

EUROPEAN MEDICINE: A RESUME OF MEDICAL
PROGRESS DURING THE EIGHTEENTH AND
NINETEENTH CENTURIES.

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THE medical historian of the future will designate the period covering the eighteenth and the nineteenth centuries as the history of "EUROPEAN MEDICINE." The period was a remarkable one, and the medical historian can discover, within the time, an array of eminent medical men comparing more than favorably with any other age or any other time.

In London, at the beginning of the eighteenth century, although there was neither university nor medical college, there were many great teachers and eminent practitioners in anatomy,

*Doyle (J. A.). The English Colonies in America. 1887. Vol. 2, p. 283.

surgery, and midwifery. Percival Pott was a surgeon to St. Bartholomew's Hospital, in the meridian of his fame as a humane and skilful operator and careful and watchful observer and writer. Dr. William Hunter was distinguished as an anatomist, physiologist, and accoucheur, and his contemporary, Smellie, was equally famed for his learning and his ungainliness of person. Denman, the pupil of Smellie, and John Hunter, the brother of William, were in connection with Dr. George Fordyce, Sir Joseph Banks, Dr. Solander, Dr. Muskleyne, Dr. Noothe, and many others, forming a society for the discussion of medical science. Percival Pott wrote a code of ethics in the year 1800. Dr. Macbride wrote his "Introduction to the Theory and Practice of Physic," Cleghorn gained a great reputation by means of his book on the "Epidemical Diseases in Minorca," and Rutty sent out his "Materia Medica."

During the same period of time, Paris contained many famous men in the medical walks of professional life. Antoine Louis was the learned expounder of difficult questions in legal medicine. His rival, Antoine Petit, celebrated for his surgical tact and sure diagnosis, had the additional merit of being the preceptor of Desault, who was an able and attractive, though not eloquent, lecturer in surgery. Sabatier wrote his anatomy, and also his work on surgery. Le Dran and Le Cat were two prominent surgeons and writers. Levret was an eminent teacher and writer on midwifery and wrote a work, "L'Art des Accouchemens." Lietaud wrote the well-known production on morbid anatomy, "Historia Anatomico-Medica." Lorry, a prolific writer on most of the branches of medicine, is chiefly remembered for his treatise on "Melancholy" and for his book on the diseases of the skin. Daran acquired a reputation of great surgical skill and talent, especially in healing stricture of the urethra by means of bougies.

The medical school at Montpellier possessed at this time Sauvages, so celebrated ever since for his "Pathologia Methodica" and "Nosologia Methodica," by which he gained the foremost rank as a nosologist. Venel, as the professor of materia medica, must be regarded as the first to introduce chemistry to its proper place in the faculty of the Montpellier medical college. He also prepared the way for the manufacture of artificial gaseous waters, by his analyses of many of the mineral waters of France. Fouquet wrote his remarkable treatise on the pulse in 1767, in which he attempted to show that each organ in disease had its character-

istic pulse, and that therapeutical agents, such as opium and blisters, have each their peculiar manifestations in this way. The reader will notice how similar this theory is to the ancient Chinese lore concerning the pulse.

Italy, the nursery of modern medicine, was an active contributor to its progress, through the able efforts of such great names as Morgagni, Spallanzani, Fontana, Caldani, and Galvani.

In the north of Europe, the University of Upsala was now celebrated for its professors, among whom shone with peculiar lustre the names of Linnaeus and Bergman. The first is known as the great naturalist of the eighteenth century, and for his merits as a discoverer in chemistry, as, for instance, of oxalic acid; he systematized mineralogy, and analyzed mineral waters in a methodical and critical manner.

Gaubius, the successor of Boerhaave in the school of Leyden, then ranking as the first in Europe, issued (1750) his "*Institutiones Pathologiae Medicinalis*." Among his associates was Albinus the second, who as teacher of anatomy was almost without a peer in the history of medicine. Camper was another name of which Holland had reason to be proud.

The University of Göttingen, founded by George II, was rising rapidly to eminence under the presidency of Haller, whose name alone would have attracted students from all parts of Europe. Among his associates were Rudolph August Vogel, teaching *materia medica*, Roederer, who taught obstetrics, and the two Richters.

The same services that were rendered to the University of Göttingen by Haller, were performed by Van Swieten for the medical institutions of Austria, which, under the encouragement of the Empress Maria Theresa, were reorganized by him on a larger scale and a more liberal plan. Van Swieten is known as the learned, laborious, and patient commentator of Boerhaave; and this may connect his name with that of Gaubius and of Haller, who engaged in the same labor of love. He influenced DeHaën to come to Vienna, and encouraged him to found a clinical school of medicine, which, under the direction of Stoll, J. P. Frank, Hildenbrand, and others, has maintained its high character to the present day. Quarin was at this time the teacher of the institutes of medicine at Vienna. Greding was working for that eminence which he subsequently reached by his careful study and the appreciation of the best methods of treating the insane, and

by his numerous and carefully conducted observations to determine the organs affected in this class of sufferers. Theden, the favorite of the great Frederick, and who had accompanied that monarch in his wars, was at the time surgeon-general of the artillery, and was laying a foundation for Prussian surgery. The name of Zimmermann, whose work on dysentery was enough to keep his name forever on the pages of medical history, must not be omitted.

These celebrated men had much to do with making it possible to build the so-called modern medicine, for without their labors we might still be groping in the darkness of the Middle Ages. Their teachings may be said to have formed the characters of the men who not only formed the modern system of medicine but in a direct way founded the schools of the United States, of England, and of Germany, schools which may be considered to be the leaders of the modern medicine of the present day.

PHYSICAL DIAGNOSIS.

Leopold Auenbrugger, born in 1722, invented the art of percussion which, however, was not appreciated for many years after the death of the inventor. Auenbrugger applied his ear to the chest and noted the sounds that followed a smart blow of his right hand on the patient. His treatise (1761) on the subject attracted but little attention until it was translated by Corvisart, in 1808, when it quickly led the way to Laennec's improvement, whereby the ear is aided by the stethoscope. The great value of Auenbrugger's discovery, although unknown during his life, has long since been universally admitted, and has taken its proper place in medicine.

During Auenbrugger's time Wichmann, of Hannover, made a strong plea for more scientific diagnoses, and demonstrated how to make them. He also described the itch mite, which was at that time a most important discovery, on account of the almost universal prevalence of scabies at that time.

René Théophile Hyacinthe Laennec was born in Brittany, in 1781, and died there in 1826. He studied medicine in Paris, where he took the degree of doctor of medicine. In 1819 he made the discovery of mediate auscultation, or the use of the stethoscope. In 1819 he published his "*De l'Auscultation Médiate*," which has, undoubtedly, produced a greater effect, in so far as diagnosis is concerned, than any other single medical work that was ever published.

The discovery of auscultation by Laennec led to the resurrection of percussion as a method brought into existence by Auenbrugger, but which the publication in Latin, in 1761, of the "*Inventum Novum*" failed to keep alive, and which Corvisart, by his translation of Auenbrugger's treatise into the French language, with abundant commentaries, published in 1808, had vainly attempted to aid. Restored to life by Laennec, percussion has since been hand in hand with auscultation. Each of these two methods has given invaluable aid to the other. They cannot with propriety be disjoined in practice and they are necessarily associated in treating of the diagnosis of diseases. It would be of little use to discuss the relative advantages of the two methods. Doubtless had we to be deprived of one of them, we could better afford to lose percussion than auscultation, but the advantages of either would be greatly diminished by the loss of the other. Laennec made his discovery of auscultation by accident, but he would not have been likely to take advantage of the accident if he had not received his previous training at the hands of Corvisart, who it seems had made a special study of Auenbrugger's book and methods in the cause of percussion.

To Laennec, and later to Skoda, and still later to our own Austin Flint, who was probably the greatest of all in the subject of physical diagnosis, must be given the credit of establishing the art of physical diagnosis, in so far as the thoracic cavity is concerned. Skoda rather arrogantly criticised Laennec's work, but his investigations rather helped the subject than otherwise. To auscultation and to percussion were soon added inspection, palpation, mensuration, and succussion.

THEORIES OF MEDICINE.

In reviewing the theories, the so-called schools or systems of medicine, and the lives of those known as medical luminaries of the previous centuries, we learn the lesson, that in the so-called new systems of medicine old principles, for the most part, reappear, and that the labors of the past are rarely so deliberately consulted as to guard against the revamping of theories which have long since been proved futile. The remnants of the theories with which the history of medicine is paved are frequently dug up again to drag out another brief period of existence under a new name, unbeknownst to the new originator. It may be noted that the so-called new schools of medicine are not always new, but are more often a rehash of old, forgotten theories, which long since

have been rejected and thrown into the rubbish pile, from which they are resurrected by some ambitious person with a purpose.

MESMERISM.

Friedrich Anton Mesmer, born at Bodensee, 1734, and graduated in medicine at Vienna in the year 1766, was the founder of Mesmerism, or animal magnetism. His system, however, soon fell into disrepute because there was nothing in it worthy of the consideration of scientific men. The terms, animal magnetism, electro-biology, mesmerism, clairvoyance, odic force, and hypnotism have been used to designate a peculiar nervous condition in which the body and mind of the individual were supposed to be influenced by a mysterious force emanating from another person. The phenomena of animal magnetism were supposed to be due to some kind of magnetic force or influence peculiar to living beings and analogous to the action of the magnet upon steel or certain metals; electro-biology referred the phenomena to the action of the electrical currents generated within the body, and capable of influencing electrically the bodies of others; clairvoyance implied power of mental vision or mental bearing or of a mental production of other sensations, by which the individual became aware of events happening in another part of the world from where he was, or could tell of the existence of objects, which could not affect at the time any of his bodily senses; odic force was a term given to a force of a mysterious character, by which all the phenomena of animal magnetism might be accounted for; and hypnotism was a name applied to a condition artificially produced in which the person was apparently asleep and yet acted in obedience to the will of the operator as regards both motion and sensation.

HOMEOPATHY: HAHNEMANN.

Samuel Hahnemann, born at Meissen, 1755, studied medicine at Vienna under Dr. Quain, and commenced to practice in Saxony. His first work was a monograph upon arsenical poisoning which is yet highly esteemed in modern toxicology. In the year 1810, Hahnemann published his work entitled "*Organon der Rationellen Heilkunde*," which was translated into all the European languages. In this book he fully expounded his new system which he called homeopathy. His "*Materia Medica*" consisted of a description of the effects of medicine upon persons in health. He founded a school of medicine and was soon surrounded by dis-

ciples. As his system involved the administration of medicines, each separately by itself, and in doses infinitely minute, there was no longer any need of the separation between the apothecary and the physician, who in the same person could now very readily prescribe for the patient.

Probably at the end of the eighteenth century and the beginning of the nineteenth, it was the practice to bleed the patient not with reason so much as with custom, and it was also the usage to give enormous doses of the vilest drugs. For example, it was not uncommon to give thirty grains of calomel at a single dose, or sixty grains of gamboge and two or three ounces of saltpeter during the day. Is it any wonder that there arose a system such as the homeopathic, although it went to the other extreme and made it the rule to give an absurdly small dose? It was surely a jump from the one extreme to the other.

Hahnemann, the founder of homeopathy, denied the existence of disease, admitting only symptoms. His motto, "*Similia similibus curantur*," was not original with him as it had long before been formulated by Hippocrates, and had been used with much success by the great humbug Paracelsus. Hahnemann professed to base the science of medicine entirely on a knowledge of symptoms, regarding all the investigations of the causes of symptoms as useless. While thus rejecting all the lessons of morbid anatomy and pathology, he put forward views respecting the causes of disease which hardly need to be seriously stated, and certainly do not merit our serious attention in the light of the modern progress of scientific medicine.

Whilst the followers of Hahnemann contributed nothing of any weight to the science of medicine, it must be admitted that they did much good in the way of treating the sick in the sick-room. Their best endeavor was towards hygiene, diet, and regulation of the manner of living, showing that the patient often recovered without medicine better than when the patient was drugged with shot-gun prescriptions. But in this they followed the wise teachings of Hippocrates, the father; not of homeopathy, but of medicine as we understand it to-day.

ISOPATHY.

Isopathy is an offshoot of homeopathy, and is probably the filthiest theory ever originated by the mind of man. According to it, like is cured by like; to such an extent was this theory

carried that smallpox was treated by variolous pus, tapeworm by the ingestion of the proglottides, etc.

THE ELECTRO-HOMEOPATHIC SYSTEM.

The electro-homeopathic system is an invention of Count Mattei who prates of "red," "blue," and "green" electricity, a theory that, in spite of its utter idiocy, has attracted a considerable following and earned a large fortune for its chief promoter.

A MISTAKEN THEORY.

Roeschlaub, born in 1768, endeavored to mold into one the Brunonian errors and the fancies of Solidism. He held that life depends on irritability, but is inherent in the organism as an independent feature; so he recognized both irritability and solidism, whilst Brown considered the former alone, adding as an after-thought, a chemical or qualitative potency (oxygen) in order to account for alterations of quality. Roeschlaub inclined first toward natural philosophy, and then to mysticism and theosophy; finally, with a courage almost unexampled, he upset all his former teachings by admitting that he was mistaken.

Sir John Forbes, born in England, 1787, became renowned for the introduction of physical diagnosis and the stethoscope into England, and for his remarkable success as an editor of medical journals, and a "Cyclopedia of Practical Medicine," in four volumes, published in 1835. This latter work exercised a pronounced and decidedly beneficial influence on the theory and practice of medicine. Whilst Forbes was not the author of any new system, nor the discoverer of any new principle, he was such a careful compiler of what was then known in medicine that his influence on medical progress was very great.

VETERINARY SCIENCE.

Claude Bourgelat, born at Lyons, 1712, was the first to establish a veterinary college in his native land. He wrote many books to further the knowledge of his chosen speciality. Bourgelat wrote on materia medica, and diseases of cattle and horses, and also on farriery. Veterinary medicine, as a scientific art, takes date from 1761, when the first veterinary college was established at Lyons with royal patronage, under the able teachings of Bourgelat.

Thomas Beddoes, born in England, 1754, was a noted medical writer and teacher, and is now principally remembered for his

writings on medicated airs, a subject which is now receiving renewed and increased attention.

David Abercromby, who lived in England, where he also received his medical education, wrote the following medical works, which had great influence over the medical minds of his day and generation: "*Nova Medicinæ Clavis*," "*De Variatione Pulsus*," and "*Opuscula Medica*."

John Abercrombie, born in 1781, a noted Englishman, took his degree in medicine at Edinburgh. His works, "*On the Intellectual Powers*" and the "*Philosophy of the Moral Feeling*," had for an object the illustration of the "important relation which subsists between the science of mind and the doctrines revealed by religion." Being recognized as the first consulting physician in Scotland, Abercrombie did much towards molding the characters of the succeeding generation of physicians.

Francis Home first described croup in 1765, and is kindly remembered for this by the medical fraternity.

James Currie, born in Scotland, 1756, is chiefly known on account of his great work, "*Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Febrile Diseases*."

SURGERY.

Desault, one of the most prominent surgeons of the eighteenth century, instituted a clinical school for surgery at the Hôtel-Dieu in Paris, and attracted pupils from all the countries of the civilized world, often having audiences of six hundred students and physicians. Most of the surgeons of the period derived their knowledge of clinical and operative surgery in greater part from the lectures delivered by Desault and from the surgical clinics presented by him. Desault introduced many improvements in the practice and in the armamentarium of the surgical art. He was also the champion of healing by first intention. Through his efforts surgery, as then known, was systematized and made more practical. Pierre Joseph Desault was born in the year 1744, and he died in the year 1795. His life was a valuable one to the medical world, both as a surgeon and as an anatomist.

François Chopart, born in 1743, was a friend and contemporary of Desault, and will be remembered for the amputation that bears his name, as he was the originator of the operation. Another surgeon of renown, living at this time was *Richter*, of Germany, who enunciated the principle of dressing wounds

"quickly, easily, and rarely." Up to this time it had been the habit of surgeons to meddle entirely too much with wounds that were healing by granulation, and thus oftentimes retarded the healing instead of giving any benefit to the patient.

Jean Louis Petit, born in 1674, perfected the screw tourniquet, and also otherwise improved the art of amputation, by originating the first decided improvement upon the ancient method of circular incision. With the circular incision he divided the skin and subcutaneous cellular tissue alone, and after reflecting them in the form of a cuff, he divided the muscles on a higher plane or level by a second circular sweep of his concave knife. After this, various methods of making the flaps in amputations were devised by different surgeons, and several such operations bear the names of the surgeons who devised them.

POTT'S DISEASE.

Percival Pott was born in London in 1713, and became a distinguished surgeon. We are indebted to him for his investigations on the subject of angular curvature of the spine, the consequence of disease of the bones of the spinal column, on which account the affection is known as Pott's disease. It is a disease of the spinal column characterized by a caries of the vertebral bodies with the attendant changes. The disease is probably as old as humanity, and the characteristic deformity is mentioned by ancient writers. A specimen in the Peabody Museum shows that the disease was not unknown among the prehistoric tribes of the North American Indians. The disorder was first accurately described by Percival Pott, in 1779. The tuberculous nature of caries of the spinal bones is at present accepted by the pathologists.

Sir Charles Bell was an eminent surgeon, whose discoveries in the branch of the nervous system have given him a European fame. He was born in 1774, and while a mere youth assisted his brother John, who was also a prominent physician and medical teacher, in his anatomical lectures and demonstrations. The two brothers conceived the idea of teaching anatomy and practical surgery in their applications to each other. This is called *topographical anatomy*, a science which is now taught in every good school of medicine.

Antonio Scarpa, born in Italy, in 1747, after studying medicine in Italy, France, Holland, and England, became a celebrated

anatomist. He was noted for being one of the greatest clinical surgeons in Europe. Scarpa's merits as an observer, a teacher, and an author are very great, and in all his work he was industrious, scholarly and artistic. He published treatises on the anatomy of the organs of smell and hearing, on the nerves of the heart, and on the minute anatomy of the bone. It was through his efforts that the question of the heart being supplied with nerves was settled. Scarpa's triangle, an anatomical and surgical part of the thigh, is well known to every surgeon, and is one of the beauties of topographical anatomy.

Lazzaro Spallanzani, born in Italy, 1729, established the fact that the heart has a propulsive power over the blood in the various vessels, demonstrated that the heart never wholly empties itself, and explained the various causes which retard the circulation and the obstacles produced by the weight of the blood. He became best known to medical history through his efficient studies in natural history.

Marie François Xavier Bichat, one of the most famous anatomists and physiologists, whose discoveries mark an epoch in biology, was born in 1771. He was one of the most capable physicians of his time and the author of nine important volumes, each one of which would have brought him fame, besides being engaged as a teacher and practitioner of medicine. His treatise on membranes, and his work on general and pathological anatomy laid their impress on the study of medicine from his time on. Bichat may be considered the founder of general anatomy. General anatomy, as we understand it to-day, was formerly not known to science, and Bichat was the first to simplify anatomy and physiology by reducing the complex structures of the organs to the simple or elementary tissues that enter into them in common. Thus he established cellular, osseous, fibrous and other tissues as such, wherever they appear throughout the body. He described the stomach as composed of mucous, serous, and muscular layers.

By overthrowing the speculative tendency of medicine, and by placing facts in the front rank, Bichat did good work for the progression of the medical sciences, and, therefore, he has been appropriately named the "Napoleon of Medicine." He also developed another luminous idea—the distinction between the organic and the animal life.

Bichat died at the early age of 31 years, falling a victim to intense and unremitting labor. The following two of his most

famous remarks are well worthy of your attention: "Take away some fevers and nervous troubles, and all else falls to the kingdom of pathological anatomy"; and, "You may observe disease of the heart, of the lungs, abdominal viscera, etc., night and morning by the sick-bed for twenty years, yet the whole furnishes merely a jumble of phenomena which unite nothing complete; but if you open a few bodies, you will see the obscurity give way, a result never accomplished by observation if we do not know the seat of the disease."

Pathologists imitating Bichat, endeavored to reconstruct their science upon an anatomical basis. France was the land, of all others, in which the men of that age sought and found in pathological anatomy a solid foundation for medical knowledge. Such men were, among others, Bayle, Corvisart, Laennec, Dupuytren, Broussais, Cruveilhier, Lallemand, Andral, Louis, Gendrin, Bouillaud, and Rayer.

Surgery, without pathological anatomy, would be reduced to a mere mechanical art, aided by certain empirical practices, alike unsatisfactory to the surgeon and of doubtful benefit to the patient—such was surgery during the "Dark Ages of Medicine." Without pathological anatomy medicine must fall back on its speculative theories and systems of medicine.

EDWARD JENNER AND VACCINATION.

One of the most notable events in the history of medicine was the introduction of vaccination for the making of the person immune against smallpox, and with the aid of the immunization of the people against the dread disease, rid the world of smallpox. This honor must be accorded to Edward Jenner, an English surgeon, who was born at Berkeley, in Gloucestershire, on May 17, 1749, and was the third son of the Rev. Stephen Jenner. After receiving his preliminary education, Jenner prosecuted his professional studies under John Hunter, becoming an expert anatomist, a sound pathologist, a careful experimenter, and a good naturalist.

The preventive inoculation against smallpox was practised both with the virus taken from those suffering from the disease of smallpox and with the virus taken from the cowpox for a long time before Jenner, but to the latter must be given the credit of making of the subject careful observation and study. Jenner first observed that people who acquired cowpox by milking cows

affected with that disease also acquired immunity from smallpox. From the time of his first observation, in 1768, to the date of his announcement of the result of his researches to the world, a period of thirty years elapsed, during which time he had patiently and carefully investigated the subject, both by observation and experiment. If ever a discovery was announced to the world with due deliberation it was that of vaccination. We have evidence that for at least thirty years, during which he encountered many perplexing and discouraging obstacles, and which he overcame one by one, Jenner studied the subject before he published it to the world, under the title of "An Inquiry into the Causes and Effects of the Variolæ Vaccinæ, a Disease discovered in some of the Western Countries of England, particularly Gloucestershire, and known by the name of Smallpox."

Jenner made his first vaccination upon the human subject in 1796, and a few years later the practice was introduced into Germany, France, and the United States. The practical usefulness of this great discovery lies in the possibility of transmitting vaccinia from the cow to the human individual and of making him immune to the disease. The disease known as smallpox is said to have existed in China many centuries before Christ, and the *Pesta Magna* described by Galen is believed to have been smallpox. During the crusades it became widespread. It was brought to America in the sixteenth century.

CHEMISTRY.

Karl Wilhelm Scheele, born in Sweden, 1742, after receiving a brief and very incomplete preliminary education, was apprenticed to an apothecary at Gothenburg, where he laid the foundation of his knowledge of chemistry. The chief of his chemical discoveries were: tartaric acid (1770), chlorine (1774), baryta (1774), oxygen (1777), and glycerine (1784); some of which had been previously discovered, though Scheele was not aware of it. He also discovered the arsenite of copper, now known as Scheele's mineral green, and prussic acid, one of the deadliest poisons known to chemistry, used, however, in therapeutics in a diluted form.

Leopold Gmelin, born at Göttingen, 1788, died in 1853, did great service to science in that he collected and arranged in order all the facts that had been discovered in chemistry. His "Handbuch der Chemie" stands alone. Other writers have indeed ar-

ranged large quantities of material in systematic order, but for completeness and fidelity of collation, and consecutiveness of arrangement, Gmelin's "Handbook" is unrivalled, and on account of its great value it is considered a classic in the literature of chemistry.

René Joachim Henri Dutrochet, born in France, 1776, became an eminent physiologist and physician. He is best known through his researches on the passage of fluids through animal and vegetable substances. The passage of a fluid from without inwards, he called endosmosis, and from within outwards, exosmosis; terms which have been adopted by physiologists of the present day.

Baron Dominique Jean Larrey, born in France, 1766, was a noted surgeon and professor of surgery, who also acted in various capacities in the medical department of Napoleon's armies and campaigns. Apart from his skill, talent, courage, and humanity shown in the course of his practice, Larrey has a high scientific reputation, and is the author of a number of very valuable books on various subjects connected with his profession, most of which have been translated into other languages. Larrey's works have been considered by eminent authorities to be the connecting link between the surgery of the last age and that of the present day. Larrey is also the inventor of the *ambulance volante* for the convenience of transporting the wounded from the field of battle to some place of safety to receive the proper surgical care.

ENGLISH SCHOOL OF MEDICINE.

At the beginning of the nineteenth century the medical practitioners of England were divided into three classes, physicians, surgeons, and apothecaries. The practice of medicine, as we understand it now, was still in its infancy. Though there were many men in medical practice who had received a technical education, and had been examined before admission to practice, there was a host of empirics who practiced without diplomas, such as cuppers, leechers, old women, midwives, herb-doctors, the majority of whom did a thriving business. And, though the practice of medicine is as yet by no means what it ought to be, times have changed decidedly for the better, mainly through the labors of the medical men whose lives we are now briefly to review.

Joseph Black was born of Scottish parents at Bordeaux, 1728. After removing to Scotland, he gained fame as an eminent chemist and was appointed as a lecturer at the University of Glasgow,

where he labored with zeal and great success. He is principally known to science for his theory of "latent heat" on which theory he is still considered an authority.

William Cheselden (1688-1752), one of the most famous of the English surgeons and anatomists of the eighteenth century, wrote a work on the "Anatomy of the Human Body," in 1713, which was for a long time the leading text-book in England on the subject. He also wrote a valuable book on "Osteography," which was published in 1733.

Alexander Blackwell, born at Aberdeen in the year 1708, studied under Boerhaave at Leyden, and became famous as a writer on materia medica. His work in two volumes, published 1737-1739 and entitled "A Curious Herbal," which contained over five hundred cuts of medicinal plants, was long appreciated by the medical fraternity as a leading book on materia medica.

CHEMICAL AGENCIES OF ELECTRICITY.

Sir Humphry Davy, born in 1778, was probably one of the greatest chemists of any age. In 1806, he delivered a course of lectures "On Some Chemical Agencies of Electricity" which was universally considered one of the most valuable contributions ever made to chemical science. Following out this principle, he was led to the grand discovery that the alkalis and the earth are compound substances, formed by oxygen united with metallic bases. It was the substance potash he first succeeded in decomposing; and when he saw the globules of the new metal, potassium, he became overjoyed. He also discovered the new metals sodium, barium, strontium, calcium, and magnesium by decomposing soda, baryta, strontium, lime, and magnesia.

Matthew Baillie, born in Scotland, 1761, was a distinguished physician of his time. Baillie's fame rests on his book, "The Morbid Anatomy of Some of the Most Important Parts of the Human Body," which, by exciting in a great measure a spirit of careful induction among professional men, marked an era in the science of medicine.

John Abernethy, born at London, 1764, was an eminent English surgeon, and the most popular medical teacher of his day. In 1814, he was appointed professor of surgery and anatomy to the College of Surgeons, where he lectured and worked most successfully for a long time. A sketch of his life was recently published in the JOURNAL.*

*1904, ii, pp. 113-119.

Sir Astley Cooper, the celebrated English surgeon and medical scientist, was born in the year 1768. Perhaps his most important work was on "Hernia," in which he graphically described both the anatomy of the disease and the mode of operating for its relief, which was a great contribution to medical science, since hernia was but ill-understood before the work of Cooper's appeared in literature. Cooper also attempted to tie the carotid artery, and in 1817 he also attempted to tie the aorta. Cooper did more than any other English surgeon, except perhaps Lister, to elevate surgery to the position of a science. Before his time, surgical operations were described as a series of "frightful alterations, or hazardous compromises," but by the teachings and example of Cooper, surgery attained a more dignified position.

Sir William Lawrence, born in England, 1783, became noted as a lecturer on anatomy and surgery, and as a surgeon. He died in 1876. His writings were very numerous.

Anesthesia was produced in the year 1784, by *Dr. Moore*, of London, who used compression of the nerves of a limb requiring amputation, but this method was in itself productive of much pain. In 1808 *Sir Humphry Davy* suggested nitrous oxide gas, or the so-called "laughing gas," as an anesthetic, and as early as 1795 *Dr. Pearson* used the vapor of sulphuric ether for the relief of spasmodic affections of the respiratory passages. *Sir James Y. Simpson* described the anesthetic virtues of chloroform in 1849.

Sir Benjamin Collins Brodie, born in 1783, was a distinguished surgeon, and much liked as a lecturer on nervous diseases, as well as on pathology. His works on nervous diseases, and on the diseases of the bones and joints, were important contributions to medical literature.

Richard Bright, born at Bristol in 1789, was a noted English physician, educated at Edinburgh. His speciality was morbid anatomy of the internal organs. He discovered that an albuminous condition of the urine, accompanied with dropsical effusions, was dependent on a peculiar degenerative condition of the kidneys, whence the diseases of the kidney in which these conditions occur was called Bright's disease.

Marshall Hall, was born in England, 1790, graduated in medicine at Edinburgh in 1812, and afterwards studied for three years in the various schools of the Continent. His name is best known in connection with the doctrine of the reflex function of the

nervous system. He admitted that the phenomena had long been known to physiologists, but he believed himself to have been the first to show their independence of sensation, to bring them together under one generalization, to establish with precision the laws of their production, to assign them their just rank in physiology, and to apply the doctrine to the elucidation of disease. Marshall Hall's last bequest to the science of medicine and the cause of humanity was the description of a simple and easily applied method of restoring suspended respiration, which has been the means of saving many from untimely death, and is known to science as the Marshall Hall method. Hall's method of artificial respiration is unsatisfactory, because it is incomplete. Under any circumstances it is far inferior to Sylvester's method, Howard's method, or the Michigan method; nevertheless, Hall's method is held in high esteem by the medical profession, if for no other reason than for giving rise to a *method* that could be improved.

William Farr, born in England, 1807, devoted himself mainly to a consideration of the important questions resulting from medical statistics. His article "Vital Statistics," published in 1837, obtained notice and approval, not only from medical men, but also from statesmen and scientists. In the same year of the publication of his notable article, the registration of all the deaths, and of the causes of death, was commenced in England, thanks to the labors of Farr.

James Cowles Prichard, born at Ross, 1785, took his medical degree at Edinburgh, 1808. Dr. Prichard's fame as the greatest of ethnologists, which, during his lifetime was miserably acknowledged, remains undisturbed to this day. He was the first to raise ethnology to the rank of a science, and his work, "Researches into the Physical History of Mankind," is a noble monument of his genius, skill, and perseverance.

Sir James Paget, born in England, 1814, was especially noted for his lectures on surgical pathology, through which he greatly enriched the science of surgery. He published a work on surgical pathology that is still considered an authoritative treatise.

Jonathan Pereira, born in London in 1804, was an eminent pharmacologist. His work, "Elements of Materia Medica," published in 1840, is remarkable for the extent of its researches, the variety of its information, whether scientific, commercial, or practical, and the scrupulous exactness of its statements. In 1843, Pereira published an excellent treatise on dietetics.

Sir James Young Simpson, born in Scotland, 1811, graduated as a doctor in medicine in 1832, and introduced to the scientific world the use of chloroform as an anesthetic, and the stoppage of hemorrhage by acupressure. He was especially efficient as a teacher and writer of the science of obstetrics.

William Benjamin Carpenter, born in England, and graduated in medicine in 1839, was the most distinguished physiologist of the time in which he lived, and his books on physiology and microscopy gained wide prestige.

Dr. Alexander Wood, of Edinburgh, born 1817, was the first to use and to recommend the use of the hypodermic syringe for the application of morphine for hypodermic use. No scientific doctor of the present day would be willing to relinquish this highly useful mode of dispensing morphine in neuralgias, in cholera morbus, in cardiac dyspnea, and in the various gastric hepatic, uterine, ovarian and kidney colics.

Space only forbids of our more extended mention of John Goodsir and his anatomical observations; of Robert Liston and John Mason Goode; of Francis Ramsbotham, the obstetrician, and Benjamin Travers and his "constitutional irritation"; of John Cheyne and William Stokes; and of a host of others who formed that brilliant galaxy of English physicians and surgeons of the last two centuries.

[To be concluded.]

EUROPEAN MEDICINE: A RESUME OF MEDICAL
PROGRESS DURING THE EIGHTEENTH AND
NINETEENTH CENTURIES.

(Concluded.)

By E. J. KEMPF, M.D.

PHYSIOLOGICAL THEORY OF MEDICINE.

THE Physiological Theory of Medicine was originated by *Broussais* (1772-1838) and was a combination of the theories that had immediately preceded it. According to him life depended upon external irritation produced by heat, which excites new chemical processes, while these in turn stimulate regeneration, assimilation, as well as contractility and sensibility. When the functions supported by heat cease, death ensues. Health depends upon moderate action of external irritants; disease, upon either their weakness or their extraordinary strength. He saw nothing ontological about disease. In therapeutics he admitted the healing power of Nature. Febrile and inflammatory diseases were all treated by the withdrawal of nourishment, carried to the extreme. Bleeding was the main treatment—leeches and lancet.

SCHOOL OF PATHOLOGICAL ANATOMY AND DIAGNOSIS.

Contemporaneous with the School of Broussais and its antagonist—the Homeopathic System—was the Paris School of Pathological Anatomy and Diagnosis, which has given tone to the Medical Art. It made it the duty of the physician to search for changes in the human body, to investigate the local products of the disease, and assigned to medicine the duty of removing the products. The proper founders of this school were Corvisart, Dupuytren, and Laennec. One of its adherents was Bayle, who was the first to apply the ear to the thorax in diseases of the heart. Its most celebrated member was Cruveilhier, who revived the Anatomical Society, and wrote his famous treatise on Pathological Anatomy, illustrated with magnificent plates. Like Morgagni he associated general anatomy and pathological anatomy with bedside observations. To this system of medicine must be traced the practice of specialism in medicine and surgery so characteristic of the present day. The medical world has become

practically an enormous school of pathological anatomy and diagnosis—a school inaugurated by Bichat, as representing the so-called regular school of medicine.

ROKITANSKY'S NEW VIENNA SCHOOL.

An offshoot of the French School of Pathological Anatomy and Diagnosis was the so-called New Vienna School, the most eminent member of this system being von Rokitansky, who was a pathologist pure and simple, having performed more than thirty thousand autopsies during his life.

Karl Rokitansky (1804-1878) was born in Bohemia and studied medicine at Prague and Vienna. In 1844 he was appointed professor of pathological anatomy at the University of Prague, of which he became honorary director in 1848. He was made rector of the University of Vienna in 1850, and resigned his professorship in 1874. His chief book is "*Handbuch der Pathologischen Anatomie*," 1846. He is still considered one of the first authorities on pathology.

Rokitansky's friend and collaborer, *Skoda* (1803-1881), was the first medical man to lecture in German. His scientific merit was based upon the fact that he overthrew the specific and pathognomic arrangement of signs, as taught by the French, and substituted therefor a category, based upon the physical constitution and shape of organs and tissues. His endeavor was to develop a strictly scientific system of medicine out of the empirical French system or doctrine of physical signs, and in his work on *Physical Diagnosis* he displayed an independent spirit, though as one who received his impulse from the teachings of the French.

To Skoda must be laid the blame for the fact that practical medicine degenerated into simple diagnosis, and that by his observations on the natural course of disease, undisturbed by therapeutics, he became the founder and exponent of expectant and nihilistic therapeutics, the harbinger of a very cheerless period in the history of medicine of the German Empire. From this idea of diagnosis above everything, the Germans are but now rallying, and are paying more attention to the cure of disease than they did only ten years ago.

Oppolzer, Hebra, Jäger, Graefe, Fuchs, Mauthner, Hasner, Donders, Arlt, Stellwag, Politzer, and others are some of Skoda's distinguished contemporaries, to whose influence in

medicine more than any other list of men, is due the advanced condition of the various branches of the medical art, or the so-called specialties, and we will find it necessary to consider their names again later on in our history.

PHYSIOLOGICAL MEDICINE.

An offshoot of the New Vienna School is the so-called Physiological School founded by *Roser* (1817-1888), seconded by *Griesinger* and *Wunderlich*. Their claim was that Physiology must include vital phenomena, while from the morbid portions of these phenomena the special science should be formed as an artificial yet practical division of knowledge. *Wunderlich's* book on Therapeutics was for a long time the best guide in that direction, inasmuch as he left to individual thought and judgment—the Hippocratic method of investigation—the determination of value and demand. *Wunderlich* claimed that pathology was the physiology of the sick, whilst *Henle*, who started a school in opposition, under the name of *Rational Medicine*, made no distinction at all between the physiology of the well and the sick.

RADEMACHER'S SYSTEM.

Rademacher's system of medicine can be traced directly to the vagaries of *Paracelsus*, which had given rise to so many other schools, among the number being Homeopathy. The followers of the medical doctrine that bears the name of *Rademacher* classified the diseases of man by their therapy: they had but three universal remedies, namely, nitrate of sodium, copper, and iron, and therefore but three diseases—sodic nitrate, copper, and iron diseases.

HYDROPATHY.

Vincent Priessnitz, the founder of Hydropathy, was born at *Graefenberg*, in Austrian Silesia, 1799. *Priessnitz*, having his attention called to the virtues of cold water in the treatment of a bruise he had received from the kick of a horse, and being possessed of sharpness of intellect and aptitude for the practice of the healing art, though he had only a very common school education, began to give advice to his neighbors and friends how to cure all ailments with cold water, and soon attained con-

siderable reputation among them. Priessnitz left nothing in writing on his method of cure, but Wunde described his system under the title of "Die Priessnitsche Kurmethode."

The efficacy of water in the cure of numerous forms of disease has long been recognized, indeed as long as history can tell us. Water was largely employed by Hippocrates in the treatment of many diseases; and, along with the regular diet and an implicit belief in the *vis medicatrix naturæ*, it appears to have formed the chief element in his medical armory. Both Celsus and Galen speak favorably in their writings of the use of water in the cure of disease, regarding it as of high value in the treatment of acute complaints, particularly of fevers. Throughout the Middle Ages, likewise, many physicians, including Aetius and Paulus Aegineta, and the celebrated quack, Paracelsus, were advocates of the remedial virtues of water; all of them, however, having faith in its uses in the treatment of acute complaints, particularly of fevers, rather than in the possible cure of chronic cases.

In 1715 Niccolo Lanzoni, a Neapolitan physician, published a learned treatise on the subject of Hydropathy. In England, about the beginning of the eighteenth century, Floyer and Baynard made large use of water in the treatment of acute chronic diseases. Their conjoint work entitled "Psychrolousia; or the History of Cold Bathing both Ancient and Modern," is replete with quaint learning and practical shrewdness and sagacity. But the most able and scientific among the older treatises on the subject of the water treatment, is the work of the well-known Dr. Currie, published in 1797, and entitled "Medical Reports on the Effects of Water, Cold and Warm, etc." In this work Currie recommends the cold effusion in typhus and other fevers, and gives practical directions in regard to the cases and the times when it may be used with advantage. This practice was considered too dangerous by Currie's contemporaries and fell into speedy disuse or neglect, but at the present time these views, with but little change, are admitted by eminent physicians to be scientific in principle and practical in use.

Whilst Priessnitz had practically very little to do with the founding of Hydropathy, except as a form of quack treatment of various diseases, in which he was remarkably successful, Winternitz has made hydrotherapy popular and in a measure successful. Cold baths have become popular in the treatment of fevers,

such as typhoid fever, pneumonia, etc., and are used in the form of ice-pack, bath-tub immersion for a variable period of time, sponge-bath, shower-bath, sweat-bath, etc. Baths have their place and uses in the treatment of skin diseases and in the treatment of syphilis, rheumatism, etc., but are not used very much in private practice. Their proper place is in the therapy of the hospital and the sanitarium.

COMPARATIVE ANATOMY.

Georges Leopold Christian Frederick Dagobert Cuvier was born in the year 1769, at Montbeliard, a small town of Alsace. Cuvier gave early indications that nature had endowed him with her choicest intellectual gifts. After showing much zeal and energy in his youth and receiving the highest academical prizes, he turned his attention to Natural History, and was appointed professor of this branch of study at Paris in the year 1795. He soon gained a great reputation through his researches and discoveries in comparative anatomy, and his achievements in science have spread his fame over the civilized world.

Paul Joseph Barthez, born at Montpellier, 1734, founded a medical school at Montpellier, which gained a great reputation all over the civilized world. Barthez was considered one of the most learned physicians of France. His principal medical work was entitled "*Nouveaux Elémens de la Science de l'Homme*," which was published in 1778, and received great attention from the medical fraternity, on whose future welfare it had great influence.

Antoine Dubois (1756-1837) was a French surgeon of great skill and possessed a wide reputation as a practitioner and teacher of medicine. It was he who saved both the Empress Marie Louise and her child at the accouchement, when the Emperor Napoleon gave out his famous saying "*Give the mother the first chance*." This principle has since been generally adopted by the medical profession.

Guillaume Dupuytren, born in France in the year 1777, located at Paris, and engaged in the practice of his profession. In 1801 he studied pathological anatomy with intense ardor. After a time Dupuytren became the chief surgeon of his day. Possessing extraordinary penetration in diagnosis, immovable firmness of nerve, and being bold and skilful in operating, nothing within the power of a surgeon was beyond his grasp, taking

into consideration the times in which he acted. Dupuytren was the inventor of many ingenious modes of operating, and of many surgical instruments, and he left the record of several important discoveries in pathological anatomy. He was the leader of an enlightened school of surgeons surpassed by none in his day and generation.

Sebaldus Justinus Brugmans (1763-1819), a Dutch physician, improved the condition of the military hospitals, and by his efforts the 20,000 soldiers wounded at the battle of Waterloo were properly cared for. Many of his medical papers were published and were highly esteemed by the medical men of the day.

Alessandro Volta, who was born in Italy, in 1745, made contributions to the science of electricity which were of great importance; the chief of them being his theory that the electrical power or principle resides in the metals. He also invented an electric battery, the electrophorus, the electrical condenser, the electrical pistol, and the hydrogen lamp. After Volta Galvanism is often termed Voltaic electricity; and the practical unit of electro-magnetic force is called a *volt*.

Karl Ferdinand Von Graefe (1787-1840) was born at Warsaw, graduated at Leipsic, and in 1811 was appointed professor of surgery at Leipsic. He superintended Napoleon's military hospitals. He also revived the operation of rhinoplasty. His contemporary and friend, *Karl Gustavus Carus*, was justly renowned for his efforts in comparative anatomy. Another contemporary was *Civiale*, a French surgeon, who performed lithotomy for the first time in 1824, which operation has been greatly improved since *Civiale's* time, notably by Henry J. Bigelow.

Hermann von Helmholtz, born at Potsdam, 1821, wrote some valuable physiological works in connection with the eye and the nervous system.

Jean Marie Gaspard Itard (1775-1838), born in France, rose to prominence as a physician and instructor of the deaf and dumb, without having received any previous training or education, medical or otherwise. His "Diseases of the Ear," in two volumes, published in 1821, is a standard medical work, still held in high esteem.

François Magendie (1783-1855) was an eminent French physiologist and physician. He was the first to prove experimentally that the veins are organs of absorption; he gave a more extended and accurate account of the process of vomiting than

had been previously given by any other physiologist; he pointed out that non-nitrogenous foods are non-nutritious, and that an animal cannot live solely on any one kind of food, however nitrogenous it might be; he investigated the physiological action and therapeutic uses of hydrocyanic acid and strychnia; he performed an important series of experiments on the cause of death when air is admitted into the large veins; he made numerous experiments to determine the functions of the various nerves and of different parts of the brain; and lastly, he shares with *Sir Charles Bell* the honor of having discovered the separate functions of the two roots of the spinal nerves. Magendie's chief physiological work, the "*Elémens de Physiologie*," was translated into English, and was for many years the best physiological work in any language, and is still used as a work of reference by the physiologists of to-day.

Cloquet, who was Magendie's contemporary and friend, was an eminent anatomist and a good surgeon. His work on "*Anatomy*" was issued in three volumes, and was highly esteemed. As a surgeon he invented many surgical instruments, which are still in use, and improved many surgical operations.

Dieffenbach, born in Prussia, 1782, became one of the greatest surgeons Prussia ever produced. He was especially noted as a surgeon in remedying deformities of the nose, and of the eyes, and of those deformities that were the cause of impediments of the speech. His work on the "*Treatment of Stammering*" may be still considered as an extremely valuable one. His great work on "*Operative Surgery*," published in 12 volumes, was translated into several languages.

Flourens, a celebrated French physiologist, who was born at Herault, 1794, graduated at Montpellier, 1813, at the age of 19 years. He became a voluminous writer on human anatomy and physiology and on comparative anatomy.

Jean Nicolas Gannal (1791-1852) was a French chemist noted for his discovery of the efficacy of injections of acetate and chloride of aluminum in preserving anatomical preparations. He accomplished embalming without mutilation of the body for the study of anatomy, by injecting into the carotid arteries solutions of aluminum salts. Many improvements in embalming have been made since Gannal's time, and at present formaldehyde has assumed a prominent place in the process of embalming of the dead human body.

The great triumvirate of the Paris Medical School during the middle part of the nineteenth century, *i.e.*, Andral, Chomel, and Louis, left the impress of their talent and skill on medicine. *Andral*, born at Paris, 1797, was a member of the Institute and Academy of Medicine, and flourished as professor of hygiene in 1828, and succeeded Broussais as professor of pathological anatomy in 1839. Andral's various published works will always remain as monuments of his fame. Among them are his "Clinique Médicale," "Digest of Pathological Anatomy," a "Treatise on Mediate Auscultation," a book on "Diseases of the Heart," three volumes on "Internal Pathology," and his "Researches on the Blood." Andral's lectures were full of learning, very carefully prepared, and methodically arranged. Andral is noted in medical history as a great pathologist.

Philip Ricord, born at Baltimore, 1800, and graduated at Paris in 1826, won a world-wide fame in the treatment of venereal diseases, a reputation which he owed to his combination of accurate physiological and pathological knowledge with great manual dexterity as a surgeon, and felicitous inventiveness and resource as a physician. His lectures and writings on syphilology, gonorrhea, and genito-urinary surgery have never been excelled for their fluency and grace of style, as well as for thorough knowledge of the subject. Ricord may be considered the greatest authority on venereal diseases the world ever produced. His works are too numerous to mention, except to say that they cover the whole field of genito-surgery and syphilology.

Johann Mueller, born at Coblenz, 1801, was an eminent physiologist. He wrote voluminously on the subject of physiology and is considered one of our leading authorities on the subject of histology.

The name of *Nicholas Pirogoff* stands out pre-eminently in the medical history of Russia. As a military surgeon he had no superior. He was to General Todleben, of Crimean fame, what Baron Larrey was to Napoleon Bonaparte. His classic work on military surgery was translated into many languages, and is still held in high esteem. Russia has honored the memory of Pirogoff in a most worthy manner by establishing and maintaining at St. Petersburg a museum known as the Pirogoff Museum. This museum is an ideal home for the medical profession, containing as it does a rich museum, in which are preserved the instruments used by Pirogoff in the Crimean campaign, a hall

for general meetings, and all that could be desired for the different specialties in medicine, with general and special libraries.

Justus von Liebig, born at Darmstadt, 1803, labored with great success in all the departments of chemistry, but particularly in organic chemistry, in which he made many discoveries, and did much to improve the method of analysis. In analytical chemistry he is especially noted, and also on the subject of fermentation, being for many years the greatest authority on the subject. Liebig's style was both terse and elegant, flowing naturally from a clear and strong intellect, and his capacity for severe and continued work was immense.

Joseph Hyrtl, born in Hungary, 1811, is considered an authority on comparative anatomy, and on the anatomy of the ear. He figured long and successfully at the University of Vienna as professor of topographic and comparative anatomy, and his work, "*Handbuch der topographischen Anatomie*," is highly regarded as a text-book on the subject by all the anatomists of the world.

HISTOLOGY.

Albrecht von Koelliker, born in Germany, 1817, rose to the position of professor of anatomy and physiology in the University of Wuerzburg. He is distinguished principally for his labors in the department of Microscopic Anatomy or Histology.

Johannes Mueller, a German by birth, published in 1830 an elaborate commentary on the minute structure of the glands, the first work in which the anatomy of the organs was examined and elucidated in a comprehensive manner and systematic way. *Ehrenberg*, 1830, explained the structure of numerous infusoria, and disclosed the peculiarities of many other structures, animal, vegetable, and mineral, which had previously eluded the most skilful researches. *Francis Kiernan*, in 1833, gave the first correct account of the minute anatomy of the liver. *Schleiden* and *Schwann*, in 1839, published most important generalizations on the cellular structures of vegetable and animal organisms. *Martin Barry* communicated new facts on the structure of the ovum and on the structure of cells generally. *John Goodsir* laid great emphasis on the office of the nucleus in the nutrition, growth, and reproduction of cells, and on the arrangement of the cells within an organism into departments and territories. *Virchow*, by his researches into connective tissues, has still further devel-

oped the idea of the cellular structure of the animal organism, and the importance of physiological and pathological processes. *Lionel Beale* attributed, both to the nucleus and to the substance of the cell immediately surrounding it, important functional properties. *Max Schulte* showed the identity in the nature between the sarcode substances of the lower animal organism and the contents of the cells in the higher animals, and applied to these substances the common term protoplasm, which had been previously introduced by Hugo Von Mohl to designate a similar material in the vegetable cell.

Auguste Nélaton (1807-1873), born at Paris, was a noted surgeon and teacher of surgery. Nélaton's soft rubber catheter, and Nélaton's probe, having an unpolished porcelain knob at its end, were introduced into surgery by Nélaton; the latter, though well known to every surgeon, is not used a great deal at the present time, thanks to the more modern methods. Nélaton also improved the operation of lithotomy in several ways and in genito-surgery he deserved the high esteem in which he was held by the medical profession.

Charles Edward Brown-Séquard, born in Mauritius, 1818, studied medicine at Paris, where he took his degree of M.D. in 1840. He afterward lectured and studied in America, especially in physiology. He soon returned to France, however, where he continued his medical work. Brown-Séquard demonstrated that the decussation of the sensory conductors is in the cord itself; and he has the reputation of having created the physiology of the sensory tract of the spinal cord. His experiments on the transfusion of the blood are also of interest. He also claimed to have discovered the "elixir of life," composed of an emulsion of the seminal glands of the sheep, which was used hypodermically. This somewhat fanciful experiment caused great excitement throughout the civilized world, but "the great expectations" were never realized.

Edouard S. Seguin (1812-1880), born in France, studied medicine and surgery under Itard, and became noted as an educator of idiotic children. He was very successful in his chosen field. A masterly treatise on the subject was published by Seguin, entitled "*Traitement Moral, Hygiène et Education des Idiots et des Autres Enfants Arriérés*," which has always been the standard text-book on the subject. Seguin also wrote other treatises on Idiocy, which were well received by his confreres. A work

on "Medical Thermometry" gained great favor among the medical fraternity; as did the physiological thermometer, which he invented, and which is in use among physicians of the present time.

BACTERIOLOGY.

Louis Pasteur, born at Dôle, in France, 1822, took his medical degree in 1847. He gained great fame in molecular chemistry, physical science, and bacteriology. In the province of fermentation and the germ theory he has achieved important results. His investigations into silk-worm disease, pebrine, and its cure, have proved of signal service. His discovery of bacteria as the cause of anthrax (splenic fever) in cattle was an epoch in the science of the disease. Similar results were obtained in regard to fowl cholera; and his experiments show success in preventing the various diseases caused by septic bacteria, by inoculating animals with a milder form of the disease by means of a weaker brood of bacteria, artificially cultured. In 1883 he studied cholera in Egypt with great zeal and energy. His name is probably best remembered as originating a cure by inoculation of the dread disease of hydrophobia. To Pasteur should be given the credit for furnishing the first reliable data from which the modern science of Bacteriology has been evolved and his discoveries marked an epoch in medicine.

FOUR GREAT SURGEONS.

Bernhard von Langenbeck, born in Germany, 1810, was a celebrated surgeon, who gained great fame through his skill and success in the operation for harelip, as well as in the replacement of noses, eyelids, and lips. He likewise gained a reputation by means of the operation of resection in which the diseased bone or injured joint is resected and the diseased part is removed. This operation Langenbeck executed with such ability and success, that many times a limb was saved, which previously was invariably sacrificed by amputation.

Theodore Billroth, probably the most celebrated of German surgeons, was born in the year 1829 and died in 1894. After his graduation in medicine, he became an assistant of Bernhard von Langenbeck; at the age of 31 years he was called to the chair of surgery at the University of Zurich; and from there he was appointed to the chair of surgery at the University of Vienna at the age of 37. Billroth represented the pathological ideal of the sur-

geon. He was one of the first to study the relationship of bacteria to wound-healing and to septic processes. He studied the reaction of the tissues to infectious agents. He labored assiduously over the minute and gross anatomy of the neoplasms, and later wrote a classical work on tumors of the breast. His practical surgical work on the stomach in the form of pylorotomy gave him a world-wide reputation. His book on "Surgical Pathology" was for many years a text-book even in American schools of medicine, and is still highly prized by surgeons. I remember that I enlarged about a hundred of the drawings in his text-book on surgical pathology, which were used by a lecturer on surgery in one of the medical schools of the West about the year 1880. However, Billroth's monumental work was the "Deutsche Chirurgie," a series of monographs by German writers.

The introduction of Billroth's "Surgical Pathology" is well worthy of your attention, as a historical sketch of surgery, and also as a good description of the obligations of the medical student who wishes to make a special study of surgery. Among other good things said by Billroth is the following. "The surgeon can only judge safely and correctly of the state of his patient when he is at the same time a physician."

Pean was a French surgeon and the contemporary of Billroth. He was, no doubt, the last of the great surgeons who put all their faith in manual skill, and had but little faith in anything else. As an operator in all branches of surgery, Pean probably has never been excelled at any time in the history of surgery. Whilst Billroth represented the pathological, Pean was the anatomical and mechanical ideal of surgery.

Johann Friedrich August Esmarch, born in Germany, 1823, is considered an authority on gunshot wounds, and has gained great renown as a military surgeon by means of his valuable improvements in the ambulances and the ambulance corps used by armies in battle, as well as in the barracks in which the soldiers live during the times of peace. Esmarch is the inventor of the bloodless method of operating on the extremities, which he combined with modern antiseptic and aseptic methods, as they are in use even to-day. Esmarch is the author of many valuable articles and books on surgical topics.

FOUR GREAT PHYSICIANS.

Hermann Nothnagel, born in Austria, 1841, is a celebrated physician of modern times. In 1865 he was appointed Leyden's

assistant at Koenigsberg, and in 1870 he published his celebrated work, "Handbuch der Arzneimittellehre." In 1894 he began the editing of his great "Special Pathology." Said Nothnagel in a lecture on the subject of the *all-around-training* of a practicing physician:—"There is no doubt that the tendency towards specialization in practical medicine is beneficial in the main, because it makes a more thorough study of a special subject possible; it may even be indispensable for the performance of certain technical operations; but this much may be expected from the practicing physician, that he should know enough of the so-called specialties at least to enable him to make a diagnosis and read the indications."

Robert Koch, born in Germany, 1843, graduated at the age of 23 years. Koch is the discoverer of the contagium of splenic fever, of the bacillus tuberculosis, etc. Koch and his supporters claim that each disease is caused by a specific micro-organism. For some six years after he graduated, Koch labored as an assistant in an obscure hospital, and in 1872 he finally succeeded in getting an appointment at Wollstein, where he continued to labor and study for seven years. It may be readily comprehended that Koch had ample time to prepare himself for his great success in the medical world, and that no success is possible without great labor and continued efforts to prepare oneself by arduous studies and never-ending toil for the duties of life to come later on.

The history and personality of *Kussmaul* must be of special interest to the practitioner of medicine, because it is said of Kussmaul that he brought order, law, and system into a mass of isolated facts. He received his degree in medicine from the institution at Heidelberg in 1855, and then he followed a course of clinical study at Vienna with those two great masters, Rokitansky and Skoda. In 1860 Kussmaul published his first important work—an exhaustive article on epilepsy, which stands even to-day as a classic. In 1863 he accepted the chair of clinical medicine at the institution at Freiburg, where he labored assiduously for seven years and made many important contributions to medical science.

Kussmaul guided the efforts of his pupils in such a way that he stimulated each to make the most of his powers; as Edinger says, he taught his pupils to think, to work, and to write, so that

the achievements of the German clinicians as investigators, thinkers, and writers are due in no small part to the influence of Kussmaul. Part of his work was the investigation into the diseases of the arteries and their classification into systemized groups, with clear instruction as to their essential characteristics, their symptoms, and the methods of their treatment. He also gave a clear description of diabetes. He was the first to introduce the use of the stomach pump; he first showed how bismuth should be given in gastro-intestinal diseases; he first practiced thoracentesis for the withdrawal of fluid from the serous cavities; and it is due to him that the German nation passed the stringent vaccination laws which are responsible for the present rarity of smallpox in Germany. Kussmaul died in 1902.

Rudolph Virchow, the father of modern cellular pathology, was born in 1821, in Pomerania, and received his medical degree at the University of Berlin in 1843. He lived to witness the greatest improvements in medicine of all time, the greater part of which he either made himself or at least helped to discover. In the year 1902 he died with the knowledge of having lived a useful life. "Whatever, outside of a cell, acts upon it," wrote Virchow, "works a mechanical or chemical change within it, which change is disorder or disease." This new knowledge completely changed conceptions of disease and made plain one of the foundations upon which it depended. It made possible the marvelous progress of the last few decades of the nineteenth century. Virchow is one of the masters of medicine, whose name must always be counted among the immortals.

In 1858 Virchow instituted the doctrine or theory known as "Modern Vitalism," which, in fact, was borrowed from natural scientific medicine and distinguished from the vitalism of the previous century in that it breaks up the vital force, which was supposed to be either distributed throughout the entire body or located in a few organs, into an indefinite number of associate forces working harmoniously, and assigns to them all the final elementary principle without microscopic seat. "Every animal principle has a sum of vital unities, each of which bears all the characteristics of life. The characteristics and unities of life cannot be found in any determinate point of a higher organism, *e. g.*, in the brain, but only in the definite, ever-recurring arrangement of each element present; hence it results that the composition of a large body amounts to a kind of social arrange-

ment, in which each one of the movements of the individual existence is dependent on the others, but in such a way that each cell has an activity of its own, and that each, although it receives the impulse to its own activity from other parts, still itself performs its own function." This is nothing but another way of expressing the cell-doctrine, to which many medical men are now committed, which means that all bodies are built up of cells and that each cell has a unity and a purpose of its own.

Time alone can decide as to the ultimate validity of Virchow's cellular pathology. An important feature in which the cellular pathology differs from other systems, and particularly from the old humoral pathology, is the doctrine that the blood itself is not the proper and original cause of dyscrasiæ and not the cause of continuous alterations of the tissues; that the dyscrasiæ arise because the blood is not an independent structure, but dependent upon the condition of the patient in consequence of its continuous conveyance of the noxious material from all parts of the body,—the blood is, therefore, merely the medium for the production of the dyscrasiæ. This theory has made several peculiar, new, and symptomatic or morphological forms of disease, such as leukæmia, leucocytosis, and what is popularly called pernicious anæmia. Virchow also cleared up the old and obscure ideas regarding pyæmia, and proved that an absorption of pus into the blood, which the name implies, is quite impossible; likewise, that pyæmia is inseparable from thrombosis.

Perhaps Virchow's greatest material monument is the Pathological Institute and Museum in Berlin, erected by the Government in accordance with his desires. It contained 23,000 specimens at the time of his death, and by far surpasses all similar collections in the world.

THE GERM THEORY.

The new theory of the cause of diseases, based on the results of the microscopical study of germs, the germ theory, stands in the closest possible relation with the doctrine of spontaneous generation, fermentation, miasm, and contagion. The germ theory of disease had its advocates two and a half centuries ago, which goes to show that the growth of any science is slow, and that a great number of workers take part in the gradual evolution of what perhaps a few get credit for by their skill in summing up the knowledge gathered by their predecessors. However, a good history of the germ theory can only be written after it has reached a sound basis.