exaggerated statement), but adds that for a month he had been sleeping 16 hours a day.

The Problem of the Medical Profession of that day before such a patient is illustrated by the following quotations:—

Dr. Nacquart put me into a bath for three hours a day, on ten pounds of grapes, and wanted me not to work; but I do work all night. (1835).

My health is at this moment so greatly affected that Dr. Nacquart issues an edict which has to be obeyed. Coffee is suppressed. Every evening they put upon my stomach a linseed poultice. I am kept on chicken broth, and eat nothing but white meat. I drink gum water, and they give me inward sedatives. I have to follow this regimen for ten days and then go to Touraine for a month, to recover life and health. All the mucous membranes are violently inflamed; I cannot digest without horrible suffering. (1836).

I fell ill. I had to travel. As soon as the result was obtained I was seized with an inflammation of the blood which threatened to attack the brain. I went to Touraine for two weeks; but on my return Dr. Nacquart condemned me to a bath of three hours a day, to drink four pints of water, and take no food, inasmuch as my blood was coagulating. I am just out of this barbarous but heroic treatment, with complexion clear, refreshed, and ready for new struggles. (1841).

I am not very well; yesterday I went to the doctor: the neuralgia must be fought with leeches and a little blister; that will take three or four days. I have been doing "César Birotteau" with my feet in mustard, and I am now writing "Les Paysans" with my head in opium. (1844).

Nacquart said to me brutally yesterday, while writing his prescription, "You will die." "No," I said, "I have a private God of my own; a God stronger than all diseases." (1844).

I am still here, detained by illness. Alas! I have paid tribute to 1848. I have come to such a pass that I can no longer brush my hair without suffocation and palpitation. Twice I nearly strangled from the impossibility of inhaling and exhaling my breath. I cannot go up stairs . . . Happily there is a doctor here, a pupil of the famous Franck (the original of my *Médecin de Campagne*). He and his son say the trouble is a *simple hypertrophy* and answer for my complete cure. (1849).

The trouble in my heart (not to speak of those in my stomach which are a consequence of it) has increased to such a degree that the treatment is renewed. I have been auscultated, and the disease named (so as not to alarm me) *simple hypertrophy*. It appears that the father undertook the cure against the advice of the son, who, imbued with our French ideas, thought it was all over with me. . . . (Here follow many details of his illness and treatment). However, the doctor is confident he can complete the work and make me as good as new. He is a great physician, quite unknown. He does justice to the French faculty; says they are the first in the world for recognizing and diagnosing diseases; but declares them absolutely ignorant, with a few exceptions, of therapeutics,—that is, the knowledge of the means of cure. Is it not dreadful to think that Frédéric Soulé died "or want of this doctor of mine?—for two months ago I was as ill as Soulé was when he put himself under treatment." (1849).

I have had to back to the treatment for heart-disease. My doctor is a great physician, buried at Wierzschnowia, who, like many another genius, dislikes the art in which he excels . . . He has invented *powders*. . . . He keeps the composition of his powders so great a secret that he will not even reveal it to his son. He has radically cured persons much worse than I. (1849).

The doctor is not alarmed. He wants me to continue the treatment six days longer. I have had a serious relapse in my heart-trouble and also in the lung. I have lost more ground than I had gained. Every motion that I make stops both speech and breathing. (1850).

It is plain to all who read this history now, that Balzac was in the grasp

of a mortal malady as early as 1847, before he went to that cruel Russian climate, which gave him his *coup-de-grâce*. After he was taken ill at Wierzschownia, he trusted, with his natural confidence, to a local doctor, who tortured him with remedies to no purpose, against the advice of his own son, a physician of broader intelligence. Dr. Nacquart, his lifelong friend and physician, being asked to give the causes of Balzac's death, wrote a long and rather irrelevant statement, in which, however, the following significant facts appear: "A longstanding disease of the heart, aggravated by overwork at night, and the use, or abuse, of coffee had taken a new and fatal development. . . . His breathing was short and panting, and forbade all active motion; his voice, formerly so strong, was weak and broken; his eyes, once clear and far-sighted, were covered with a film or veil. The patient retained hopes of himself; but science had in the first instance diagnosed the complication of a marked albuminuria. (*profound albuminuria*), and could see no prospect of recovery." (Balzac's sister).

For several hundred years pseudotherapeutics such as are shown in the last excerpts have been handed down from one medical generation to another. Were it not that these patients are treated in exactly the same way to-day there could be no word of regret, pity, or criticism of the elders; they could not know the light that has been thrown on the etiology of the motley and somewhat ludicrous crowd of patients now labeled "hysterics," "neurasthenics," "degenerates," and all the other dozen or two names invented to disguise ignorance. Nacquart, of course, had a patient who would break rules, but it was chiefly because Nacquart had no reason for his rules, and, if Balzac would have worked less extremely, he might as well have doctored himself. A most trustful and "good" patient Balzac assuredly was. Even when he fell into the hands of the quackish Russian physician his confidence in the trickster remains perfect.* The score or more of "diagnoses" made of Balzac's troubles, all except one, resolve themselves into blunders as to facts, ignorances as to the cause of the facts, lucky or unlucky empiricisms as to the cures. Nacquart held pretty firmly (as we all do when we can't cure), to the advice to stop working and travel. Why writing and reading produced the symptoms and sufferings so evidently consequential, was beyond explanation except by the words used to-day in such cases, — "Brain-fag," "Cerebral exhaustion," "Over-work," and the rest. Nacquart was excusable. A thousand present-day neurologists and diagnosticians, "leaders" of the profession, so-called, are not excusable. The sole lesson that seems to come out of their dogmatism and unprogressiveness is that they would prefer their patients should not be cured rather than to have them cured by means of ocular treatment.

The only scrap of what might be called direct evidence to be found

* His faith indeed was somewhat noteworthy, as it illustrated in his implicit confidence in somnambulists, "magnetizers," etc., whom he constantly consulted. He is even proud of his own "magnetizing" powers.

that Balzac suffered from eyestrain is in the incidental remark of his sister that his eyes had been far-sighted. This, however, means only that he did not have myopia, nor so much astigmatism as to prevent distant vision. But in this case the direct evidence is not needed, because the indirect is so clear and so cumulative. His symptoms, and especially their life-history are precisely those of most who consult the modern expert oculist. The usual immediate and permanent disappearance of such symptoms in those under 45 years of age, by means of scientific refraction-work, is demonstrated every day in the oculist's office. Without that is any modern physician able to cure such patients? Never, except by ordering, as of old, that the patient shall stop all writing and reading. The silencing demonstration that Balzac's brain was not "inflamed," "exhausted" or otherwise diseased, is the fact that the works produced in his last years, just before his marriage, free from financial worries, happy and hopeful, show all the invention, power, objectivation, — all the perfections of technic, in a word, of those of ten or fifteen years previously. What, then, had failed? Simply ability to see, "at close range," that is, in writing and reading, so continuously as before. The long-standing and single cause of mischief, the reflex which had attacked one set of organs after another, was, simply, "eyestrain." If Balzac had not been "far-sighted," but had, say, one diopter of simple myopia alike in each eye, even his unhygienic habits could not have broken him at 47 and killed him at 50. The simple physiologic reason for this is that in all the human body there is no muscle that can be long and continuously innervated. That is a task Nature has been unable to carry out, and a hundred anatomic mechanisms illustrate this truth of physiology. Even if Balzac had been without ametropia he would still have had enormous eyestrain, because the ciliary muscle, although acting in a way that might be called "normal," was put to impossible tasks. Accommodation would always be subnormal under such conditions. The ciliary muscle of the eye, that of "accommodation," in the "far-sighted," is required by such work as Balzac did to be daily in a constant state of contraction for hours, and even for twenty of them. The attempt at this physiologic impossibility produces the morbid results we know and which are so capitally illustrated in Balzac's case. But, of course, no pair of human eyes has ever been tested in which absolute "emmetropia" existed, and the least ametropia would vastly increase eyestrain in such a case as that of Balzac. Indeed, local ocular disease preceded other lethal organic diseases, and comparative blindness (not cataractous, or albuminuric) preceded death. All oculists know that between the ages of 40 and 50 eyestrain is necessarily doubled by what is technically

called presbyopia. All biographers deplore and wonder at Balzac's death at 50. Seven years before his own death, however, occurred that of another which removed the chief obstacle to his marriage with the woman he had so long, so purely, and so fervently loved. To this was added such an improvement in his finances that it was possible to lessen the exorbitant demands upon his eyes and mind. Despite these things, despite comparative wealth, despite love and travel and happiness, that his health grew steadily worse, and that he died immediately after his marriage,—these things cannot be explained except upon the theory of eyestrain, which had long lessened his resisting power, and which when reinforced by presbyopia, finally produced the nephritis which killed him.

THE CURE OF TUBERCULOSIS.

The interest of the closing sitting of the Congress on Tuberculosis centred in a statement by Professor Behring respecting his new cure. This was made in Germany by the Professor himself. * * *

Here follows the text of the paper.

The conclusion of this remarkable paper was greeted with cheers, but there was no comment or discussion. * * * Professor Behring's announcement is to be regarded simply as the conviction of a man of high scientific reputation, known for the care with which his researches are invariably conducted. * * The fact remains that his discovery does not seem to have reached a stage at which it could have been submitted to and discussed by the congress, and that its truth still remains to be demonstrated. Like Koch's tuberculin and numerous serums and vaccines that acquired a monetary notoriety, it is derived from the tubercle bacillus, but is supposed to act on the cells and not on the serum of the blood or the fluids of the body. It is this difference in its action which, according to Sir William Broadbent, constitutes the new departure in Professor Behring's cure, which, so far as human beings are concerned, has scarcely reached even the experimental stage. Furthermore, it has not yet been subjected to independent investigation. While confident that some serum or vaccine will eventually be discovered, capable of greatly promoting the prevention and cure of tuberculosis, Sir William Broadbent does not anticipate the discovery of a specific for all cases.

The Weekly Times, Oct. 13, 1905.

Messrs. P. Blackiston's Son & Co. have favoured us with advance sheets of the fourth edition of Coplin's Manual of Pathology. It will appear in the course of the present month.

THE

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DISCOVERY AND COMMERCIALISM.

The announcement of Professor von Behring that he has discovered a cure for consumption, which, however, can not as yet be disclosed, has done medical science harm instead of good. What the motive for the statement was, is as yet largely a matter of conjecture, and does not greatly matter. It is said that the intention was to forestall or prevent statements of a similar kind from some other quarter: these matters of local politics make a very uninteresting explanation, and no excuse at all for such a proceeding. Others have said that he wished to obtain the profits accruing therefrom not for himself, but for his laboratory, to help future investigation. However worthy this plan may be, Prof. von Behring knows at what cost it can be carried out. When a man makes a discovery that is useful for the welfare of human kind, our custom demands that he make it known to the profession at large: if he conceals its nature because it is not yet as perfect as he can make it, he makes the admission that he had no business to bring it out: if he con-

ceals it for personal profit, he is a quack: if he conceals it for the profit of an institution, he is liable to be called one, however good his motives. At the present moment there must be thousands of consumptives harboring bitter thoughts against an honored member of the medical profession. This much, we say, from the standpoint of the looker-on.

On the side of the laboratory discoverer there is much to be said. Again and again, it has happened that discoveries of world-wide importance have been made, and the profits accruing from the discoverer's brains have gone to the manufacturer's pockets. In Behring's own case, hundreds of thousands of dollars, not to say millions, have been made by manufacturers out of diphtheria serum. We venture to say that there ought to be a possibility that a discovery such as this should be put at once into the hands of the highest authority in the government of the country concerned, that the government should, in its name, patent the idea, make freely public the nature of the remedy, and administer the patent for the profit and benefit of the discoverer or the institution to which he belongs. When an air-brake is devised that adds to the safety of the travelling world, we have never yet heard that it was made public for the benefit of the first manufacturer to take it up; even if they could, a company of physicians is not allowed to manufacture Westinghouse air-brakes, save at a price. Why should manufacturers be allowed to grow rich from Behring's serum and pay nothing for it?

THE MONTREAL MATERNITY HOSPITAL.

The old Maternity Hospital at 93 St. Urbain street is now a thing of the past, and the institution appears in its handsome new quarters on the corner of St. Urbain and Prince Arthur streets, whither the patients were moved about the middle of September. The building, a handsome structure of pressed brick with stone dressings, has a frontage of 130 feet on one street and 80 feet on the other, and has cost more than \$100,000, of which Sir William C. Macdonald has contributed \$60,000.

The hospital contains 56 beds of which 13 are in private wards; the operating and preparation rooms are on the top flat, and are, as might be expected, modern in all regards.

It is a matter for congratulation to many that this long-desired building is at last occupied: most of all, perhaps, are those ladies, the directors of the hospital, to be congratulated who have been so unsparing in their efforts to bring about the change. The students in obstetrics will be for the future in much better circumstances for instruction, and it is undoubted that a large number of patients will now avail themselves of the hospital, and that its usefulness will be much increased.

NEW NURSES' HOME AT THE ROYAL VICTORIA HOSPITAL.

The erection of the new Nurses' Home is now in progress and it is expected to be ready for occupancy early next year.

It is situated immediately to the west of the surgical wing of the hospital and connected with it by a bridge. It will provide recreation rooms, a lecture hall and bedrooms, etc., for a staff of over 100 nurses and when completed will be one of the finest in the world.

It is being built of grey limestone similar to the hospital and in style somewhat resembling it. There will be 5 stories in all and the construction will be the most perfect that modern science can produce. The interior is to be of steel and terra cotta. The floors will be of hard maple, and highly polished.

The building will be rendered as far as possible fire-proof, with two complete sets of staircases, besides outside fire escapes.

The dining room will measure 58 ft. by 30 ft. with serving pantry and kitchen adjoining. A large assembly room 38x36 ft. with a massive fireplace, will be capable of extension by flexible folding doors. It will contain also the library 20x14 ft. with fire place designed to burn logs.

Each bedroom will be 10x12 ft. with a cupboard 3x5 ft.

The sanitation and ventilation will be of the very highest order and altogether everything possible is being done for the future comfort of the nurses of the Royal Victoria Hospital.

ST. PAUL HOSPITAL FOR CONTAGIOUS DISEASES.

The new Contagious Diseases Hospital in connection with the Notre Dame Hospital is now completed and was opened by Archbishop Bruchesi on October 28th. It is situated near Parc Lafontaine and will be connected with the new Notre Dame Hospital, by a tunnel running under Maisonneuve street.

The hospital is composed of four buildings, and administration building and three disease pavillions.

In the Administration Building are situated the kitchen, heating and lighting apparatus. rooms for the staff, nurses, laundry, etc. There are also in the left wing of the building rooms for doubtful cases and for erysipelas, and the dispensary.

The diphtheria pavilion, 120 ft. x 28, is three stories high. The ground floor is for light cases and the other two stories for male and female wards. There is a visiting room in each ward, covered in with glass, so that the friends and patients may see one the other, without risk of infection. In this pavilion is also situated an operating theatre.

The measles and scarlet fever pavillions are somewhat smaller than the diphtheria, but are fitted out in much the same manner.

The various buildings are connected with the administration building by means of tunnels.

The walls in all the buildings are smooth, there being no mouldings or projections to harbour dust or microbes.

The disinfecting chamber is situated below the administration building.

All the drainage before leaving the hospital passes through an anti-septic tank and is thoroughly disinfected before passing on into the river.

Dr. Stephen Lett, of Guelph, Ont., died on October 11th, of paresis. Dr. Lett devoted himself to the study of mental diseases, and was on the staff of the Hamilton, Toronto and London asylums, of which last he was assistant-superintendent before he removed to Guelph, where he took charge of the Homewood Sanitarium. He saw service in the Fenian Raid, and was always a man of active citizenship. The onset of the illness from which he finally died was observed first by Dr. Lett himself, although he believed that the prognosis in his own case would be a favourable one; since 1901 he has not been able to follow his profession.

The Winnipeg Medical Association has a membership of 97. The newly elected officers are: President, Dr. Gordon Bell; 1st vice-president Dr. E. W. Montgomery; 2nd vice-president, Dr. J. R. Davidson; hon. sec.-treasurer, Dr. Charles Woollard; executive committee, Dr. Mary Crawford, Dr. Hugh Mackay, Dr. A. D. Carscallen, and Dr. N. J. McLean.

Dr. J. A. Simard, of Quebec, died on September 29th, after a long illness. At one time Dean of the Medical Faculty of Laval University, and long connected with it as professor, he practised his profession especially in the diseases of the eye and ear. Dr. Arthur Simard is his son. The funeral service was celebrated in a very impressive manner at the Basilica.

Dr. H. Wolferstan Thomas, formerly Fellow in Pathology, McGill, has recently recovered from an attack of yellow fever, contracted in Brazil, where he is working under the direction of the Liverpool School of Tropical Medicine. His companion, Dr. Breinl, also recovered after a very severe attack.

Dr. R. A. Reeve, Dean of the Medical Faculty of Toronto University, came from Toronto to attend the funeral of the late Dr. Buller: his presence was regarded very appreciatively by the profession here, and was

a tribute not only to a friend of many years, but to one high in the same branch of science as Dr. Reeve himself.

The Association for the Prevention of Tuberculosis has printed a very handsome folder of advice to those afflicted with tuberculosis, both for the betterment of the patients themselves and for the safety of those with whom the patients come in contact. It will be put in general circulation very soon.

Dr. Bruce L. Riordan, of Toronto, has been promoted to the medical charge of the Grand Trunk lines west and north of Toronto; in other positions Dr. Riordan has been connected with the road for more than twenty years.

Professor Simpson, the well known occupant of the chair of obstetrics in Edinburgh, has resigned: although there are two eminent men in Edinburgh, has resigned: we understand that Dr. Halliday Croom has been appointed in his stead.

Dr. John A. Mackenzie, Assistant Superintendent of Nova Scotia Hospital, Dartmouth, died on October 12th, the 40th anniversary of his birth; he was a native of Cape Breton, and graduated in Boston. Death followed an attack of appendicitis.

Dr. J. L. Todd, who has spent the last two years in different parts of Tropical Africa in the study of sleeping sickness, has returned to Liverpool, and will be in Canada during the course of the winter. It will be remembered that Dr. Dutton, who was on the same expedition, died of relapsing fever.

Dr. R. F. Ruttan, Professor of Chemistry in the Medical Faculty of McGill University, leaves next month to spend some time in study at European universities.

Dr. Forster, late of the interne staffs of the General and Royal Victoria Hospitals, has been appointed medical health officer for North Adams, Mass., where he has begun practice.

Dr. Lauriston Shaw, physician to and late Dean of Guy's visited Toronto and Montreal recently.

Professor Adami has been invited to attend the jubilee of Melbourne University in April, 1906.

Dr. George Riddell, of Crystal City, Man., died on September 27th, of heart disease; he had practised in that locality for twenty-five years.

Obituary.

PROFESSOR FRANK BULLER.

The death of so eminent a physician as the late Professor Buller is a loss to his profession and to the branch of science to which he devotes himself that cannot be repaired. "There is no man in the world who can not be replaced," said the "Times," when Lord Palmerston died; but to the generation in which he lives there is a loss of knowledge and of experience that is not returned to it; the scientific man of great attainments carries out of the world with him the aggregation of knowledge which has come to him, which has fused with his mind, which can, indeed, fuse with no other mind in exactly the same way, and can therefore, never again give precisely the same result. But a small part of this individuality can he impart by his spoken or written word, and much, with the man, departs. The acquiring of knowledge would be a sorry task if this were all, but a physician of active mind and body spreads his influence beyond the domain of science to that of humanity; and the world of science and knowledge that to-day is the poorer by reason of Professor Buller's death, is richer by thirty-five years of his kindly life.

It would scarcely be becoming that we should in this place insist upon the eminent place in the science of ophthalmology that our late colleague attained, lest we should seem to claim for him a posthumous glory, that he would have been the last to claim for himself. A wide circle of friends and fellow physicians in America and Europe will mourn his death: his many friends because they knew his skill and his attainments, and a far greater number who knew his reputation. It is fitting that we should recall some of the more important advances in his science, with which his name is honorably associated: such are the eye shield which bears his name, the modification of Mules' operation, and the tying of the canaliculi; further mention of these and others will be made elsewhere.

Dr. Buller, was the son of Charles G. Buller, and of Frances Elizabeth Boucher, and was born at Campbellford, Ontario, on May 4th, 1844. He was educated at Peterborough High School and Victoria College, where he graduated in medicine in 1869. Subsequently, in Europe, he studied especially the diseases of the eye, ear and throat, having the great advantage of the tuition of Helmholtz and von Graefe. During the Franco-Prussian

war he served as surgeon in the German military hospitals, subsequently occupying a position on the staff of the Graefe-Ewers Hospital in Berlin. In 1872 he went to London and was for four years connected with the Royal London Ophthalmic Hospital (the well known "Moorfields"), for the last two years as chief house-surgeon. Here he formed intimate friendships with many leading English ophthalmologists, which lasted to the end. He was perhaps the very first to introduce to London the procedure instituted in Germany, of ophthalmic examination by the so-called "direct method." He became a member of the Royal College of Surgeons of England, and in 1876 returned to Canada, beginning practice in Montreal, where he resided till his death in the enjoyment of a constantly increasing reputation.

For many years his clientele has been so extensive as to demand the most diligent use of his faculties: yet Professor Buller always responded most generously to the exacting duties demanded by hospitals and university. He was indeed the first ophthalmologist to be appointed to the General Hospital: prior to 1877, each physician and surgeon treated such eye and ear cases as he desired in his own clinics: by the thoroughness of his knowledge and by his mastery of his subject, Dr. Buller won from all a cheerful transference of such cases and founded his department for future time. After seventeen years service in the General Hospital, he accepted the same post in the Royal Victoria Hospital. Upon the foundation of the chair of ophthalmology and otology in McGill University, Dr. Buller was appointed to it, and for twenty-two years his learning and experience were freely given to that institution.

Dr. Buller was a president of the Montreal Medico-Chirurgical Society, and a member of the Ophthalmological Societies of Great Britain and of America; it was while attending a meeting of the latter society at Boston that the first evidence of severe physical weakness became evident. Shortly after his return, the condition was diagnosed as pernicious anaemia, and the course of the disease, though temporarily checked, was progressively downward.

He died on October 11th, 1905, and two days later was followed to the grave by the entire medical profession of this city and by many others.

Dr. Buller is survived by his wife, three daughters and a son.

It is not easy to describe the characteristics of so many sided a man. Dr. Buller had much of the strong persistent force that marks his English race: his picture stands lined in clear definite outlines, and his character had the firmness that his face betokened. A certain brusqueness of demeanour overlay, but did not conceal one of the kindest of hearts; a decisive, if abrupt, mode of thought was reflected in the decisive action which, applied to his profession, carried him far towards greatness. A striking characteristic,—which was part and, in fact, the outcome of his strong nature—was his interest in an obscure case. Such called out all his energy and application, and the possibility of defeat was the only stimulus necessary to invoke the greatest effort of which he was capable. To this may be attributed much of the success that he attained, because such cases make the reputation of the one over the many: the reputation which he gained, he was ever jealous to guard, and his painstaking care was a byword. The physician who safeguards himself by safeguarding his patient first, fulfils “the greater commandment.”

A colleague who knew him very intimately, says:—

“In very delicate cases, where he feared to trust patients in the hands of untrained attendants, and they were too poor to hire professional nurses, he has been known to stay with the patients all night, after an operation, and attend to the dressing himself, lest the eye, so tender and in such a precarious condition, might suffer needless pain or be injured through a slight mistake. The poor were given the same attention as the rich.

“He would never admit defeat; this was one of his strong points. It inspired confidence in the patient, and study was often and often rewarded with success in cases which others had given up as beyond human aid.”

It is a simple thing to utter the words and to pen the sentence of condolence; however heartfelt, they seem to pass away with the occasion that called them forth. A far more enduring thing is the knowledge—that can remain for all time in the minds of those that loved him—that in our colleague, our art has lost a very honorable adherent and many a sufferer has lost a friend.



THE LATE DR. FRANK BULLER.

THE WRITINGS OF DR. BULLER.

The writings of Dr. Buller, seventy-six in number, extend over an exact period of thirty years. They are the work of a teacher and practitioner rather than the product of an original investigator. Dr. Buller was from the very outset of his career far too busy a man to spend time in laboratory research; but he was fully aware of the advantages of laboratory work and encouraged it in every way he could. His studies in Berlin were by no means confined to his special subjects, but included as well the courses of the great Virchow. As a result of this early grounding in general pathology he was able to intelligently follow all the advances in this department of medicine and to appreciate the methods which produced them. Dr. Buller's writings are then almost entirely either didactic or clinical in character.

Under the former heading are included numerous papers which were intended primarily to acquaint the profession in general with the most important advances made in the domain of his special subjects. These however, were never mere compilations. They were given out only after an intimate personal experience and were usually accompanied by citations of illustrative cases; they mark Dr. Buller as the leading exponent in this country and one of the first on this continent, of the newer school of ophthalmology which originated with Helmholtz, Donders and von Graefe.

Dr. Buller's clinical writings constitute the most valuable part of his work. These are "grains of sand which will in time lose themselves in the pile of human knowledge"; but they were always contributions of great value. They are complete, thorough, and satisfying, and they clearly reflect the mind of a profoundly learned Master. Of clinical compilations Dr. Buller's paper "On Anomalies in the Function of the Extrinsic Ocular Muscles" "represents truly the expense of an enormous loss of time and the exercise of unbounded patience," and his last article on "Methyl Alcohol Blindness" with Dr. Wood, of Chicago, done really when in failing health, is, as Dr. de Schweinitz has justly said "by far the most important contribution to the subject and one to which too high praise cannot be given."

A third class of writings represents Dr. Buller's well known and unceasing efforts to overcome difficult obstacles in ophthalmic practice. His first article describes the shield for the protection of the sound eye in gonorrhœal ophthalmia which has always been associated with his name. It was not the first nor the last attempt in this direction; but it is unquestionably the best appliance ever introduced for this purpose. His modification of Critchett's idea of slitting the outer canthus in gonorrhœal ophthalmia to apply strong solutions of nitrate of silver to the everted conjunctiva is another proof of his progressiveness and of his ability to grasp the newer developments in bacteriology. His alteration

of Mules' operation, which is everywhere accepted, is of the greatest value. He saw that the failures of this operation were due to suppurations brought about by the pyogenic organisms of the conjunctival sac entering the interior of the sclerotic along the sutures passed in a combined way through the sclerotic and the conjunctiva. By suturing first the scleral wound in the vertical direction and the conjunctival wound separately in the horizontal direction Dr. Buller made it impossible for the organisms to produce suppuration within the sclerotic; and the procedure has been undoubtedly more enduring and satisfactory since the acceptance of this modification. His idea of tying the canaliculi to prevent the regurgitation of septic material from the lacrimal sac in chronic dacryocystitis is unique and has been favourably commented upon by leading oculists in Boston, New Orleans and elsewhere. His trial frame was another expression of his ingenuity in recting certain well-known deficiencies.

The following list represents probably an almost complete bibliography of Dr. Buller's contributions to medical literature.

1. A Protective Bandage for the Eye. *Lancet*, Vol. 1, p. 690, 1874.
2. A New Ophthalmic Operation (letter). *Lancet*, Vol. 1, p. 661, 1875.
3. The Polypus Knife-hook (letter) *B. M. J.* Vol. 1, p. 209, 1875.
4. Chloroform and Ether as Anaesthetics. *B. M. J.*, Vol. 1, p. 73, 1876.
5. Remarks on Keratotomy, *C. M. & S. J.*, Vol. 6, p. 481-488, 1878.
6. A case of Acute Purulent Meningitis, the result of Acute Otitis (with Dr. Ross), *C. M. & S. J.* Vol. 8, p. 343-345, 1880.
7. Pilocarpine in Iritis, *C. M. & S. J.* Vol. 8, p. 200-207, 1880.
8. Syphilitic Condyloma of the eyelid, with Bubonic Enlargement of Lymphatics over corresponding Parotid. *Mont. Gen. Hosp. Rep.*, Vol. 1, p. 221-225, 1880.
9. The use of Eserine in Ophthalmic Practice. *Mont. Gen. Hosp. Rep.*, Vol. 1, p. 125-139, 1880.
10. Chronic Iridochoroiditis with Secondary Cataract, etc. Excision of Pupil and Removal of Opaque Lenses; Partial Restoration of Vision. *Mont. Gen. Hosp. Rep.*, Vol. 1, p. 216-219, 1880.
11. On Diseases of the Mastoid Cells. *C. M. & S. J.*, Vol. 9, p. 257-269, 1880.
12. Introductory Lecture, McGill University. Session 1881-1882. *C. M. & S. J.* Vol. 10, p. 193-204, 1881.
13. Granular Ophthalmia with Pannus, treated by inoculation. *Can. Jour. Med. Science.* Vol. 6, p. 233-235, 1881.

14. A Case of Sudden and Complete Loss of Vision after Large Doses of Quinine. *Trans. Am. Oph. Soc.* Vol. 3, p. 262-272, 1881.
15. Remarks on Optic Neuritis, *C. M. & S. J.* Vol. 10, p. 641-649, 1881-1882.
16. Mucocoele of the Frontal Sinus, with two illustrations. *Am. Jour. Oph.* Vol. 1, p. 33-37, 1884.
17. Common Errors in Ophthalmic Practice. *C. M. & S. J.* Vol. 12, p. 147-152, 1884.
18. On Cocaine Hydrochlorate. *C. M. & S. J.* Vol. 13, p. 421-422, 1885.
19. On Jequirity in Granular Ophthalmia. *C. M. & S. J.* Vol. 13, p. 144-152, 1885.
20. Melanotic Fibro-Sarcoma of Orbit, removed ten years after Enucleation of the Eyeball containing a Pigmented Growth. *C. M. & S. J.* Vol. 14, p. 65-71, 1886. *Trans. Am. Oph. Soc.*, Vol. 4, p. 84-89, 1885. *Amer. Jour. of Oph.* Vol. 2, p. 118-123, 1885.
21. Small Fragments of Rock-crystal removed from the Cornea. *C. M. & S. J.* Vol. 14, p. 620-621, 1886.
22. Remarks on the Treatment of Gonorrhoeal Ophthalmia. *C. M. & S. J.* Vol. 15, p. 215-219, 1886-87.
23. Tumor of Optic Nerve. *C. M. & S. J.*, Vol. 15, p. 306, 1886.
24. A Rare Form of Ophthalmia Granulosa associated with Ichthyosis. *Amer. Jour. of Oph.* Vol. 4, p. 346-351, 1887. *Trans. Am. Oph. Soc.* Vol. 4, p. 582-587, 1887.
25. A case of Pulsating Exophthalmos probably due to Rupture of the Carotid Artery in the Cavernous Sinus. *Amer. Jour. Oph.* Vol. 5, p. 323-327, 1888. *Trans. Am. Oph. Soc.*, Vol. 5, p. 22-26, 1888.
26. A case of Lightning Shock with Recovery. *M. M. J.* Vol. 17, p. 99, 1888.
27. Peculiar Cause of Blindness. *C. M. & S. J.* Vol. 16, p. 240, 1888.
28. The Influence of Certain Ocular Defects in causing Headaches. *C. M. & S. J.* Vol. 16, p. 321-328, 1888. *Can. Lancet*, Vol. 20, p. 163-167, 1887-88.
29. Cicatricial Ectropion cured by Transplantation of Skin by Thiersch's Method. *M. M. J.* Vol. 17, p. 161-162, 1888.
30. Some Remarks on Penetrating Wounds of the Eyeball. *M. M. J.* Vol. 17, p. 259-264, 1888. (See also p. 295).
31. Case of Pulsating Exophthalmos cured by Ligation of the Common Carotid. *M. M. J.* Vol. 17, p. 386-390, 1888. *Med. Rec.* Vol. 34, p. 135, 1888. *Jour. Am. Med. Ass.*, Vol. 11, p. 169, 1888. *N. Y. Med. Jour.* Vol. 48, p. 100, 1888.

32. A Case of Injury of the Eye from Lightning Stroke. Arch. f. Augen. Bd., 21, p. 390-393, 1889-90.

33. Remarks on Antiseptic Eye Surgery. M. M. J. Vol. 18, p. 5-10, 1890.

34. Rupture of the Cornea treated by Evisceration of the Eyeball and the Introduction of a Glass Globe in the Sclerotic. M. M. J. Vol. 18, p. 123-124, 1890.

35. Report on the Progress of Ophthalmology. M. M. J. Vol. 18, p. 12-21, 1890.

36. Granular Conjunctivitis. M. M. J. Vol. 19, p. 824-828, 1891.

37. Conservative Surgery of the Eye. M. M. J. Vol. 20, p. 401-409, 1891.

38. Glaucoma after Extraction of Cataract. Amer. Jour. Oph. Vol. 8, p. 313, 1891. Trans. Am. Oph. Soc., Vol. 6, p. 120-126, 1891.

39. A Case of Zoster Ophthalmicus. M. M. J. Vol. 21, p. 100-101, 1892.

40. The Dependence of Abnormal Eye Conditions upon Uterine Diseases (with Dr. Alloway). M. M. J. Vol. 21, p. 335-351, 1892.

41. A Foreign Body in the Retina. Trans. Am. Oph. Soc., Vol. 6, p. 332-335, 1892.

42. An Improved Trial Frame. Trans. Am. Oph. Soc., Vol. 6, p. 456-458, 1892.

43. Presidential Address (Mont. Medico-Chir. Soc.) M. M. J. Vol. 21, p. 529-537, 1883.

44. The Present Status of Asthenopia. Amer. Jour. Oph. Vol. 11, p. 327-333, 1894. M. M. J. Vol. 23, p. 170, 1894. Internat. Med. Mag., Vol. 3, p. 720-724, 1894-95.

45. Removal of the Membrana Tympani and Ossicles. M. M. J. Vol. 24, p. 248-254, 1895.

46. The Electro-magnet in Ophthalmic Surgery, with some Illustrative Cases. M. M. J. Vol. 25, p. 236-240, 1896. Ann. Oph. and Otol. Vol. 5, p. 928-931, 1896.

47. Sarcoma of Choroid. Trans. Am. Oph. Soc., Vol. 7, p. 374-382, 1896.

48. Sympathetic Ophthalmia. Internat. Clinic (Phila.) Vol. 4, p. 306-311, 1896.

49. The Treatment of Dermoid Tumors of the Orbit. Trans. Am. Oph. Soc. Vol. 7, p. 687-693, 1897.

50. Notes on the "Mules' Operation" versus Evisceration. Oph. Rev. Vol. 16, p. 282-288, 1897.

51. Anomalies in the Functions of the Extrinsic Ocular Muscles. Oph. Rev. Vol. 16, p. 363-382, 1897.

52. Clinical Notes on the so-called Strumous or Phlyctenular Keratitis. *M. M. J.* Vol. 28, p. 450-451, 1899.

53. Injuries and Diseases of the Orbit. *Amer. Text Book of Diseases of the Eye, Ear, Nose and Throat.* (DeSchweinitz and Randall) p. 523, 1899.

54. Operations on the Orbit. *Ibid.*, p. 599.

55. Double Needle intended to facilitate the Discision of Secondary Cataract. *Trans. Am. Oph. Soc.* Vol. 8, p. 553-567, 1899.

56. A Case of Primary Tumor of the Optic Nerve. *Trans. Am. Oph. Soc.* Vol. 8, p. 510-518, 1899.

57. Gonorrhœa in its Relation to Diseases of the Eye. *M. M. J.* Vol. 29, p. 185-187, 1900.

58. Excision of the Eyeball and some Alternative Operations. *M. M. J.* Vol. 29, p. 341-348, 1800.

59. Report of Cases in Eye and Ear Clinic, R. V. H. (with Dr. Byers). *M. M. J.* Vol. 29, p. 192-201, 1900.

60. Report of Cases in Eye and Ear Clinic, R. V. H. (with Dr. Byers). *M. M. J.* Vol. 29, p. 776-773, 1900.

61. The Medical Student and his Prospective Career. Address to Undergrad. Soc. *M. M. J.* Vol. 30, p. 69-78, 1901.

62. Diseases of the Cornea. *Buck's Ref. Handbook of the Medical Sciences.* Vol. 3, p. 283-291, 1901.

63. Affections of the External Auditory Canal. *Ibid.* Vol. 3, p. 613-621, 1901.

64. Syphilis as seen by the Ophthalmic Surgeon. *M. M. J.* Vol. 30, p. 699-704, 1901.

65. A Case of Recent Acute Suppuration of Cornea, successfully treated after Ligation of Canaliculi. *M. M. J.* Vol. 31, p. 186-187, 1902.

66. Semi-auto-etherization. *M. M. J.* Vol. 31, p. 878-880, 1902.

67. Temporary Ligation of Canaliculi as a means of preventing Wound Infection in Operations on Eye. *M. M. J.* Vol. 32, p. 132-175, 1903. *Trans. Amer. Oph. Soc.* Vol. 9, pt. 1, p. 633-638, 1902.

68. Tumor of Optic Nerve with Intracranial Complications. *M. M. J.* Vol. 32, p. 176-179, 1903. *Trans. Am. Oph. Soc.* Vol. 9, pt. 3, p. 629-633, 1902.

69. Chronic Suppurative Otitis Media, Thrombosis of Sigmoid Sinus and Internal Jugular; Operation on Mastoid and Sinus with Ligation of Deep Jugular, followed by Septic Pulmonary Complications, and Death sixty-five days after Operation. *Trans. Am. Otol. Soc. (New Bedford).* Vol. 8, p. 288-290, 1903.

70. A Practical Suggestion in regard to the Use of Politzer's Inflation. *Trans. Am. Otol. Soc.* Vol. 8, p. 308-311, 1903.

71. Valedictory Address. *M. M. J.* Vol. 32, p. 500-506, 1903.

72. Skin-grafting in Ophthalmic Surgery. *M. M. J.* Vol. 32, p. 721-723, 1903. *Trans. Amer. Oph. Soc.* Vol. 10, pt. 1, p. 134-137, 1903.

73. Toxic Amblyopia caused by Methyl-Alcohol. *M. M. J.* Vol. 33, p. 29-38, 1904.

74. Diseases of the Sclera. *Buck's Ref. Handbook of the Medical Sciences.* Vol. 7, p. 74-75, 1904.

75. Poisoning by Wood Alcohol. Cases of Death and Blindness from Columbia Spirits and other Methylated Preparations (with Dr. Casey A. Wood, Chicago). *Jour. Am. Med. Assoc.* Vol. 43, p. 1289-1296 and Vol. 23, p. 1213-1231, 1904.

Reference to cases presented by Dr. Buller before the Montreal Medico-Chirurgical Society and to parts taken by him in different discussions are to be found in the Transactions of the Society in the pages of the Montreal Medical Journal as follows:

(1). Exostosis from the External Auditory Meatus. Vol. XVII., p. 830.

(2). Congenital Polypoid Growth of Conjunctiva. Vol. XXII., p. 627.

(3). White Sarcoma of the Choroid. Vol. XXIII., p. 460.

(4). Discussion on Erysipelas. Vol. XXIV., p. 144.

(5). Discussion on Cancer. Vol. XXIV., p. 726.

(6). Some Interesting Eye Conditions. Vol. XXVIII., p. 229.

Reviews and Notices of Books.

AMERICAN EDITION OF NOTHNAGEL'S PRACTICE. — Diseases of the Kidney, Diseases of the Spleen, and Hemorrhagic Diseases. By Drs. H. SENATOR, and M. LITTEN, of Berlin. Edited, with additions, by James B. Herrick, M.D., Professor of Medicine in Rush Medical College, Chicago. Octavo, 816 pages, illustrated. Philadelphia and London: W. B. Saunders & Company, 1905. Cloth, \$5.00 net; Half Morocco, \$6.00 net. Canadian agents, J. A. Carveth & Co., limited, 434 Yonge St., Toronto.

It is not to the purpose to make critical remarks at this late date, upon Senator's book, which appears in this volume. The editor has a by no means easy task in combining the diseases of the kidney and of the spleen, to say nothing of the "cleaning-up" process which makes it

necessary to deal with that incongruous and friendless group—the so-called hemorrhagic diseases.

Dr. Herrick is engaged on a labor of love for Senator has not suffered at his hands in the slightest, and the additions made by the editor appear to us to be in exactly the same spirit as influenced Senator when he wrote it: the tone is one of great conservatism; it is a pleasure to find a writer in authority who does not feel bound to bow down to classification, for upon student and teacher, clinician and pathologist there is no greater curse laid, than that of having to reconcile conflicting views upon the forms of nephritis. Herrick says he considers the terms Bright's disease and nephritis interchangeable, and states that we must be willing to make a diagnosis of chronic nephritis without being willing to classify more fully—which is a very sensible way of looking at it.

The editor has appended short paragraphs upon subjects that interest us greatly, namely, the surgical treatment of nephritis, cryoscopy and phloridzin glycosuria. For Edebohl's procedure as a routine, Herrick has little but condemnation, and he hints that the physiological explanation is unsatisfactory; the editor adds in his preface that he thinks Senator's silence on this subject is more condemnatory than his own spoken word. Upon cryoscopy, we are pleased to see that there is no wild enthusiasm though the applications of the procedure, few and limited as they are, are given due consideration. The phloridzin test and the methylene blue test are considered as fit to be confirmatory evidence of the better-known methods of measuring the competence of the kidneys. There are two good editorial pages upon the treatment of movable kidney: these are followed by several of Senator's pages upon nephralgia, which it seems to us the editor might have modified with advantage, for the chapter is largely based upon the assumption that because an organic cause of pain was not found at operation or autopsy, such organic cause did not exist; this assumption is very commonly made, is baseless, and has produced many false impressions — to say nothing of case reports. The editor's note indicates that he feels this himself. A few timely paragraphs are added upon the question of diet in chronic nephritis, and the routine milk diet, of which von Noorden is such an enemy, comes in for a due share of condemnation, von Noorden's views being given some mention and consideration.

It may perhaps be remembered that Senator's book opens with an introduction on general subjects such as albuminuria, hematuria, dropsy and uremia, which are discussed in a broad way; the main part of the book is devoted to special diseases: it seems a mistake to include tuberculosis among the neoplasms of the kidney, or of any other organ for

that matter: perhaps to change this lay beyond the rightful power of the editor, but it is an error, especially if the book should be used by those whose pathological opinions are yet immature: among true tumors, hypernephroma at the present day exceeds some of the others in importance and this paragraph would gain in interest if it were fuller. The last chapter, called Anomalies of the Renal Vessels deals with aneurysms and thromboses which should be included, one would think, in circulatory disturbances. The book is fully entitled to its place among the Nothnagel monographs, and is, the writer thinks, excellently edited.

The diseases of the spleen are taken up in a very different way, and the editor has felt his limitations; Litten's work is a strange jumble of all sorts of diseases that have any connection with the spleen, however slight. Properly speaking, there do not seem to be any diseases of the spleen itself: and when two pages and a half comprise all that is to be said upon the physiology of the organ, it is rather incongruous that its diseases should be treated at great length; among the chapter headings are "infarct of the spleen," "abscess of the spleen," "congestion of the spleen" and even treatment is suggested for "amyloid disease of the spleen." There is a great deal of information in all these chapters, but the plan on which it was first brought out, was not in the least excused by the prominence of the writer; and in the American Nothnagel it remains, as it did in the original, a badly constructed building, made of good material.

With this, however, the editor has had nothing to do; what additions he has made are placed in a judicious way and the added paragraphs such as on splenic anæmia, are necessary. The hemorrhagic diseases are put in with additions by Dr. Herrick, with the explanatory note in the preface, that there is no attempt at cohesion: it is, as it were, a sweep-up of remnants.

A TEXT-BOOK OF DISEASES OF WOMEN. By BARTON COOKE HIRST, M.D., Professor of Obstetrics in the University of Pennsylvania, Gynecologist to the Howard, the Orthopædic and the Philadelphia Hospitals. Second Edition, re-written and enlarged, with 701 illustrations. W. B. Saunders & Co., Philadelphia and London, 1905. Canadian Agents, J. A. Carveth & Co., Ltd., 434 Yonge Street, Toronto.

This text-book appeared two years ago, the work of a practical man, written in a practical way. In this second edition, fifty-seven pages of text have been added, and forty-seven new illustrations introduced, and the author's claim to recognition, even the most up-to-date, is thereby honestly established.

Professor Hirst has written a good text-book. To the uninitiated student its pages present a rather monotonous appearance; paragraph merely succeeds paragraph. Small attempt is made to catch the eye, and the attention by means of italics, head-lines and spacings. In no objective way is the young reader made to single out the more important or essential facts. This is, however, a fault rather in the editing of the book, and does not concern its substance.

On this latter count Professor Hirst writes a good, plain work-a-day thesis. This book is just this.

To the second edition we re-extend the welcome vouchsafed upon its initial appearance—"That among American text-books of Gynæcology it ranks second only to Dudley."

A. TEXT-BOOK OF CLINICAL DIAGNOSIS, BY LABORATORY METHODS, FOR THE USE OF STUDENTS, PRACTITIONERS AND LABORATORY WORKERS. By L. NAPOLEON BOSTON, A.M., M.D., Assoc. in Medicine and Director of the Clinical Laboratories of the Medico-Chirurgical College, Philadelphia. Second Edition, revised and enlarged. Octavo, of 563 pages, with 330 illustrations, including 34 plates, many in colours. Philadelphia and London: W. B. Saunders & Co., 1905. Cloth, \$4.00 net; Sheep or Half Morocco, \$5.00 net. Canadian Agents: J. A. Carveth & Co., 434 Yonge Street, Toronto.

The first edition of this work was reviewed in the *JOURNAL* in January, 1905, and it speaks well for Dr. Boston's work that a second edition is required so soon.

There is not much to add to our previous review, except to state that a few of the newer tests have been added. The subject of cytodagnosis is considered more extensively, as is also malaria.

MANUAL of the DISEASES of the EYE for STUDENTS and PRACTITIONERS. By CHARLES H. MAY, M.D. Chief of Clinic and Instructor in Ophthalmology, College of Physicians and Surgeons, N.Y. Fourth edition revised. With 360 original illustrations including 21 plates with 60 colored figures. New York: William Wood & Co., 1905.

The appearance of a fourth edition of Dr. May's *Manual of Diseases of the Eye* since 1900, would evidently indicate that it has filled a demand and found a very ready market.

The present edition contains considerable additions and despite this has been kept within the compass of the previous volume. The possibility of condensing within the limits of such a small work the main points of almost all diseases of the eye, together with anatomo-

mical and pathological notes is an almost impossible task. The consequence is that in some respects this work rather suffers from too much condensation, and produces too closely the character of a catalogue.

The book is very profusely illustrated, both with coloured and non-coloured plates, some of which are very good, while others are far from what one could desire. Some of these illustrations could be very well omitted, as for example:—the illustration of a test lens case, as it passes all human understanding what purpose such an illustration could subserve.

Barring this fault of extreme condensation the book is very complete, and as a specimen of the printer's and binder's work it could hardly be better.

SAUNDERS' MEDICAL HAND-ATLASES; Atlas and Epitome of Diseases of the Skin. By PROFESSOR DR. FRANZ MEACEK, of Vienna. Edited, with additions, by HENRY W. STELWAGON, M.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Second edition, revised, enlarged, and entirely reset. With 77 coloured lithographic plates, 50 half-tone illustrations, and 272 pages of text. Philadelphia and London: W. B. Saunders & Company, 1905. Cloth, \$4 net. J. A. Carveth & Co., Toronto.

Frequent mention has been made of this series of Atlases, and always in terms of praise. They appeal to one by reason of the accuracy and beauty of the plates, and by the lucidity of the text. The reasonable price is also worth noting. The editor of this volume is Dr. Stelwagon, and he has performed a useful work. The practitioner will find this book adequate to his needs. Treatment is not neglected.

INDEX CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMS. Vol. X; M. to MNIKHOVSKI.

This is the tenth volume of the second series of the Index-Catalogue of the Surgeon-General's library. It contains 10,122 author-titles representing 4,690 volumes, and 10,750 pamphlets; and, in addition, 22,622 titles of articles in periodicals. The catalogue to date records 277,353 authors, 250,374 book-titles, and 812,766 articles in periodicals. We make respectful mention of this noble work which is already so well known to all who are interested in the recorded experience of the profession.

PROGRESSIVE MEDICINE. Edited by HOBART AMORY HARE, assisted by H. R. M. LANDIS. September 1st, 1905. Lea Brothers & Company.

The contents of this volume are Disease of the Thorax, by William

Ewart; Dermatology and Syphilis, by William S. Gottheil; Diseases of the Nervous System, by William G. Spiller; Obstetrics, by Richard C. Norris. This number is up to the standard established by former numbers. We note one reference to work which has been done in Canada.

A MANUAL OF THE PRACTICE OF MEDICINE. By A. A. STEVENS, A.M., M.D. Seventh edition, revised; 556 pages, illustrated. W. B. Saunders & Company, 1905. J. A. Carveth & Co., Toronto. Flexible Leather, \$2.50 net.

This manual has been frequently commended. It corresponds with "Carter," in England, and is liked by students.

THE MEDICAL EPITOME SERIES; Practice of Medicine, by HUGHES DAYTON, M.D. Series edited by VICTOR COX PEDERSON. Lea Brothers & Co.

Medical News.

LA SOCIÉTÉ MÉDICALE.

"La Société Médicale" resumed its work Tuesday, October 3rd.

The secretary gave a retrospect of the work during the last session. The retiring president, Dr. O. F. Mercier, then announced the elections of officers for the present year.

DR. R. BOULET, former vice-president, was unanimously elected president.

DR. A. MARIEN carried the vice-presidency by a majority of one vote over Dr. F. DeMartigny.

DR. A. LARAMÉE and A. ETHIER were returned, the former as secretary and the latter as treasurer.

DR. MERCIER thanked the members for the effective aid they had given him; then rendering light the duties incumbent on the office he was about to hand over to Dr. Boulet; he predicted for the association a most prosperous year under the guidance of his successor.

DR. BOULET was called to the chair.

A vote of thanks was unanimously passed in favor of the retiring officers and the meeting was closed after routine business.

THE MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The opening meeting of the year was held in the Society's rooms, on Friday, October 6th; the new office-holders took charge, and the evening was pleasantly passed by a smoking concert. Assisted by the

acceptable playing of Mr. F. H. Blair, the members of the society dragged from their lairs the musical talents that lie dormant during the rest of the year, and made night tuneful. The new president, Dr. F. R. Tngland, took the chair; the stupendous efforts of the Rooms Committee in preparing the programme, were lightened by the assistance of Dr. Lauterman.

ROYAL VICTORIA HOSPITAL.

Monthly report for September: Patients admitted, 268; patients discharged, 235; patients died, 18. medical, 74; surgical, 122; ophthalmological, 27; gynæcological, 33; laryngological, 12. Out-Door Department: medical, 787; surgical, 336; eye and ear, 389; diseases of women, 81; nose and throat, 349; total, 1,942. Ambulance calls, 80.

Retrospect of Current Literature.

LARYNGOLOGY AND RHINOLOGY.

An interesting case of complete paralysis of the left vocal cord, associated with dilatation of the left pupil, mitral stenosis, and enlargement of the left auricle, has recently been reported by Atwood Thorne before the Laryngological Society of London. The patient, a dressmaker aged 17, had been troubled with hoarseness for three months.

On examination the left vocal cord was found to be in the cadaveric position and immobile.

The left pupil was dilated, but responded sluggishly both to light and accommodation. There was no localized sweating or other sign of involvement of the sympathetic nerve. The upper eyelid did not droop. The radial pulses were apparently synchronous and equal. There was a history of rheumatic fever about four years previously, and there was great dyspnoea on exertion.

On examination of the chest there was no indication of aneurysm, but evidence of marked mitral stenosis.

Dr. Thorne considered that the laryngeal paralysis was probably due to the enlarged left auricle.

He asked Dr. Wilfred Harris to see the case as two years before he had shown a somewhat similar case at the Harveian Society. Dr. Harris was of the opinion that the paralysis of the left vocal cord was due to the cardiac condition.

Although Dr. Thorne knew the condition was a very rare one, he considered that the paralysis of the cord was due to pressure on the recurrent laryngeal nerve by the enlarged left auricle, the dilatation of

the left pupil being due to irritation of the sympathetic from the same cause.

THE SUBMUCOUS RESECTION OF THE SEPTUM.

In no department of rhinology or surgery as a whole has greater advance been made than in the treatment of deflections of the nasal septum. The older methods which have been as a rule unsatisfactory are being rapidly supplanted by the much more scientific and very successful operation known as the submucous or window resection of the septum.

By this method we are enabled to remove without any destruction of the mucous membrane, deflections of the cartilaginous or bony septum as well as crests or ridges, replacing a bent and distorted septum by one that is quite straight and in which the cartilage and bone which have been removed are apparently regenerated at the same time the patient has complete nasal sufficiency restored.

During the past two years there have been a number of contributions to the literature on the subject, notable among these being:

Freer. The window resection. (*Journal of the American Medical Association*, December 5th, 1903.)

Killian (Die submucöse Fensterresektion der nose scheidewand, *Fraenkel's Archiv. für Laryngologie*, Vol. 16, p. 362, 1904).

(This has since been translated by E. Edwin Foster and appeared in the *Annals of Otolaryngology, Rhinology, and Laryngology*, Vol. 14, No. 2, p. 362.)

Hajek (Bemerkung zu der Krieg'scheu Fensterresektion, *Fraenkel's Archiv. für Laryngologie*, Vol. 15, p. 45, 1904).

E. White (Resection of the nasal septum, *Boston Medical and Surgical Journal*, Vol. CL. page 419, April, 1904.)

Spratt (The removal of Septal Spurs and the correction of Deviations of the Septum, *American Medicine*, May 7th, 1904).

Menzel (Zur Fensterresektion der Verkrümmten Nasenscheidewand, *Fraenkel's Archiv.* Vol. 15, page 48, 1904).

Zarinko, ueber die Fensterresektion der Deviatio Septi. (*Fraenkel's Archiv.*, Vol. 15, page 248).

Erhard Mueller (Zür Technik der Fensterresektion, *Ibid*, page 312)

Weil (Ueber die Submucösen Resektionen an der Nasenscheidewand. (*Fraenkel's Archiv.*, Vol. 15, page 578, 1904).

Otto T. Freer (Deflections of the Nasal Septum; a critical review of the methods of their correction by the Window resection, with a report of 116 operations. *Annals of Otolaryngology, Rhinology and Laryngology*, Vol. XIV, No. 2, 1905.

William Lincoln Ballenger (The Submucous resection of the Nasal

Septum). A new technic with the author's swivel knife, reducing the average time of the operation several minutes. *Annals of Otolaryngology and Rhinology*, Vol. 14, No. 2, page 394, 1905.

As lack of space forbids going into minute details concerning this operation reference to the literature will furnish these.

To Killian, of Freiburg, belongs the credit of having introduced this operation in the refined form in which we now find it; the other writers perform the operation in a similar manner, different only in minor details.

In the paper above referred to Killian records his experience of 220 cases from the operation book of his clinic, 1899-1904, and described minutely the operation to which he has given the name "The submucous window resection of the septum." For more complete details of this operation, the reader is referred to the article previously mentioned. The author credits Krieg with having prepared the way for the operative treatment of extensive and deep seated deformities of the nasal septum; Krieg removed the mucous membrane of the side of the septum operated on, because it was in the way during the operation. Killian considers that with the improvement of technique and instruments the indications for the submucous resection of the septum have become more and more numerous, and he is now convinced that this operation should be used whenever there are sufficient reasons for any operative interference. Contra-indications to the window resection of the septum are, according to Killian: (1) Advanced age; (2) small children, on account of their small nasal proportions; the narcosis is not so satisfactory, and disturbances from growth occur later on. From 12 years on he considers that the submucous window resection of the septum can generally be performed; (3) Patients suffering from different chronic constitutional diseases; but in the early stages of pulmonary tuberculosis, where the patient is well nourished and there is a prospect of arrest or healing of their disease, the restoration of free nasal breathing is often of the greatest value to such. He never operates on cases with temporary healed nasal lupus, because of the danger of a recurrence, and the extension of the lupus process; (5) The operation is temporarily contra-indicated in all patients with an acute disease in the region of the nose, (5) In cases of sinusitis with a decidedly purulent secretion it is best to put off the operation until there is a marked improvement, unless there are urgent reasons for operating; (6) Fresh injuries of the septum should be allowed to heal; (7) In tertiary syphilis of the nose, one must wait till healing has taken place, and a long time has elapsed without recurrence.

Killian's method consists (after aseptic precautions have been ob-

served and the nose cocainized) in making an oblique incision from below upward about one-half a centimetre back of the movable edge of the septum. This incision should pass completely through the mucosa and a little way into the cartilage.

The muco-perichondrium is then elevated over the convex side of the deviation; this being done, the cartilage is incised, care being observed that the mucosa of the opposite side be not injured.

Through the incision in the cartilage the opposite muco-perichondrium is now elevated; a special knife for cutting the cartilage is introduced between the separated muco-perichondrium through the slit in the mucous membrane and the deviated portion of the septum is then removed.

If the bony septum is involved it is necessary to use cutting forceps for its removal. Bony spurs are removed with the chisel and bone forceps.

When all the deviated portions of the septum have been removed the muco-perichondrium of both sides are brought into apposition and both nostrils are packed with gauze strips, which are left in the nose for two days and then carefully removed; then, if the septum is not exactly in the middle, it can be put so by placing in the narrower side a tampon to remain for a day or two. The patient can be discharged after a day or two, but should be cautioned to observe care of the external nose that the union be not destroyed.

This article by Killian contains a number of illustrations of the instruments used by him, diagrams of the field of operation which assist materially in giving one a clear understanding of the operation in all its details.

To Otto Freer we are also much indebted for having introduced a modified method for this operation of the window resection of the septum, which in some cases is, perhaps, more applicable than that of Killian. He makes one incision vertically along the apex of the deviation, and another parallel to the floor of the nose extending backward to beyond the limit of the deviation and anteriorly beyond the anterior limit, passing through the lower extremity of the vertical incision. The mucous membrane is separated on the convex side forming an anterior and posterior flap, which may be pushed out of the way, leaving the field of operation clearly exposed to view.

For this operation he has invented a large number of instruments which answer the purpose admirably.

Ballenger, of Chicago, has also contributed an article on the sub-mucous resection of the nasal septum, the main feature of which is the description of a swivel knife used by him for removing the cartilage.

This, he claims, lessens appreciably the time occupied in performing the operation. This instrument consists of a swivel knife between two prongs on a handle and appears to be of great service in the operative technique.

Hajek and others, as quoted at the beginning of this article, have all their own peculiarities of operating, the differences being mainly in the incisions adopted and the instruments used, but they all have the same object in view, namely, the submucous resection of the septum.

For fuller details, the reader is referred to the literature, mention of which has already been made.

In conclusion, a brief mention of the methods of anæsthesia may be of interest. As a rule, local anæsthesia is all that is necessary, and by this means the operation is rendered painless. Some preparation of the supra-renal gland is used to increase the anæsthesia and assist in rendering the field of operation bloodless, which is the case in nearly all instances. If a general anæsthetic is used, their local application is also necessary. Killian at first made use of 20 per cent. cocaine and 1-1000 adrenalin rubbed into both sides of the septal mucosa. He now injects, submucously on both sides of the septum, 1 cc. of one-half per cent. solution of cocaine to which are added 4 drops of suprarenium hydrochlor., and obtains complete anæsthesia and a bloodless field.

These injections must be made most carefully, or tearing of the mucosa will result, rendering perforation of the septum difficult to avoid. Freer applies powdered cocaine and claims to get most satisfactory results. Finally, it is perhaps only necessary to state that the operation has already proved a great success and in the experience of the reviewer, who has performed the operation in a number of cases, both by the Killian and Freer methods, the results have been most satisfactory.

W. H. JAMIESON.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

RECENT LITERATURE UPON PNEUMOCOCCUS.

PARK, W. H., and WILLIAMS, A. W. "A Study of Pneumococci."

COLLINS, KATHERINE R. "The Application of the Reaction of Agglutination to the Pneumococcus."

LONGCOPE, W. P. "A note upon the growth of Pneumococci and Streptococci from the mouths of healthy individuals and from Pathological conditions."

NORRIS, C., and PAPPENHEIMER, A. M. "A Study of Pneumococci and Allied Organisms in human mouths and lungs after death."

- DUVAL, C. W., and LEWIS, P. A. "Studies on the Pneumococcus."
- BUERGER, L. "Studies of the Pneumococcus and Allied Organisms; with reference to their occurrence in the human mouth."
- HIS, P. H., JR., BORDEN, J. H., and KNAPP, C. B. "A Comparative Study of Pneumococci and Allied Organisms."
- WOOD, F. C. "The Visability of the Pneumococcus after drying; a study of one of the factors in pneumonic infection."
- LONGCOPE, W. T. "A note upon the growth of Pneumococci in Blood Serum." *The Jour. of Exp. Med.*, Vol. VII, No. 5, August, 1905.
- ROMER. *v. Graefe's Arch. f. Oph.*, No. 54.
- ANENFELD. *Munch. Med. Wochen*, No. 33.
- RYMOWITSCH. *Russ. Wratsch*, No. 23.
- DAVIES and BROWN. *Lancel*, Oct. 8, '04.

The entire number of the *Jour. of Exp. Medicine* is taken up by the work of Rockefeller Investigators upon this organism. They find relative to its distribution that in the winter months half of the people in New York who were examined had pneumococcus in the mouth or throat; in cases where the organism was not found, Norris and Pappenheimer kept examining these throats and were finally rewarded by a positive result in 85 per cent. of their cases. Longcope and Fox found that the spring months were freer than the winter months in this regard, and found the greatest percentage of infections in the months preceding the heaviest pneumonia period of the winter. Buerger finds that in the wards of the hospital, normal individuals frequently acquire the pneumococcus, though not with greater frequency than outside. Pneumonia patients may retain the pneumococcus for months after the attack, though the relative virulence is not stated. Lips of drinking-cups and sputum mugs were found often to harbor virulent pneumococci. Most interesting in this regard is the work of F. C. Wood, reported below.

The germs found in the mouths of healthy persons were, as a rule, less typical than those from pneumonic cases, and proved less virulent to rabbits, but could be rapidly intensified when passed through successive animals. Reasoning by analogy, Park and Williams think that by passage from person to person a similar increase in virulence can be the result, and see herein a further good reason to limit expectoration in public places.

The favorite medium with all these experimenters seems to be 2 per cent. glucose-serum-agar, or neutral serum agar. Buerger, in this publication, as well as in the *N. Y. Path. Proc.*, refers to the certainty with which the pneumococcus can be determined, by its ability to form

“ring-shaped” colonies after 18-20 hours growth on this medium; the edges are raised, the centre depressed, even in the most minute colonies.

The close relationship between the streptococcus and the pneumococcus is commented on by all, especially where the so-called *S. mucosus* is concerned; this germ is considered to be more nearly related to the pneumococcus, of which it is probably a variety, than to the streptococcus.

Katherine Collins in agglutination experiments found that there was no definite relationship discernible between agglutination and other characteristics in the different strains of pneumococcus, save with regard to the “mucosus,” which, she considers in this respect, a true streptococcus; in this respect her conclusions are somewhat at variance with the others.

Norris and Pappenheimer experimented with the organism as found in the lungs at autopsy. Pneumococcus or streptococcus was found in nearly all their cases, but they consider that they frequently attain that position by gravity, which causes the mouth secretions to trickle down the bronchi, and so lodge in the lung. They put bacillus prodigiosus, a bacillus which forms a striking red-coloured pigment, into the mouth after death, and in half the cases, they recovered it from the lungs at autopsy, the manipulations from the moment of death to the time of autopsy tending to this displacement. For this reason, they say, cultural findings from the lungs after death are unreliable.

Working with agglutination, Buerger found that all strains of pneumococcus were agglutinated by pneumococcus immune serum, but that ordinary serum was entirely without effect on pneumo- or streptococcus, the mucosus form included; yet immune pneumococcus serum agglutinated the pyogenic streptococci and streptococcus mucosus.

It is considered, from his observations, that colds and pneumonia had little or no relation to the existence of pneumococcus in the mouth, save in two cases in which colds existed, and the likelihood, he thinks, was great that these occurred as a sequence of the presence of the organism.

The most interesting part of all these experiments to the physician, was that undertaken by F. C. Wood on the conditions under which the organism will live. In moist sputum, at room temperature, pneumococcus lives 11 days; at 0° C., 35 days; at room temperature in strong light, 5 days; dried sputum harbors living germs in the dark 35 days, in diffuse light 30 days, in sunlight 4 hours. In powdered sputum in the dark it lives 1-4 hours, in sunlight less than 1 hour; on cloth a little longer than on non-absorbing surfaces. When sputum is sprayed, the particles remain in suspension 24 hours, but the pneumococcus dies

in less than an hour; in sunlight it can exist but a few minutes. Wood considers that the mucus of sputum is destructive to the organism. His conclusions are that in the care of pneumonia patients, illumination and ventilation are of great use, and dry sweeping or dusting is to be avoided; articles which cannot be damped ought to be removed. The organisms coming from the patient by sweeping, coughing, or speaking are soon killed in suspension, especially in a sunlit room.

Romer some time ago (v. Graefc's Arch. f. Oph., No. 54, and elsewhere), gave the result of his work on *ulcus corneae serpens* by direct injection of rabbit-pneumococcus-serum; his researches on animals of different kinds were very convincing.

Axenfeld (Munich. Med. Woch., N. 33) went farther, in ascribing to the serum a prophylactic value in the operations in the eye upon unclean territory or upon tissues modified by the existence of a general disease such as diabetes.

Rymowitsch (Russ. Wratsch, No. 33) found in a large series of cases of conjunctivitis (472 cases) during late summer, 18 per cent. caused by pneumococcus; these were especially found in the young, and were often contagious.

Davis and Brown (Lancet, Oct. 8, '04) describe a case of pneumonia with empyema, suppurative antritis of the knee, and septic peritonitis which recovered—thoracotomy, incision of the knee and laparotomy were performed. In ten and a half years in St. Bartholomew's, 39 cases of multiple localisation of *Pneumococcus* had died.

An afebrile case of pneumonia is also reported.

REPORTS ON THE INVESTIGATION OF THE IMPERIAL CANCER RESEARCH FUND.

No. 2, Parts I. and II., 1905. DR. E. F. BASHFORD, General Superintendent of Research.

Part I. deals with the further statistical investigation of cancer, the terms being used to include all forms of malignant new growth. The conclusion is reached that we can not yet say with certainty that cancer is increasing, in spite of the apparently increasing numbers of deaths attributed to cancer. Nothing in the statistics obtained points to an increase in the death rate from cancer. Sarcoma is found to increase in frequency as life advances exactly parallel to the manner in which carcinoma does; it has generally been supposed that sarcoma is essentially a disease of those of younger age than is carcinoma, but if this be disproved, as seems likely, we shall be less inclined to consider sarcoma and carcinoma as two fundamentally different growths.

The authors show the fallacies in all the reports that have been hither-

to made upon the basis of a "cancer-census." Without going into detail, it may be said that the committee has instituted a card index in which the metropolitan hospitals record all their cases; this takes in all the cases that are determined absolutely to be cancer. A microscopical examination of these cases is essential, and it is felt that though the figures are as yet small, they are correct. Although many cases without microscopical examination can be undoubtedly diagnosed as cancer, yet without the use of the microscope, these must be classed as "examination not made."

Age is a great factor in malignant growth. In mice and cattle large series of cases show that cancer occurs with increasing frequency as age advances; in the dog, horse and cat fewer figures are to be had, but the indication is the same. The reports which seem to show that there is endemic distribution of cancer in certain areas, have constantly neglected the age incidence. The time at which malignant new growths appear in animals stands in direct relation to the absolute duration of life in long- and short-lived animals respectively. The same is borne out in human pathology: the chorion is a short lived tissue and chorion-epithelioma appears at an interval after fertilisation which corresponds to its senile stage of proliferation. The mamma and uterus are slow to arrive at function, are active for a long time, but carcinoma is commonest when these organs are undergoing involution. The skin remains functional long after middle life, and the age of epithelioma corresponds.

The maximum of normal growth is attained early in intra-uterine life and falls gradually to old age, reaching zero at death: fertilization renews this proliferative process; the proliferative power of cancer does not follow this rule, as is shown by cancer being transmitted continuously for $3\frac{1}{2}$ years after its transference from the mouse first affected.

In giving the recorded cancer death-rate, it is of interest that 275 cases appear from the Montreal General and the Royal Victoria Hospitals from a series of 3,275 autopsies; this is an incidence of one case in twelve. Guy's Hospital post-mortems show one in eight.

Obtaining data from uncivilized races has been attempted, and is progressing: specimens of cancer from tribes where intercourse with civilisation is at a minimum have been already obtained. The report states that there is no reason to suppose that any race is exempt.

Statistics must show age and sex-incidence, the incidence as to organs or primary sites, and the types of growth: these points have not received so full attention as have geographical distribution, diet, climate, and other external factors, which the authors think are of much less importance.