

# DOWNLOAD PDF THE NINETEENTH CENTURY: THE DEVELOPMENT AND SPREAD OF WESTERN MEDICINE

## Chapter 1 : Allopathic Medicine

*The nineteenth-century merger of missionary zeal and medicine had roots in two separate traditions—the Evangelical church with Christ as healer and the development of scientific medicine.*

In Context Biomedicine and Health: The Germ Theory of Disease Introduction According to the modern germ theory of disease, infectious diseases are caused by the presence of pathogenic microorganisms within the body. In other words, the germ is that which gives rise to the development of disease. During the last 20 years of the nineteenth century, germ theory revolutionized both medical thought and the art of surgery, although the drugs, antibiotics, and vaccines that made it possible to treat or prevent many of the major epidemic diseases were not available until the twentieth century. Microbiologists proved that specific microbes caused specific diseases, and that these microbes multiplied in the sick and spread from one person to another. By the beginning of the twentieth century, microbiologists had identified the microbial agents—bacteria, protozoa, fungi, and viruses—that cause many major infectious diseases in both humans and animals. Health reformers brought the lessons of germ theory to the public, teaching people how to organize their homes and lives in accordance with modern sanitary practices.

Historical Background and Scientific Foundations The evolution of the germ theory of disease can be traced to ancient speculations about the noxious entities that were thought to cause epidemic and endemic diseases. The Greek physician Hippocrates of Cos c. Health and disease depended on interactions between such atmospheric conditions and the four humors that made up the human body, a concept known as the atmospheric-miasmatic theory of disease. Other medical writers speculated that the noxious particles in disease-causing miasmas might actually be living entities. Although the modern germ theory of disease has eclipsed its predecessors, the atmospheric-miasmatic theory of disease was generally more influential until the late-nineteenth century, when the relationship between microbes and disease was finally demonstrated and confirmed. It was vigorously defended by many of the great nineteenth-century public health reformers who argued that poor sanitary conditions, filth, and noxious air caused the epidemic diseases that flourished in the rapidly growing industrial cities of Europe. In practice, sanitary reforms that helped remove the filth that allegedly generated noxious vapors or miasma often helped reduce the toll of epidemic diseases in cities and towns.

Supernatural Theories of Disease In ancient and primitive medicine, disease was often seen either as a form of punishment sent by the gods, or attributed to demons, ghosts, and evil spirits. Because it was thought to be caused by supernatural agents, magic was part of its diagnosis and treatment. Shamans, medicine men, diviners, and priests served as healers because of their special relationship to the supernatural. Such healers used divination, exorcism, magic spells, and nauseating drugs to drive away evil spirits. Many folk beliefs persist and even flourish alongside modern medicine. Our vocabulary for illness still reflects these doctrines: Until the Renaissance c. The supernatural also played a major role in the civilizations that developed in the period between about and BCE in Mesopotamia, Egypt, China, and India. According to the writings of ancient Mesopotamia, demons, devils, and evil spirits caused disease and misfortune, often as punishment for sins. A combination of exorcism and noxious drugs was used to drive out disease. Medical writings from ancient Egypt reflect the belief that supernatural agents were associated with health and disease. Although humans were born healthy, their bodies were susceptible to many disease-causing threats, including intestinal putrefaction, worms and insects, noxious winds, spirits, and ghosts. Whatever the cause of illness, the cure involved driving the agents of disease from the body by purging or exorcism. In the ancient legends of India, gods and healers wrestled with the demonic forces that caused disease and pestilence. Ancient Hindu texts reveal a complex pantheon of gods and a vast array of demons capable of causing fevers, fractures, wounds, and poisoned bites. According to the scholarly tradition of Chinese medicine, disease was caused by physical imbalance, and all therapies were directed towards restoring the body to a state of harmony. Scholarly Chinese physicians, however, cared for only a tiny fraction of the population. Most people assumed that demons and spirits, as well as imbalance, played a role in causing

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disease. Protective measures for dealing with magical forces included exorcisms, incantations, and talismans. Because the drugs used to drive out disease-causing demons were powerful poisons, instead of swallowing the drug the patient might wear the prescription or the drug itself as an amulet. The intellectual traditions established by Greek philosophers, naturalists, and physicians became the foundations of Western philosophy, science, and medicine. But the ancient Greeks also ascribed disease to supernatural agents, a belief reflected in the Iliad and the Odyssey, epics traditionally attributed to the ancient Greek poet known as Homer fl. In these epic poems, the god Apollo has the power to heal the wounded and cause epidemic disease as a form of punishment. In contrast, Hippocrates 460–370 BC rejected superstition, divination, and magic. During the Middle Ages AD 500–1500, Christian theologians explained disease as a test of faith or punishment for sin, but medical books still referred to devil-sickness and other disorders caused by elves, demons, flying venom, elf-shot, and worms. Although prayer was an accepted response to illness, medical writers like John of Gaddesden 1275–1321, physician to Edward II, prescribed charms, rituals, and amulets. An earlier medical writer, the remarkable Hildegard of Bingen 1098–1179, a German abbess, scientist, and philosopher, argued that healers should look for natural causes to explain even the most bizarre conditions, such as frenzy, insanity, and seizures. People might think a man was possessed by a demon, but Hildegard suggested that such behaviors might be caused by headache, migraine, or vertigo. Supernatural explanations of disease certainly did not disappear with the end of the Middle Ages and the dawn of the Renaissance, but they were generally abandoned by scholars and physicians. Contagion, Miasma, and the Germ Theory of Disease Ancient and primitive ideas about contagion dealt with the general notion of transfer through contact, and were not directly related to modern germ theory. Just as heat and cold were transferred to neighboring bodies by contact, so too were putrefaction, uncleanness, corruption, and disease thought to be transmitted. The Greeks seemed to ignore the concept of contagion; the Hippocratic approach analyzed disease in terms of the relationship and interactions between individuals and their environment—including weather conditions and other local circumstances, as discussed in *Airs, Waters, Places*. Some Greek and Roman philosophers, poets, and architects thought that disease might be caused by little animals dwelling in swampy places, or by contact with the sick and with contaminated articles. For example, in his discussion of hygienic regulations for selecting building sites, the Roman architect Marcus Terentius Varro 116–27 BC warned against swampy locations. Tiny animals living in swamps, so small as to be invisible, might enter the body through the mouth and nose and cause illnesses. More commonly, however, epidemic diseases were associated with comets, eclipses, floods, earthquakes, or major astrological disturbances that charged the air with poisonous vapors known as miasmata. Medieval writers believed that corruption, alteration, or pollution of the atmosphere caused disease, but they were also quite concerned with contagion, in the biblical sense of the spread of disease and moral pollution by contact. This is clearly seen in the medieval attitude toward leprosy. This disease seemed to increase as Crusaders and pilgrims returned from the Middle East. More than any other disease, leprosy demonstrates the difference between the biological nature of illness and the attributes ascribed to the sick. The leper, according to medieval interpretations of the Bible, was a dangerous source of physical and moral contagion. Merely standing downwind of one could endanger a healthy individual. In the 1840s, *Mycobacterium leprae*, the bacillus that causes leprosy, was discovered by Norwegian physician Gerhard Hansen 1842–1912. Many people who have extended and intimate contact with lepers, such as spouses, nurses, and doctors, do not contract the disease. Of course, this does not mean that leprosy was not more contagious in the past, but it does make it unlikely that the leper was ever as dangerous to others as medieval people believed. Girolamo Fracastoro and the Seeds of Disease Girolamo Fracastoro 1478–1553, poet, physician, mathematician, and author of *On Contagion, Contagious Diseases and their Treatment* has often been called the founder of the germ theory of disease. His medical classic *Syphilis, or the French Disease*, was published in 1530. This sexually transmitted disease probably made its first appearance in Europe at the end of the fifteenth century, shortly after Christopher Columbus 1451–1506 and his crew returned from their historic voyage to the Western hemisphere. The disease was known by many names—the French called it the Neapolitan disease, the Italians called it the French disease, the Portuguese called it the Castilian disease. In

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India and Japan it was called the Portuguese disease. Eventually, syphilis, the name suggested by Fracastoro, was universally adopted. Whatever its name, the disease spread explosively throughout Europe in the sixteenth century, providing a compelling example of how an epidemic disease could be transmitted directly from person to person. The seminaria were transmissible, specific for each disease, and capable of reproducing themselves. By carefully reviewing what was known about contemporary diseases, Fracastoro analyzed the kinds of evidence that seemed to support the miasma and the contagion theories. Some diseases, such as syphilis, were transmitted only by direct contact. Some diseases were apparently transmitted by direct contact, by fomites, and by contagions or seeds capable of infecting new victims without any known direct contacts. Although the establishment of the germ theory of disease is often cast in terms of a conflict between contagion theory and miasma theory, until the late nineteenth century medical writers often used these terms interchangeably. Microscopic Observations and Theoretical Considerations Both Marcus Terentius Varro and Fracastoro speculated about minute living entities that might serve as the material basis of contagion, but these hypothetical entities were invisible until the invention of the microscope. Seventeenth-century microscopists were certainly able to see a new world teeming with previously invisible entities, including protozoa, molds, yeasts, and bacteria, but their observations had little or no impact on contemporary theories of disease. Using simple microscopes, van Leeuwenhoek studied plant and animal cells, spermatozoa, molds, and microbes, including various bacteria and pond infusoria, water from different sources, saliva, seminal fluid, and minerals. When told that animalcules had been found in the seminal fluid of a man with gonorrhea, van Leeuwenhoek investigated semen from healthy men and animals including dogs, rabbits, birds, amphibians, and fishes. These investigations convinced him that the animalcules in semen were not related to venereal disease or putrefaction. These entities, he argued, were normal constituents of the fluid. However, it was not until the early nineteenth century that other minute parasites were implicated as the causative agents of specific diseases. Agostino Bassi is often credited with being the first to isolate a live disease-causing agent. In 1794, he demonstrated that a silkworm disease known as muscardine was caused by a parasitic fungus transmitted by direct contact between silkworms and indirectly by contaminated food. The causative agent, a parasitic fungus, was later named *Botrytis bassiana* in his honor. The fungus has since been reclassified as *Beauveria bassiana*. Bassi suggested that similar living agents might cause other contagious diseases. Most eighteenth- and early-nineteenth-century physicians held a medical philosophy not very different from that of Hippocrates: Attempts to attribute illness to disease-causing germs or microbes were generally dismissed as little better than ancient superstitions about disease-causing demons. Some early-nineteenth-century clinicians and epidemiologists, however, suspected that living germs might cause infectious disease. By mapping the areas in which residents died, Snow was able to identify the contaminated well that he believed was causing the outbreak. At his urging, city officials removed the pump handle, rendering it inoperable, and the epidemic was halted. In 1830, Jacob Henle, a prominent German pathologist, physiologist, and anatomist, published *On Miasmata and Contagia*, a new analysis of contagious, miasmatic, and miasmatic-contagious diseases. Newly improved microscopes provided one of the most important technological innovations available to Henle and his contemporaries. Diseases such as syphilis, gonorrhea, and rabies were acquired only through contagion. Miasma was traditionally defined as something that mixed with and poisoned the air, but, Henle argued, no one had ever demonstrated the existence of miasma. It was simply assumed to exist because no other cause could be demonstrated. A more likely hypothesis, Henle asserted, was that contagia animate living organisms caused contagious diseases, because whatever the morbid matter of disease might be, it obviously had the power to increase in the afflicted individual. A poison or toxin, by contrast, might be powerful even at very small doses, but inanimate chemicals were not capable of multiplying beyond their original finite quantity. The natural history of epidemics could be explained by assuming that a living agent emitted by sick individuals caused disease. If the lungs excreted this agent, it might pass to others through the air; if via the gastrointestinal tract, it could enter sewers and wells. Given the fact that the pus from smallpox pustules could be used to infect a multitude of people, the contagion that caused smallpox must be a living entity capable of

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multiplying within the body of the sick person. Chemicals remain fixed in amount; only living things have the power to reproduce and multiply.

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## Chapter 2 : TCM history - The Qing Dynasty

*Finally in the 19th century, Western medicine was introduced at the local level by Christian medical missionaries from the London Missionary Society (Britain), the Methodist Church (Britain) and the Presbyterian Church (USA).*

To prevent internal conflict, the Qing pursued in certain circumstances a policy of giving rewards of land for cultivation and reducing or exempting taxes. The early Qing emperors, especially Kangxi, Yongzheng and Qianlong, not only resolved the long conflict between nomads and peasants which had plagued China throughout its history, but also undertook a series of measures to develop the economy, culture and transportation in the frontier areas. Map of Qing Dynasty In spite of these noticeable achievements, the Qing rulers were autocratic and despotic. The nation was still agriculturally based and dominated by feudal ethics and rites. Worse still, the Qing empire in its relationship with foreign countries was isolationist, conservative and arrogant. It paled in comparison with the newly industrialized West and was left behind in world development. The gap between China and the West gradually widened. During the mid-Qing dynasty, social conflict began to surface. The Opium War of and increasing foreign aggression resulted in many unequal treaties being signed between the Qing and Western imperialist powers. Eventually, China became a semi-feudal and semi-colonized country. With its corrupt politics and conservatism, the Qing dynasty rapidly declined. The dynasty was finally overthrown by the Revolution of led by Dr. Wenrebing which was derived from "wenbing", were diseases associated with heat, which today remains one of the disease causing agents of TCM. Through clinical practice and further study, physicians in the Qing dynasty gave new prominence to the study of wenbing. Wang Mengying devoted an entire work to fever-related illnesses, the Wenre Jingwe. Confronted by the challenge of Western medicine, the practice of Chinese medicine was buttressed by its long-held traditions and continued unabated in the later-Qing period. Its survival was assured by the adherents to the Shanghanlun Treatise on Febrile Diseases, school of "cooling", the Shennong Bencaojing Classic of Herbal Medicine and other champions of traditional Chinese medicine. Little had been added to this work since its completion because surgery had not been looked upon favorably over the centuries. Wang Qingren Although it was not the first documentation of proper anatomy, Wang Qingren published his Yilin Gaicuo Errors Corrected from the Forest of Physicians in In this, he dispelled certain long-held beliefs, such as the claim that urine originated from excrement and that the lungs had 24 holes. His observations from corpses abandoned in public cemeteries and execution grounds led him to discover organs and structures previously unmentioned in traditional Chinese medicine. These included the abdominal aorta, pancreas and diaphragm. He also showed that it was the brain and not the heart, as was previously thought, that was the seat of thought and memory. Use of the Smallpox Virus to Combat Smallpox Prevention measures for variola smallpox had been used in China as early as the sixteenth century, during the time of the Ming. According to Yu Maokun, whose Douke Jinjing Fujijie was published in, variolation inoculation against smallpox had been practiced since the years The method involved extracting the dry scabs caused by the disease, reducing them to a fine powder and then having the patient inhale the powder through the nose with the aid of a silver tube. Despite the imperfection of such a method, it is undeniable that variolation as practiced in China played a significant role in the prevention of smallpox. It was the earliest vaccination method in the world. Knowledge of the process quickly spread to Europe. A total of drugs were listed under the categories of water, fire, earth, metals, stones, herbs, trees, creeping plants, flowers, fruit, seeds, vegetables, utensils, birds, quadrupeds, creatures with scales or shells, and insects. His book, Chuanya, recorded these teachings. The popularity of such physicians, who were also known as "bell physicians" lingyi because they announced their presence by means of a small bell, stemmed from the fact that they prescribed medicinal plants that were accessible and thus inexpensive. Zhao Xuemin thought highly of these physicians it might be said that the famous "barefoot doctors" of post China were their heirs, concluding that the drugs they recommended were cheap, efficient and practical. He noted in the book that drugs need not be expensive and berated the medical quacks whose

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scientific skills did not match their high fees. In his opinion, such people knew how to prescribe an expensive tonic, but did not know how to recognize a medicinal plant. The traveling herbalist in Qing Taken from the Complete Illustrated Guide to Chinese Medicine, Typical Chinese dispensary Taken from Chinese Herbal Medicine Phytotherapy plant therapy remained the basis of Chinese medicine throughout the nineteenth century and earlier medical works of this tradition were reissued in new editions. It was the desire to revive this plant-based medicine that inspired physicians like Wu Qijun , who published Zhiwu Mingshi Tukao Illustrated Account of Flora , and Fei Boxiong, who published Yichun Shengui in The best known dispensary of the time, the Tongren tang, was located in the capital Beijing and catered especially to the imperial family. Publishing Boom in Encyclopedias and Medical Books Anxious to obtain the support of the scholar class, the new rulers encouraged intellectual life and gave patronage to encyclopedic projects in history, arts, medicine and science. Illustrations from Yizong Jinjian Golden Mirror of Medicine - about bone setting The encyclopedia became very popular in the s. One Chinese medicine classic that emerged during this publishing boom was the Gujin Tushu Jicheng Collection of Ancient and Modern Works , an encyclopedia of 10, chapters that provides much background to the history of Chinese medicine. Published in , about chapters of the encyclopedia focused on medicine. To this day, this remains an important reference book. A trend also developed of authors writing collections of books. These collections provide windows into the different thoughts of the period. At the same time, more modest publications on medicine appeared. The book discussed the four methods of examination, diagnostic principles and therapeutic techniques that served as the basis of medical training. Another book, Zhengzhi huibu by Li Yongcui, which dates from , is entirely devoted to illnesses and their symptoms that relied on internal medicine for treatment. They enjoyed considerable popularity and were subject to various commentaries. Other texts written during this dynasty focused on topics such as gynecology, pediatrics, ophthalmology, massage and external medicine, which mainly dealt with skin diseases or trauma. Christian missionaries and medical doctors associated with the church played a major role in establishing foreign influence in China at this time. This triggered growth in the number of medical schools run by the Chinese, or jointly with Western doctors, and many Western medical books were translated. Chinese doctors at this time were also introduced to Western medical practice. The first Chinese to study medicine abroad was Huang Kuan , a Cantonese who went to Edinburgh University in Scotland, and then disseminated what he had learned on returning to his native Guangzhou. This brought about a new generation of doctors who saw a wealth of knowledge in Western medicine. A description of ginseng which talks about its properties and functions. Ginseng was an expensive herb even in the Qing Dynasty and hard to come by. Integrated Traditional Chinese Medicine In the late-Qing, this Westernization movement had a significant impact on traditional Chinese medicine. Response to the movement varied: One of the earliest pioneers for the integration of Eastern and Western medicine was Zhu Peiwen. He suggested that each tradition had its advantages and disadvantages. This integrated approach enjoyed little success during the Qing dynasty because of strong adherence to traditional Chinese medicine texts and skepticism about medical knowledge garnered from the West.

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## Chapter 3 : 19th century doctors in the U.S. – Melnick Medical Museum

*The spread of new learning. Among the teachers of medicine in the medieval universities there were many who clung to the past, but there were not a few who determined to explore new lines of thought.*

The relationship between medicine and the study of life is as old as medicine itself. Nevertheless, historians have highlighted the great transformation that took place in the nineteenth century when first physiology and then bacteriology became important resources for the classification, diagnosis, and treatment of human diseases. Together, they helped to fashion modern, professional medicine. While one may point out the importance of widely circulated and celebrated innovations, such as bacteriological cultures and diagnoses, or a few but impressive therapeutic agents like diphtheria antitoxin, bacteriology itself did not have a radical impact on early-twentieth-century public health. The transformation of biology and medicine, and their convergence after, is far from being uncharted territory for historians. They have also described the culture of the therapeutic miracle that has pervaded scientific and medical communities, and inspired the search for magic bullets against tuberculosis, cancer, and cardiovascular diseases. Firstly, there have been tensions between three different kinds of medicine: Although biomedicine has, above all, been dominated by experimental medicine, other sets of practices have persisted alongside those employed by the experimenter, including molecular modelling and analysis, and biomedical scientists have developed complex relationships with hospital clinicians and public health officials, which have varied from arms-length distance, to mutual inter-dependence, and – more rarely – to outright collaboration. Then, of course, there have been variations due to different local and national contexts. Even within the relatively homogeneous scientific landscape of post-war Europe, one might therefore expect national differences to have played a role that has been all the more important in that, in the decades after the war, the management of life and health became a matter for the state, exceeding in scale and scope the demographic concerns of earlier governments. The purpose of the following collection is therefore to examine further this changing relationship, as well as encourage the study of biomedicine in different national contexts. Historians of molecular biology and its parent disciplines, biochemistry, genetics, and virology, have stressed the critical role that the development of new tools and instrumental practices – such as the use of the ultracentrifuge, electron microscope, and electrophoresis – have played in this transformation. These developments in the life sciences were not without their consequences for, and echoes in, medicine. The most obvious was the incorporation of new entities, ranging from enzymes to cancer viruses and inbred strains of mice, in the aetiological characterization of diseases. Despite such advances, the direct impact of molecular biology on medical practice remained confined to new explanatory models and diagnostic tools. The most significant displacements were more indirect, resulting from the complex interaction between the molecularization of the life sciences and the molecularization of medical intervention, i. The prominence acquired by the term between and coincided with the appearance of a new system of medical innovation in relation to biology and health policy. However, this system was far from homogeneous, and the meaning of biomedicine has been deeply influenced by the different scientific and national cultures that have shaped western medicine since the late nineteenth century. Although direct comparisons between the two countries are relatively rare, <sup>22</sup> the historiography has tended to reinforce the idea of their distinct patterns of evolution. These observations drawn from the historiography help to highlight the legitimacy and significance of a comparison between Britain and France, particularly in view of the need to examine further the link between science, medicine and public health in the era of biomedicine. However, a major paradox resulting from our comparison is that, despite these differences, French and British biologists and clinicians considered American biomedicine in much the same way, i. The papers by John Stewart and Luc Berlivet show how this convergence emerged out of two different public health systems, the first in Britain, the second in France. The opportunities were in many respects obvious enough – universal health care for British citizens, which was comprehensive, free at the point of delivery,

and accompanied by steadily rising expenditures. However, the creation of the NHS has been problematic for those with aspirations to a form of medicine that takes into account the socio-economic environment, emphasizing prevention rather than cure, and thus overall seeks to deal with health in an integrated rather than molecular manner. Thus, the public health sector and the local authorities experienced a significant loss of power. Social medicine in particular was discouraged as a discipline, and eventually declined into a version of medical statistics. Berlivet analyses how the rise of biomedicine impacted on French public health research after the Second World War. In France, the rise of biomedicine did not depend upon, or lead to, displacements of concepts, instruments or people; on the contrary. As in the case of Britain, it was a matter of intellectual and institutional competition between various forms of health-related enquiries. The INH, established by the Vichy regime but later maintained and expanded by the political and scientific elites of the Fourth and Fifth Republics, was initially set up to monitor the health of the French population. The social and population approach to public health previously adopted by the INH, and reflected in its large surveys of infectious diseases and later chronic illnesses—cancer and respiratory disorders among them—was gradually marginalized. At the same time, the rise of biomedicine encouraged a different kind of population-based research. The last two papers deal with yet another similarity that emerges from this comparison, namely the common rise of the clinical trial as a privileged form of, and site for, therapeutic evaluation. The history of clinical trials has begun to move away from the once overarching concern with methodological innovation and the problematic emergence of statistics as a legitimate form of evidence in medicine. Recent work on the British aspect of the story has focused on the peculiar history of statistical studies and clinical research conducted under the aegis of the MRC. In this connection, the MRC trials of streptomycin for the treatment of tuberculosis are usually seen as a highpoint in the history of modern biomedicine. Clinical investigations of chemotherapeutic treatments were developed by the National Cancer Institute in association with a mass-screening enterprise, which adopted a high-throughput approach, and the use of standard molecules, animal models, and therapeutic protocols. They played an important part in scaling-up activities and achieving statistical significance, but unexpectedly resulted in a blurring of the boundaries between the biological modelling of cancer causation and the therapeutic combination of surgery, radiotherapy, and drugs. In addition, clinical trials seemed particularly well suited to the production of evidence in cases where efficacy was not a matter of cure but rather a question of survival time, and to the evaluation of palliative forms of medical intervention, as in the case of cancer. If the streptomycin trials are well remembered, it is less well known that the MRC Tuberculosis Research Unit that oversaw these trials also organized clinical trials on the treatment of lung cancer, which were far less successful in that they produced less clear-cut evidence than their predecessors. In their paper, Helen Valier and Carsten Timmermann look at both sets of trials, comparing the often similar problems the MRC researchers encountered when organizing the different studies, and the various ways in which they dealt with these. Thus the post-war MRC trials participated in the transformation of clinical research into a collective enterprise that relied on sophisticated forms of co-ordination and division of labour, a development mirroring the hospital-based organization of the NHS. The internationalization of leukaemia research was an important element in this transformation. Local tinkering led to a combination of RCTs and alternative designs that included historical controls, as well non-randomized trials, a situation far from specific to France. What message can historians of twentieth-century medicine take from this selection of articles? Our first conclusion is that it is worth embedding biomedicine within the broader context of different post-war national health systems, and vice-versa, and looking more precisely at the articulation as well as tensions between the three forms of medicine, experimental, clinical, and social, which make up the western medical tradition. The second conclusion is that—contrary to what one might expect—in the era of biomedicine, individual national patterns have had a relatively limited influence. The moral and political economy of the post-war period stimulated the rapid internationalization of biological research. Their generosity made the workshop on which this special issue is based possible. We also gratefully acknowledge the workshop commentators, especially David Cantor, Arthur Daemmrich, and Patrick Zylberman, for their

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helpful suggestions, as well as the editors of *Medical History*, and the anonymous referees for their comments on the individual papers that make up this collection. Ivan Waddington, *The medical profession in the industrial revolution*, Dublin, Gill and Macmillan, *A history of the genetic code*, Stanford University Press, Regarding French and British medical sciences and the pharmaceutical industry, see Quirke, op.

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## Chapter 4 : 19th century - Wikipedia

*In this lesson, we explore several of the important advances made in medicine during the 19th century, both in general medical knowledge and inventions that improved medicinal technique.*

Bring fact-checked results to the top of your browser search. The spread of new learning Among the teachers of medicine in the medieval universities there were many who clung to the past, but there were not a few who determined to explore new lines of thought. The new learning of the Renaissance , born in Italy, grew and expanded slowly. Two great 13th-century scholars who influenced medicine were Roger Bacon , an active observer and tireless experimenter, and Albertus Magnus, a distinguished philosopher and scientific writer. Prohibitions against human dissection were slowly lifting, and Mondino performed his own dissections rather than following the customary procedure of entrusting the task to a menial. Although he perpetuated the errors of Galen, his *Anothomia*, published in , was the first practical manual of anatomy. Foremost among the surgeons of the day was Guy de Chauliac , a physician to three popes at Avignon. Albertus Magnus, detail of a fresco by Tommaso da Modena, c. In medicine, it was perhaps natural that anatomy and physiology, the knowledge of the human body and its workings, should be the first aspects of medical learning to receive attention from those who realized the need for reform. By his scientific observations and methods, Vesalius showed that Galen could no longer be regarded as the final authority. His work at Padua was continued by Gabriel Fallopius and, later, by Hieronymus Fabricius ab Aquapendente ; it was his work on the valves in the veins , *De venarum ostiolis* , that suggested to his pupil William Harvey his revolutionary theory of the circulation of the blood, one of the great medical discoveries. In the 16th century Flemish physician Andreas Vesalius revolutionized the practice of medicine by providing accurate and detailed descriptions of the anatomy of the human body, which were based on his dissections of cadavers. In Britain during this period, surgery, which was performed by barber-surgeons, was becoming regulated and organized under royal charters. Companies were thus formed that eventually became the royal colleges of surgeons in Scotland and England. Physicians and surgeons united in a joint organization in Glasgow, and a college of physicians was founded in London. The 16th-century medical scene was enlivened by the enigmatic physician and alchemist who called himself Paracelsus. Born in Switzerland, he traveled extensively throughout Europe, gaining medical skills and practicing and teaching as he went. In the tradition of Hippocrates, Paracelsus stressed the power of nature to heal, but, unlike Hippocrates, he believed also in the power of supernatural forces, and he violently attacked the medical treatments of his day. Eager for reform, he allowed his intolerance to outweigh his discretion, as when he prefaced his lectures at Basel by publicly burning the works of Avicenna and Galen. The authorities and medical men were understandably outraged. Widely famous in his time, Paracelsus remains a controversial figure to this day. Despite his turbulent career, however, he did attempt to bring a more rational approach to diagnosis and treatment , and he introduced the use of chemical drugs in place of herbal remedies. A contemporary of Paracelsus, Girolamo Fracastoro of Italy was a scholar cast from a very different mold. Although Fracastoro called syphilis the French disease, others called it the Neapolitan disease, for it was said to have been brought to Naples from America by the sailors of Christopher Columbus. Its origin is still questioned, however. Fracastoro was interested in epidemic infection, and he offered the first scientific explanation of disease transmission. In his great work, *De contagione et contagiosis morbis* , he theorized that the seeds of certain diseases are imperceptible particles transmitted by air or by contact. The Enlightenment In the 17th century the natural sciences moved forward on a broad front. New knowledge of chemistry superseded the theory that all things are made up of earth, air, fire, and water, and the old Aristotelian ideas began to be discarded. Harvey and the experimental method Born in Folkestone, England, William Harvey studied at Cambridge and then spent several years at Padua, where he came under the influence of Fabricius. He established a successful medical practice in London and, by precise observation and scrupulous reasoning, developed his theory of circulation. National Library of Medicine, Bethesda, Maryland That the book aroused

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controversy is not surprising. There were still many who adhered to the teaching of Galen that the blood follows an ebb-and-flow movement in the blood vessels. Following the method described by the philosopher Francis Bacon, he drew the truth from experience and not from authority. This link in the chain of evidence was supplied by Marcello Malpighi of Bologna who was born in , the year of publication of *De Motu Cordis*. With a primitive microscope , Malpighi saw a network of tiny blood vessels in the lung of a frog. Harvey also failed to show why the blood circulated. After Robert Boyle had shown that air is essential to animal life, it was Richard Lower who traced the interaction between air and the blood. Eventually, the importance of oxygen , which was confused for a time by some as phlogiston, was revealed, although it was not until the late 18th century that the great chemist Antoine-Laurent Lavoisier discovered the essential nature of oxygen and clarified its relation to respiration. Although the compound microscope had been invented slightly earlier, probably in Holland, its development, like that of the telescope, was the work of Galileo. He was the first to insist upon the value of measurement in science and in medicine, thus replacing theory and guesswork with accuracy. The great Dutch microscopist Antonie van Leeuwenhoek devoted his long life to microscopical studies and was probably the first to see and describe bacteria , reporting his results to the Royal Society of London. The futile search for an easy system Several attempts were made in the 17th century to discover an easy system that would guide the practice of medicine. A substratum of superstition still remained. There was, however, a general desire to discard the past and adopt new ideas. One group adopting this explanation called themselves the iatrophysicists; another school, preferring to view life as a series of chemical processes, were called iatrochemists. Santorio Santorio , working at Padua, was an early exponent of the iatrophysical view and a pioneer investigator of metabolism. Another Italian, who developed the idea still further, was Giovanni Alfonso Borelli , a professor of mathematics at Pisa, who gave his attention to the mechanics and statics of the body and to the physical laws that govern its movements. The iatrochemical school was founded at Brussels by Jan Baptist van Helmont , whose writings are tinged with the mysticism of the alchemist. It soon became apparent that no easy road to medical knowledge and practice was to be found along these channels and that the best method was the age-old system of straightforward clinical observation initiated by Hippocrates.

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### Chapter 5 : Western Missionaries Spread Western Medicine Around the World | calendrierdelascience.com

*The outstanding characteristic of nineteenth-century medicine was the correlation of discoveries in the laboratory and autopsy room with observations at the bedside, and it was principally the hospital where such investigations and interconnections were pursued.*

Ashley Bowen A friend of mine, in his third of fourth year of med school at the time, once told me that doctors are just highly paid mechanics. The history of medicine therefore touches on a lot more than the facts of anatomy and physiology. Bodies are subject to law, culture, desire, politics, and more. The maintenance of bodies always intersects with other, bigger questions. The books below all grapple with these issues. A few notes about this list. To keep this to books, I pretty narrowly focused on the history of scientific or allopathic medicine. Lazlo Kreizler Book 1 by Caleb Carr: One of the few true modern classics, it changed and framed how AIDS was discussed in the following years. Tracing the evolution of medical ethics and the nature of decision making in bureaucracies, Jones attempted to show that the Tuskegee Study was not, in fact, an aberration, but a logical outgrowth of race relations and medical practice in the United States. Comparing and contrasting this growth to white counterparts, she explores barriers of race and gender stereotyping. In this psychological portrait of a city in terror, J. Powell presents a penetrating study of human nature revealing itself. In *The Demon Under the Microscope*, Thomas Hager chronicles the dramatic history of the drug that shaped modern medicine. Featuring of these historic photographs and illuminating essays by two experts on the subject, *Dissection* reveals a startling piece of American history. *Architects for Integration and Equality* by Althea T. Public Health Service doctors that they were being treated, not just watched, for their late-stage syphilis. With rigorous clarity, Reverby investigates the study and its aftermath from multiple perspectives and illuminates the reasons for its continued power and resonance in our collective memory. *Incisive, compassionate, illuminating, Fasting Girls* offers real understanding to victims and their families, clinicians, and all women who are interested in the origins and future of this complex, modern and characteristically female disease. Now Katherine Ott chronicles how in one century a romantic, ambiguous affliction of the spirit was transformed into a disease that threatened public health and civic order. Johnson illuminates the intertwined histories of the spread of disease, the rise of cities, and the nature of scientific inquiry, offering both a riveting history and a powerful explanation of how it has shaped the world we live in. It outlines the development of public health in Britain, Continental Europe and the United States from the ancient world through to the modern state. Saunders and Charles D. At last, it provides the fullest possible context for comprehending the behavioral fallout that has caused black Americans to view researchers—and indeed the whole medical establishment—with such deep distrust. *An American History* by Michael Willrich: Expertly sifting through a vast array of cultural documents, Metzl shows how associations between schizophrenia and blackness emerged during the tumultuous decades of the s and s. *The Lost Work of Dr.* This novel offers two extraordinary books in one. The first is a fictional biography of Dr. Spencer Black, from a childhood spent exhuming corpses through his medical training, his travels with carnivals, and the mysterious disappearance at the end of his life. *Science at the Borders*: The best examples, featured here, are remarkable pieces of art that attempted to elucidate the mysteries of the body, and the successive onset of each affliction. Combining social history with biography, historian Judith Leavitt re-creates early-twentieth-century New York City, a world of strict class divisions and prejudice against immigrants and women. The story culminates in the postwar establishment of the Veterans Administration, one of the greatest legacies to come out of the First World War. Tell me in the comments. But finding those people can be tough! Go here to find out more, or just click the image below:

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## Chapter 6 : Biomedicine and Health: The Germ Theory of Disease | calendrierdelascience.com

*Modern medicine and regulation of the body (late 18th century): Michel Foucault () describes development of modern medicine and notes split between two trends Medicine of the species gave strong emphasis on classifying diseases, diagnosing and treating patients, and finding cures.*

Little was known of biochemistry or endocrinology. As the body was also defined as a closed system of energy, physical, mental and reproductive expenditure were held to be in competition. Hence, too, must have derived the Victorian prescription for many ailments: Water- and air-borne infection was not generally accepted. The causes of fever included injury, bad air, violent emotion, irregular bowels and extremes of heat and cold. A limited range of medication was employed, and the power of prayer was regularly invoked. Diseases such as pulmonary tuberculosis often called consumption were endemic; others such as cholera, were frighteningly epidemic. In the morbidity statistics, infectious and respiratory causes predominated the latter owing much to the sulphurous fogs known as pea-soupers. Male death rates were aggravated by occupational injury and toxic substances, those for women by childbirth and violence. Work-related conditions were often specific: In Britain, epidemiological measuring and mapping of mortality and morbidity was one of the first fruits of the Victorian passion for taxonomy, leading to the clear association of pollution and disease, followed by appropriate environmental health measures. A major breakthrough came during the cholera outbreak, when Dr John Snow demonstrated that infection was spread not by miasmas but by contaminated water from a public pump in crowded Soho. When the pump handle was removed, cholera subsided. It was then possible for public health officials such as Sir John Simon to push forward projects to provide clean water, separate sewage systems and rubbish removal in urban areas, as well as to legislate for improved housing - one goal being to reduce overcrowding. The number of inhabitants per house in Scotland, for example, fell from 7. On a household basis, the indoor water-closet began to replace the traditional outdoor privy. Scientific developments in the 19th century had a major impact on understanding health and disease, as experimental research resulted in new knowledge in histology, pathology and microbiology. Few of these advances took place in Britain, where medical practice was rarely linked to scientific work and there was public hostility to the animal vivisection on which many experiments relied. The biochemical understanding of physiology began in Germany in the s, together with significant work on vision and the neuromuscular system, while in France Louis Pasteur laid the foundations of the germ theory of disease based on the identification of micro-bacterial organisms. By the end of the century a new understanding of biology was thus coming into being, ushering in a new emphasis on rigorous hygiene and fresh air, and a long-lasting fear of invisible contagion from the unwashed multitude, toilet seats and shared utensils. British patent applications around include devices for avoiding infection via the communion chalice and the new-fangled telephone. Technological developments underpinned this process, from the ophthalmoscope and improved microscopes that revealed micro-organisms, to instruments like the kymograph, to measure blood pressure and muscular contraction. By mid-century, the stethoscope, invented in France in to aid diagnosis of respiratory and cardiac disorders, became the symbolic icon of the medical profession. Surgery advanced - or at least increased - owing largely to the invention of anaesthesia in the late s. Anaesthetics enabled surgeons to perform more sophisticated operations in addition to the traditional amputations. Specialised surgical instruments and techniques followed, for some time with mixed results, as unsterile equipment frequently led to fatal infection. Aseptic procedures followed, involving sterilisation of whole environments. But overall the 19th century is notable more for systematic monitoring of disease aetiology than for curative treatment. A growing medical industry Like other learned professions, medicine grew in size and regulation. In the early Victorian era it was dominated by the gentlemen physicians of the Royal College founded , with surgeons and apothecaries occupying lower positions. In the same spirit, the profession also resisted the admission of women, who struggled to have their qualifications recognised. Partly in response to population growth, however, numbers

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rose; for example, from a total of 14, physicians and surgeons in England and Wales in 1800, to 22, of whom 10 were female in 1850. At the turn of the century the GMC register held 35, names altogether, including 10 in military and imperial service. The number of dentists rose from 10 in 1800 to 100 in 1850, including women in 1850. A growing proportion of qualified personnel worked in public institutions, and a new hierarchy arose, headed by hospital consultants. This reflected the rise in hospital-based practice, for this was also the era of heroic hospital building in the major cities, accompanied by municipal and Poor Law infirmaries elsewhere. These were for working-class patients; those in higher economic groups received treatment at home. Under prevailing conditions, however, intervention through the use of forceps, for example, often caused puerperal fever and the high maternal mortality, which was a mid-century concern. Largely through the endeavours and energy of Florence Nightingale, whose nursing team at Scutari captured the public imagination amid military deficiencies in the Crimean War, hospital and home nursing was reformed, chiefly along sanitary lines. Rigorous nurse training also raised the social status of the profession and created a career structure largely occupied by women. Despite these and other improvements, death rates remained relatively steady. In some fields, however, survival rates improved and mortality statistics slowly declined. Thus crude death rates fell from 25 per 1,000 in 1800 to 15 per 1,000 in 1850. Here, the main factors were public hygiene and better nutrition thanks to higher earnings - that is, prevention rather than cure. Although doctors made much of their medicines with Latin names and measured doses, effective remedies were few, and chemical pharmacology as it is known in only began at the end of the Victorian era. From the 1850s animal thyroid extract was used for various complaints including constipation and depression, while from animal testicular extracts were deployed in pursuit of rejuvenation and miracle cures. At the same time aspirin was developed to replace traditional opiate painkillers. As a result, many conditions remained chronic or incurable. From notions that disease was caused and cured by mental or spiritual power alone were circulated by the Christian Science movement. The Victorian period witnessed an impressive growth in the classification and isolation or strictly the concentration of the insane and mentally impaired in large, strictly regulated lunatic asylums outside major cities, where women and men were legally incarcerated, usually for life. Opened in 1800, the Colney Hatch Asylum in Middlesex housed 1,000 patients. Wealthier families made use of private care, in smaller establishments. Regarded at the time as progressive and humane, mental policies and asylum practices now seem almost as cruel as the earlier punitive regimes. Men and women were housed in separate wards and put to different work, most devoted to supply and service within the asylum. Over the period, sexualised theories of insanity were steadily imposed on mad women, in ways that were unmistakably manipulative. Throughout the era, since disorders of both body and mind were believed to be heritable conditions, the chronic sick, the mentally impaired and the deranged were vigorously urged against marriage and parenthood. She has written widely on gender and society in the 19th century. She is currently a visiting professor at the Humanities Research Centre of the University of Sussex and is working on Victorian representations of ethnicity.

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## Chapter 7 : Top 10 Shocking Historical Beliefs and Practices - Listverse

*Medical Specialization in the Nineteenth Century aspects of specialization in Germany,<sup>2</sup> Britain,<sup>3</sup> and the United States,<sup>4</sup> but it is nonetheless significant that all were written about thirty years.*

Medicine and surgery before Early medicine and folklore Unwritten history is not easy to interpret, and, although much may be learned from a study of the drawings, bony remains, and surgical tools of early humans, it is difficult to reconstruct their mental attitude toward the problems of disease and death. It seems probable that, as soon as they reached the stage of reasoning, they discovered by the process of trial and error which plants might be used as foods, which of them were poisonous, and which of them had some medicinal value. Folk medicine or domestic medicine, consisting largely in the use of vegetable products, or herbs, originated in this fashion and still persists. But that is not the whole story. Humans did not at first regard death and disease as natural phenomena. Common maladies, such as colds or constipation, were accepted as part of existence and dealt with by means of such herbal remedies as were available. Serious and disabling diseases, however, were placed in a very different category. These were of supernatural origin. They might be the result of a spell cast upon the victim by some enemy, visitation by a malevolent demon, or the work of an offended god who had either projected some object—a dart, a stone, a worm—into the body of the victim or had abstracted something, usually the soul of the patient. The treatment then applied was to lure the errant soul back to its proper habitat within the body or to extract the evil intruder, be it dart or demon, by counterspells, incantations, potions, suction, or other means. One curious method of providing the disease with means of escape from the body was by making a hole. Trepanned skulls of prehistoric date have been found in Britain, France, and other parts of Europe and in Peru. The practice still exists among some tribal people in parts of Algeria, in Melanesia, and perhaps elsewhere, though it is fast becoming extinct. Magic and religion played a large part in the medicine of prehistoric or early human society. Administration of a vegetable drug or remedy by mouth was accompanied by incantations, dancing, grimaces, and all the tricks of the magician. The use of charms and talismans, still prevalent in modern times, is of ancient origin. Apart from the treatment of wounds and broken bones, the folklore of medicine is probably the most ancient aspect of the art of healing, for primitive physicians showed their wisdom by treating the whole person, soul as well as body. Treatments and medicines that produced no physical effects on the body could nevertheless make a patient feel better when both healer and patient believed in their efficacy. This so-called placebo effect is applicable even in modern clinical medicine. The ancient Middle East and Egypt The establishment of the calendar and the invention of writing marked the dawn of recorded history. The clues to early knowledge are few, consisting only of clay tablets bearing cuneiform signs and seals that were used by physicians of ancient Mesopotamia. In the Louvre Museum in France, a stone pillar is preserved on which is inscribed the Code of Hammurabi, who was a Babylonian king of the 18th century bce. This code includes laws relating to the practice of medicine, and the penalties for failure were severe. Greek historian Herodotus stated that every Babylonian was an amateur physician, since it was the custom to lay the sick in the street so that anyone passing by might offer advice. Divination, from the inspection of the liver of a sacrificed animal, was widely practiced to foretell the course of a disease. Little else is known regarding Babylonian medicine, and the name of not a single physician has survived. When the medicine of ancient Egypt is examined, the picture becomes clearer. Surer knowledge comes from the study of Egyptian papyri, especially the Ebers papyrus and Edwin Smith papyrus discovered in the 19th century. The former is a list of remedies, with appropriate spells or incantations, while the latter is a surgical treatise on the treatment of wounds and other injuries. The preservation of mummies has, however, revealed some of the diseases suffered at that time, including arthritis, tuberculosis of the bone, gout, tooth decay, bladder stones, and gallstones; there is evidence too of the parasitic disease schistosomiasis, which remains a scourge still. There seems to have been no syphilis or rickets. Ebers papyrus Ebers papyrus prescription for asthma treatment. Though the Bible contains little on the

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medical practices of ancient Israel, it is a mine of information on social and personal hygiene. The Jews were indeed pioneers in matters of public health.

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## Chapter 8 : Achievements in Public Health, Control of Infectious Diseases

*But overall the 19th century is notable more for systematic monitoring of disease aetiology than for curative treatment. A growing medical industry Like other learned professions, medicine grew in size and regulation.*

Western Missionaries Spread Western Medicine Around the World Overview Missionary activities expanded dramatically during the nineteenth century, introducing Western medicine to the "utmost ends of the earth. To propagate the Christian faith, groups organized to send people to other countries. The term missionary derives from the Latin word *mittere*, meaning to send, and refers to sending one on an errand. During the nineteenth century, the evangelical mission of the church converged with the precepts of Western culture and experimental medicine. Missionaries, such as David Livingstone in Africa and Adoniram Judson in Burma, were not only preachers of the gospel but explorers who disseminated medical knowledge to the new cultures they encountered. Inland missions, such as those in the Asia, established schools that trained native doctors. Missionaries contributed directly toward the expansion of Western medicine and thinking, and laid the foundation for health care systems of the twentieth century throughout the world. Background The nineteenth-century merger of missionary zeal and medicine had roots in two separate traditions—the Evangelical church with Christ as healer and the development of scientific medicine. In Christian history, plagues and illness have been a flagship for missionary causes. The incurable diseases that struck the Roman empire during the first three centuries A. Jewish communities were recognized for their morality and their care for the sick and poor. When Christianity emerged from the Jewish community, the same concerns were carried on. In disasters such as the plagues of Orosius in A. Although Christians had compassion, the Church itself actively repressed scientific thought and discovery for over 1, years. Medical advances were stifled until the end of the fifteenth century. The precepts of Western medicine can be traced to the age of scientific thought that flourished between to Some very specific ideas about the body and disease developed that distinguished Western medicine from longstanding traditional medicine and Eastern philosophy. With the transformation of thought about the nature of the physical world during this time, traditions of Greek and Islamic Arabic medicine were replaced by the findings of experimental science. The British scientist William Harvey , who discovered the circulation of the blood, along with French philosopher Rene Descartes , usually are credited with this beginning. The development of Western medicine was characterized by the following: In the decades after the Great Awakening , missionary activity carried these ideas and medical approaches throughout the world. Impact The prophetic world vision developed when ministers began preaching that God had commanded Christians to evangelize the world. The father of modern missions was Englishman William Carey , a village cobbler who became a scholar and linguist. He founded the first foreign missionary organization, the Baptist Missionary Society, in When he set sail for India in June , there was much excitement in both England and America. On February 6, , five American missionaries were ordained. Four months later Adoniram Judson arrived in India. The movement built up steam, then sent forth missionaries from English-speaking countries throughout the world, bringing with them Western culture. Carey worked for 30 years to organize a growing network of missionaries. As a student of botany and agriculture, he also spread scientific thinking in his mission schools. Throughout history, missionaries from all religions have transplanted both their religious and secular cultures. Christian missions of the nineteenth century especially sought to impose their own culture and beliefs upon foreign converts. Missionaries taught Western education, medicine, architecture, music, work habits, and dress. Evangelical missionaries were generally highly trained and might be called to work in various areas. They started schools, promoted agricultural improvements, taught hygiene, and an advanced standard of living. In this way, Western missionaries promoted what was known about Western medicine. Even those not trained as physicians became disseminators of medicine. The evangelicals began preaching to call sinners to God, which then evolved into social concern. A wide variety of churches were involved as these evangelists went to foreign fields. Roman Catholics also began a new thrust.

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In the 1800s and 1900s overseas missions became a regular part of English and Scottish church life. The relationship between colonial expansion and missions is complex. Missionaries were simply following the flag of their countries and were not working to expand new territories. However, the missionary movement and imperial or colonial expansion ended up as fellow travelers. Many countries were interested in China as a mission field. The Chinese Evangelization Society sent Dr. His goal was to take the gospel to every part of the Chinese empire, which had just opened up to the West. Late in the nineteenth century Canadian missionaries organized medical training in Chengdu, Sichuan, a province in southwest China. Five Western mission boards joined to begin a medical and dental school. Missionaries were agents of change in China. They have even been referred to as "Evangelists of Science. The Chinese medical elite provided the backbone through the upheavals in China in the twentieth century. Jesuit missionaries and Dutch physicians took Western medicine to Japan in the sixteenth and seventeenth centuries. European books on anatomy and medicine written in the eighteenth century set the stage for a Japanese text on physiology in Like China, the medical schools founded by missionaries developed an elite group of medical personnel dedicated to Western medicine. James Curtis Hepburn was a Presbyterian missionary doctor to Singapore when he developed malaria. He became one of the first missionaries to Japan. During the last part of the eighteenth century the Japanese government had encouraged the westernization of Japanese medicine. Japanese scientists contributed great medical breakthroughs, such as the discovery of the plague bacillus in and a dysentery bacillus in Alexander Duff established the Vellore Medical College in for education of Indian nurses and women physicians. The scramble for influence and the colonization of Africa brought in missionaries. David Livingstone was from a poor Scottish family and struggled to gain medical qualifications to become a medical missionary. He was sent by the London Missionary Society in and became most famous as an explorer. Traveling widely through Central Africa on waterways such as the Zambezi River, he mapped more uncharted territory than any white man and was honored as the hero who found Victoria Falls. His travels spread Western medicine to major areas of the continent. Missionaries like Livingstone and Robert Moffat vigorously opposed the slave trade and were influential in anti-slavery movements. Nineteenth century missions had their first notable successes in Polynesia, Madagascar, and the East Indies. Although India and China became only one to two percent Christian, the missionaries still impacted medicine. In Burma, Korea, Ceylon, and Indonesia, significant churches developed. Africa proved difficult because so many missionaries died of tropical diseases, which Western medicine was not developed enough to combat. Wilfred Thomas Grenfel was a British medical missionary who established a chain of hospitals and nursing centers in Labrador. It is hard to realize that in the nineteenth century missionaries were at the forefront of public awareness. In the twentieth century they have been stereotyped and satirized as long-frosted, plain people with safari hats. One typical secular joke showed a missionary in a pot about to be cooked by savages, with a caption reading, "Would you care to say grace? When they spoke, auditoriums were packed. By the end of the nineteenth century, missionaries had spread into almost every conceivable part of the world. With them was carried Western influence and Western medicine. Heal the Sick Was Their Motto: The Protestant Medical Movement in China. History of the Expansion of Christianity. Grand Rapids , MI: The Evolution of a Chinese Medical Elite. University of Toronto Press, Cite this article Pick a style below, and copy the text for your bibliography. Understanding the Social Significance of Scientific Discovery. Retrieved November 09, from Encyclopedia. Then, copy and paste the text into your bibliography or works cited list. Because each style has its own formatting nuances that evolve over time and not all information is available for every reference entry or article, Encyclopedia.

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## Chapter 9 : Project MUSE - The Emergence of Medical Specialization in the Nineteenth Century

*The 19th century was an era of rapidly accelerating scientific discovery and invention, with significant developments in the fields of mathematics, physics, chemistry, biology, electricity, and metallurgy that laid the groundwork for the technological advances of the 20th century.*

Ayurvedic herbal medicines The Atharvaveda , a sacred text of Hinduism dating from the Early Iron Age , is one of the first Indian text dealing with medicine. The Atharvaveda also contain prescriptions of herbs for various ailments. The use of herbs to treat ailments would later form a large part of Ayurveda. Ayurveda, meaning the "complete knowledge for long life" is another medical system of India. Its two most famous texts belong to the schools of Charaka and Sushruta. The earliest foundations of Ayurveda were built on a synthesis of traditional herbal practices together with a massive addition of theoretical conceptualizations, new nosologies and new therapies dating from about BCE onwards, and coming out of the communities of thinkers who included the Buddha and others. Both these ancient compendia include details of the examination, diagnosis, treatment, and prognosis of numerous ailments. His medical treatise consists of chapters, 1, conditions are listed, including injuries and illnesses relating to aging and mental illness. The Ayurvedic classics mention eight branches of medicine: The teaching of various subjects was done during the instruction of relevant clinical subjects. For example, teaching of anatomy was a part of the teaching of surgery, embryology was a part of training in pediatrics and obstetrics, and the knowledge of physiology and pathology was interwoven in the teaching of all the clinical disciplines. But the physician was to continue to learn. It progressed during Indian sultanate and mughal periods. Unani medicine is very close to Ayurveda. Both are based on theory of the presence of the elements in Unani, they are considered to be fire, water, earth and air in the human body. According to followers of Unani medicine, these elements are present in different fluids and their balance leads to health and their imbalance leads to illness. Muslim rulers built large hospitals in in Hyderabad , and in Delhi in , and numerous commentaries on ancient texts were written. Traditional Chinese medicine Assorted dried plant and animal parts used in traditional Chinese medicines, clockwise from top left corner: Much of the philosophy of traditional Chinese medicine derived from empirical observations of disease and illness by Taoist physicians and reflects the classical Chinese belief that individual human experiences express causative principles effective in the environment at all scales. These causative principles, whether material, essential, or mystical, correlate as the expression of the natural order of the universe. The Jin Dynasty practitioner and advocate of acupuncture and moxibustion , Huangfu Mi , also quotes the Yellow Emperor in his Jiayi jing, c. During the Tang Dynasty , the Suwen was expanded and revised, and is now the best extant representation of the foundational roots of traditional Chinese medicine. Traditional Chinese Medicine that is based on the use of herbal medicine, acupuncture, massage and other forms of therapy has been practiced in China for thousands of years. In the 18th century, during the Qing dynasty, there was a proliferation of popular books as well as more advanced encyclopedias on traditional medicine. Jesuit missionaries introduced Western science and medicine to the royal court, the Chinese physicians ignored them. Because of the social custom that men and women should not be near to one another, the women of China were reluctant to be treated by male doctors. The missionaries sent women doctors such as Dr. Mary Hannah Fulton . Because Machaon is wounded and Podaleirius is in combat Eurypylos asks Patroclus to cut out this arrow from my thigh, wash off the blood with warm water and spread soothing ointment on the wound. View of the Askleipion of Kos , the best preserved instance of an Asklepieion. Temples dedicated to the healer-god Asclepius , known as Asclepieia Ancient Greek: Some of the surgical cures listed, such as the opening of an abdominal abscess or the removal of traumatic foreign material, are realistic enough to have taken place, but with the patient in a state of enkoimesis induced with the help of soporific substances such as opium. He argued that channels linked the sensory organs to the brain, and it is possible that he discovered one type of channel, the optic nerves, by dissection. Most famously, the Hippocratics invented the Hippocratic

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Oath for physicians. Contemporary physicians swear an oath of office which includes aspects found in early editions of the Hippocratic Oath. Hippocrates and his followers were first to describe many diseases and medical conditions. Though humorism humoralism as a medical system predates 5th-century Greek medicine, Hippocrates and his students systematized the thinking that illness can be explained by an imbalance of blood, phlegm, black bile, and yellow bile. For this reason, clubbed fingers are sometimes referred to as "Hippocratic fingers". His teachings remain relevant to present-day students of pulmonary medicine and surgery. Hippocrates was the first documented person to practise cardiothoracic surgery, and his findings are still valid. Some of the techniques and theories developed by Hippocrates are now put into practice by the fields of Environmental and Integrative Medicine. These include recognizing the importance of taking a complete history which includes environmental exposures as well as foods eaten by the patient which might play a role in his or her illness. Herophilus and Erasistratus[ edit ] The plinthios brochos as described by Greek physician Heraklas, a sling for binding a fractured jaw. Some of what we know of them comes from Celsus and Galen of Pergamum. Herophilus also distinguished between veins and arteries, noting that the latter pulse while the former do not. He and his contemporary, Erasistratus of Chios, researched the role of veins and nerves, mapping their courses across the body. Erasistratus connected the increased complexity of the surface of the human brain compared to other animals to its superior intelligence. He sometimes employed experiments to further his research, at one time repeatedly weighing a caged bird, and noting its weight loss between feeding times. Some of this vital spirit reaches the brain, where it is transformed into animal spirit, which is then distributed by the nerves. He dissected animals to learn about the body, and performed many audacious operations—including brain and eye surgeries—that were not tried again for almost two millennia. In *Ars medica* "Arts of Medicine", he explained mental properties in terms of specific mixtures of the bodily parts. Naples Dioscurides, 7th century.