EARLY KNOWLEDGE REGARDING PHTHISIS.

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In view of the forthcoming Conference in Edinburgh on consumption and other forms of tuberculosis it has seemed to the writer that a short sketch of the earlier development in knowledge and in opinions held regarding this disease might prove generally interesting. The following short article consists, therefore, of some historical notes prepared in connection with an historical and literary section which, at the request of the Executive Committee, the writer has got together for the exhibition connected with the Conference. For several of the references to works that he has quoted he desires to express his thanks to Professor W. Osler and to Dr. James Miller.

NOMENCLATURE OF THE DISEASE.

While instances of the disease known at the present day as "Tuberculosis" can be recognised from their symptoms in the writings of the ancient dwellers in Egypt and Assyria, our first definite knowledge may be said to date from the time of Hippocrates (460-355 B.C.), who gave to wasting disease affecting the lungs, accompanied by cough, spit, and fever, the name of "Phthisis." ¹ A few of his aphorisms will serve to show that the disease to which he gave this name was essentially the same as that of which we still think when we use the term at the present day:—

"Those who spit up frothy blood bring this up from the lung."

"Phthisis arises chiefly at ages from eighteen to thirty-five years."

"In one affected by phthisis, the appearance of diarrhoea is a deadly sign."

"When an empyema develops in patients from pleurisy, if they get clear of it in forty days after it bursts it is checked; if not, they develop phthisis."

"Autumn is bad for the phthisical."

Without going into the debated question of how far in the age of Socrates and Pericles physicians pursued the study of morbid anatomy, one may say that Hippocrates, who lived in
this brilliant age of Greece, was well acquainted, not only with the outward appearances and the future prospects of patients suffering from this disease, but that he understood in a general way the changes in the lungs that accompany its symptoms. Hippocrates, however, does not apparently recognise the infectious nature of phthisis, though in the first book of the Epidemics he gives an elaborate description of an acute form of the disease. The subsequent Greek and Roman writers continue the name in the same sense, though the term consumption is quite a modern variation of this word. "Tabes," another Greek term for wasting, was used in a more general sense.

The term "struma" was applied by Celsus, who flourished at the beginning of the Christian era, to the enlarged glands in the neck; while the term "scrofula" (scrofa, a pig) was given by the later Roman writers, e.g. Vegetius, to the great enlargement of these glands, which sometimes confers upon the face and neck a distinctly pig-like expression. These words have remained in constant use till, in the last century, the identity of cause was established both in the case of enlarged glands and in that of pulmonary phthisis when the two words naturally fell into disuse.

The word "tubercle" was apparently first applied to the little nodules occurring in a diseased lung by Sylvius about the year 1680. This Sylvius is not to be confounded with Jacobus Sylvius, the teacher of Vesalius and friend of Ambroise Paré, whose name we associate with the fissure in the brain which he described, but is the Leyden teacher, Franciscus Sylvius, who was one of the first to originate in the famous Dutch University that system of clinical teaching introduced at its commencement into the Edinburgh Medical School, and continuing one of its chief features to the present day.

The term "tuberculosis," indicating the general disease produced by the formation of these tubercles, seems not to have been introduced until about the year 1843, when Canstatt advances it in his Text-Book of Pathology.

Nature of the Disease.

The peculiar characters of the disease were, as we have already stated, well understood at the time of Hippocrates. Celsus (circa 50 A.D.) divides "tabes" into three types. One of these he calls "atrophy," a condition in which the body is not nourished and
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becomes emaciated; a second type he calls "cachexia," where the habit of the body is bad and all the nutriment becomes corrupted. "The third, and by far the most dangerous species, is that to which the Greeks give the name of phthisis. It generally takes its rise from the head and thence descends upon the lungs. From this an ulceration proceeds, and there comes a slow fever which although it may have abated yet returns. In this also there is a frequent cough, and pus is expectorated and sometimes something bloody. Whatever comes up, if it be thrown upon the fire, has a bad smell. Therefore those that are doubtful of the disease try it by this test."

With regard to the theory of origin, it may be remarked that the catarrh in which the disease was supposed to be produced originated from the brain, passed down into the nose, and thence as the cold moist humour dropped into the warm lung it produced an ulceration—a crude but by no means an extravagant theory.

Galen's theory regarding the cause of phthisis is simply to regard it as a process of ulceration arising from extravasated blood within the lung or between this organ and the chest. Among the compilers of the Byzantine Empire there is nothing additional to note, and it seems not to have occurred seriously to any of the ancient writers that this disease was of an infectious nature. To the Arabs the learning of the Ancient World passed over during the Dark Ages when throughout Europe men and races were too busy with the desperate struggle for bare existence to pay any attention to the cultivation of the gentler sciences, and among the Arab writers, for example Rhazes, Avicenna, and Haly Abbas, the infectious nature of various diseases was first distinctly stated. Haly Abbas ⁶ gives as examples of infectious maladies—leprosy, scabies, phthisis, madness, smallpox, and ophthalmia, and recommends for prophylactic measures that one should not stay long with the sick nor dwell in the same house with them, and that one should use various cleansings and fumigations.

The progress of knowledge regarding the real nature of the disease may be divided into four stages as follows:

First Stage.—Throughout the Middle Ages the idea of an abscess in the lungs or elsewhere was that it originated simply from the stagnation and putrefaction of a humour in a place to which it should not have come, and the modern idea regarding the specific nature of tuberculosis begins with Sylvius, who first described in 1680 the special structures that we know as tubercles. "I had no doubt," he says, "that in these tubercles lies the hereditary and fatal
predisposition to phthisis of certain families, for the tubercles are wont to increase with age and gradually proceed to suppuration. . . . I have come at length to several suspicions about the glands, which are naturally extremely small and almost invisible to the eye, except when they increase somewhat in size and show themselves to the vision scattered everywhere throughout the organs and flesh of our bodies. To these thoughts and conjectures of mine the little glands in the choroid plexus have given rise, which are not visible save in an unnatural state, though then they may reach sometimes to a considerable size, also the glands or glandulous tubercles now in the lung and the glands manifest through various parts of the body in the strumous or scrofulous constitution."

Sylvius thus does little more than suggest an analogy between scrofula and phthisis, while Richard Wiseman,7 surgeon to King Charles II., defines scrofula, which apparently he does not recognise to be connected in any way with phthisis, as "a tumour arising from a peculiar acidity of the serum of the blood, which, whencesoever it lies upon glandulae, muscle, or membrane, it coagulates and hardens, when it mixeth with marrow always dissolves it and rotteth the bone."

An important advance was made by Richard Morton in his Exercitationes de Phthisi, published at London in 1689, in which he for the first time recognised the identity of scrofula and tubercle. He was also one of the first English authors who insisted upon the contagiousness of the disease, and he regarded the presence of enlarged glands upon the surface of the body as a help in diagnosing the internal disease of phthisis.

In 1700 the next step in arriving at our modern knowledge was made by Manget,8 who, in the additions made by him to the Sepulchretum of Bonetus, described the celebrated autopsy upon the body of a young man, aged 17, who had died of phthisis. He found tubercles, which he compares in size to millet seeds, scattered throughout not only the lungs but the liver, spleen, mesenteric glands and intestine, thus describing the first case recorded of miliary tuberculosi.

Boerhaave,9 the most celebrated physician and teacher of the eighteenth century, was content in his aphorisms to trace phthisis back to an ulcer of the lungs, which he supposed to originate from a stoppage of the blood, and its change into purulent matter, thus following the mediæval view.

Morgagni,10 the founder of morbid anatomy as a science, in his great book on The Seats and Causes of Disease, raises the question
whether tubercles are really glands, and expresses an adverse opinion, though he offers no solution of the problem as to their real nature.

An important step in discovering the nature of the tubercle was made by William Stark,\textsuperscript{11} whose works were published in 1788. He not only attributes pulmonary phthisis in every case to tubercles, but he performed some early researches upon the structure of these little bodies, showing by a process of injection that they contain no blood-vessels. His work was further promulgated and enlarged by Thomas Reid, who is mentioned a little further on as the originator of the curious method of treatment by means of vomits. The great step of deciding that tubercles were not glands, as had been supposed for a century since the time of Sylvius, was made by Matthew Baillie\textsuperscript{12} in his \textit{Morbid Anatomy}, published at London in 1797. Baillie was a Scotsman, born at Shotts in 1761, his mother being a sister of the celebrated anatomists, John and William Hunter. In his \textit{Morbid Anatomy}, which contains the earliest pictorial representations of this disease, he describes scrofulous tumours not only in glands but in the pericardium, pharynx, peritoneum and mesentery, tubercles in the liver and spleen, abscesses and tubercles in the kidney, scrofulous vesicula seminales, scrofulous ulcer of the bladder, scrofulous testicle, and scrofulous tumours of the cerebral membranes. He declares that the tubercles are not glands, as some imagine, but a special formation in the cellular tissue between the air cells of the lungs, which later burst into the air cells and suppurate. He further appears to have been one of the first to apply the term “cheesy” to the matter in the glands. Along with Baillie should be mentioned Pott,\textsuperscript{13} who was the first to describe scrofula as it affects the bones in his classical monograph on \textit{Palsy of the Lower Limbs, which is Frequently Found to Accompany Curvature of the Spine}; also Sir Astley Cooper, who for the first time clearly described tubercle of the testicle in 1830, and Addison,\textsuperscript{14} who, in 1855, first recorded the symptoms produced when this disease attacks the suprarenal glands.

The second stage includes the establishment of the fact that tubercles are a special product of disease, and are not enlargements of minute glands; till this became accepted, the idea of the hereditary and unavoidable nature of the disease perforce retained its hold. One of the greatest works on tuberculosis, indeed the first really modern study of the disease, was issued by Bayle,\textsuperscript{15} a confrère of Laënnec, in 1810. He describes very accurately the
stages of development of the tubercle, and takes the miliary tubercle as the starting-point in every case. Entirely discarding the theory that the tubercle has anything to do with glands or inflammation of the lymphatic system, he regards the cheesy substance in the tubercle as a specific substance characteristic of this disease, and wherever the cheesy material is found he pronounces the process to be tuberculous. He describes several varieties of the tubercle as encysted or not encysted, formed of homogeneous whitish substance, or yellowish in colour, and varying in size from that of a millet seed to a chestnut. He also describes six varieties of phthisis:—Phthisis tuberculeuse, P. granuleuse, P. avec mélanose, P. ulcéreuse, P. calculeuse, P. cancéreuse.

After the time of Bayle and Laënnec several opponents arose. Broussais,\(^{10}\) during the life of Laënnec, had acrimoniously disputed with him the relation of tubercles to phthisis, and the fact of whether tubercles are of lymphatic origin, holding that “a sanguine inflammation of the lung either pneumonic or catarrhal can, when it is prolonged by the causes which have produced it, impress on the lymphatic bundles of the organ an impulse which makes them degenerate into tubercles, or which forms a dépôt for tuberculous material.” Andral,\(^{17}\) in 1826, further combated Laënnec’s view by insisting that tubercles are formed after inflammation and oedema of the lungs by the deposit of minute particles from the inflammatory fluid, which later fuse together into single tubercles.

On the other side of the dispute, Buhl,\(^{18}\) in 1857, held that miliary tuberculosis appears always as a specific disease by absorption and infection, and further, that an infectious disease appearing in any individual who already suffered with tubercle and cavities of the lungs, is found to be a miliary tuberculosis. He thus established the idea that the virus was situated in the little cheesy nodules, which, if absorbed and disseminated throughout the body, form other minute nodules containing the peculiar poison.

The third stage included the firm establishment of the fact that the tubercle is of an infectious nature, and may be conveyed from body to body. A great and distinctive step was taken by Villemin,\(^{10}\) a French army surgeon, who, in 1865, was the first to demonstrate the fact which had for long been popularly suspected, to wit, the transmissibility of tuberculosis. His method was to inoculate rabbits with diseased material obtained from phthisical human beings, and by this means he succeeded in
making them tuberculous. He obtained similar results by injection of the rabbits with tuberculous material from disease in oxen. It was observed that a tuberculous process was set up at the seat of inoculation, and that later on, after, sometimes, a lengthy period of incubation, the tuberculosis spread throughout the body. He therefore concluded that some material, capable of reproducing itself first at the point inoculated and subsequently through the body, was passed into the animal. In 1868 a somewhat parallel experiment was carried out by Chauveau, who showed that heifers might be rendered tuberculous both by inoculation and by feeding with material from cases of abdominal tuberculosis in the ox. These experiments met with repeated contradiction, but they were placed beyond all doubt in 1877 by Cohnheim and Salamonsen, who performed an experiment similar to, but very much more delicate than, that of Villemin, by introducing into the anterior chamber of a rabbit’s eye a minute fragment of tuberculous material in a fresh condition. The immediate effects of the slight prick speedily passed away, but the minute fragment remained visible in the anterior chamber of the eye until it was absorbed. After a lapse of some days granulations appeared on the iris, the aqueous humour became cloudy, and upon examination the eye was found to be infected with indubitable tubercles, which could be actually seen.

The fourth stage includes the careful study of the tubercle by microscopic means to find the actual cause of the infection, which was discovered in 1882 by Koch to be the bacillus that now bears his name. The account he gives might form a model for scientific records by reason of its clearness, conciseness, and convincingness. The manner in which the discovery was ultimately made consisted in over-staining films and sections of diseased material from sputum, glands, &c., by means of an alkaline solution of methylene blue. Next the films were put in a concentrated solution of vesuvin for one or two minutes and afterwards washed in distilled water. By this means the tubercle bacilli were stained blue, and this colour distinguished them from all other bacteria, tissues, &c., which took on the brown colour of the vesuvin. Subsequently Koch was able to grow the bacteria which he thus discovered upon solidified blood-serum and other media.

The search for the infective agent in the disease caused the study of the tubercle, from a histological point of view, to occupy many of the most prominent minds in the latter half of the nineteenth century. Chief among these was Rokitansky (1855), who
was the first to discover the giant cell characteristic of the tubercle, and to figure it in the third edition of his *Text-Book on Pathological Anatomy*. Certain cells had previously, in 1849, been described by Lebert as corpuscles or globules proper to the tubercle, but were easily shown by Virchow to be simply degenerated cells. It has been a gradual work of many years carried on by many observers, chief among whom may be mentioned Virchow himself, Weigert, Baumgarten, and Metchnikoff, to show that the lymphocytes, the endothelial cells, and the giant cells are but stages in the formation of a structure which, it has been suggested, is designed to destroy and shut off tubercle bacilli from the remainder of the body.

The question as to the non-identity of human and bovine tuberculosis was raised in 1901 and 1902 by Koch, who pled that all experiments on the point had been performed by inoculation from man to animals, and pointed out the great need for fuller investigation; and the Royal Commission is still engaged in the difficult study of the conditions that govern the relations between these two types of the disease.

**Diagnosis.**

Hippocrates, as already mentioned, refers in several of his works to incidental points in the nature and diagnosis of phthisis. A point of special importance is, that "if the sputum of a patient when poured upon hot coal has a heavy smell, the person is suffering from phthisis," and he appears to have practised a rough form of auscultation by applying his ear to the patient's side. Aretaeus, a writer about the end of the first century A.D., gives a description of the type of person liable to suffer from phthisis, which has been famous ever since:—"The old seldom suffer from this disease, but very rarely recover from it; the young until manhood become phthisical from spitting of blood and do recover indeed, but not readily; children continue to cough even until the cough pass into phthoe, and yet readily recover. The forms of body most prone to the disease are slender, those in which the scapulae protrude like folded doors or like wings, in those who have prominent throats, and those who are pale and have narrow chests. As to constitutions, those which are cold and humid as being akin to the nature of the disease."

All through the Middle Ages the diagnosis had to depend upon the outward appearance of the patient and his symptoms.
Sylvius, writing in the year 1680, gives the signs of early phthisis and those of a desperate and incurable case. In the former we have (1) cough coming on after a pneumonia or pleurisy or empyema, lasting a long time, with expectoration of pus; (2) slow continuous fever; (3) wasting of the body, with loss of appetite and prostration of strength. The desperate case he recognises by the symptoms of (1) general emaciation, pallor, and feebleness; (2) troublesome cough, with expectoration of pus and embarrassment of breathing; (3) slow hectic fever.

Not until the year 1761 was any new method devised by which more certain assurance could be obtained as to the unnatural condition of the chest. In this year Auenbrugger published his "new discovery" in the form of a short pamphlet, wherein he described the sounds which are given out when the chest is struck with the fingers. For the purposes of this percussion, the points of the fingers were all brought together and the chest of the patient percussed here and there to determine the resonance of the note. Sometimes the percussor wore a glove, sometimes he performed his examination with the fingers bare. Auenbrugger describes, quite in our modern manner, the physical signs which can be elicited by percussion, and he verified his results by examining the chests of those who died.

It was not till more than half a century afterwards that auscultation was described by Laënnec, while physician to the Necker Hospital in Paris. His work, _Traité de l'Auscultation Médiate_, appeared in 1819, and includes both a large amount of pathological research on the nature of diseases of the chest, together with the physical signs which he founded upon the morbid anatomical work of Bayle and of himself. His account of the physical signs, as revealed by auscultation, presents us with an almost perfect work in clinical medicine, and while they have been reclassified and rearranged, we use them at the present day in practically the same form as that in which they were originally recorded by their discoverer. As examples of the signs which he discovered and whose significance he elucidated by anatomical examination, we may mention the "cracked pot" sound, which he attributed to an excavation close to the surface of the lung; pectoriloquy, which he held to be equivalent to the formation of a ragged cavity; and the crepitant moist râle, which he considered pathognomonic of pneumonia in its earliest stage. His discovery of the stethoscope may be given in a translation of his own words: "In 1816 I was consulted by
a young woman labouring under general symptoms of diseased heart, and in whose case percussion and the application of the hand were of little avail on account of the great degree of fatness, the other method just mentioned being rendered inadmissible by the age and sex of the patient. I happened to recollect a simple and well-known fact in acoustics, and fancied it might be turned to some use on the present occasion. The fact to which I allude is the great distinctness with which we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other. Immediately on this suggestion I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear. . . . The first instrument which I used was a cylinder of paper formed of three quires compactly rolled together and kept in shape by paste. The longitudinal aperture which is always left in the centre of a paper thus rolled led incidentally in my hands to an important discovery. This aperture is essential to the exploration of the voice; a cylinder without any aperture is best for the exploration of the heart. The same kind of instrument will indeed suffice for the respiration and rhonchus, but both these are more distinctly perceived by means of a cylinder which is perforated throughout and excavated into somewhat of a funnel shape at one of its extremities to the depth of an inch and a half. . . . This instrument I have named the stethoscope." It is a fact of pathetic interest that Laënnec shared the same fate as Corvisart, Lancisi, and Bayle, dying of phthisis in 1826 just after a second edition of his immortal work had passed the press.

Piory, in 1828, published his Treatise on Mediate Percussion, in which he suggested a modification of the Laënnec stethoscope into the form of the thin tube with expanded end which we know to-day. Piory also devised the plessimeter, a thin oval ivory plate with up-turned ends, upon which the percussor struck with one or two fingers, instead of by Auenbrugger's original method. This was supposed to be less uncomfortable to the patient and more valuable in the results it gave to the examiner, and in Piory's Atlas de Plessimétrie a careful and elaborate account is given of the information to be thus elicited.

Since Skoda published his treatise giving a rearrangement of these authors' works, with commentaries of his own, at Vienna
before the middle of the nineteenth century, there has been practically no new fact added to this important branch in physical examination of the lungs.

An impulse was given in the direction of exact observation upon the chest by Louis's *Recherches sur la Phthisie* in 1825. In this treatise he introduced his so-called "numerical method." Medical observation hitherto had dealt with the record by men in authority of certain facts relating to each disease. These facts were either accepted as true or declined as false; but Louis has the merit of introducing the idea that symptoms, signs, &c., may be of relative importance or truth in proportion to the frequency of their occurrence. Accordingly we find that his work is specially distinguished by its statistical inquiries, and that all his notes, measurements, &c., are made with the most scrupulous exactitude.

The physical examination of the chest having reached so great a state of perfection, it only remained to discover something which might distinguish the disease from all other similar conditions of the chest. This was effected when Koch in 1882 published his description of the tubercle bacillus. It is unnecessary to do more than mention the valuable diagnostic method introduced in the form of tuberculin by the same authority, and later modified in various ways by other workers.

**TREATMENT.**

In the classical period of Ancient Greece, when rationalism and simplicity were the distinguishing characteristics alike of medical theory and of medical treatment, a favourite method of healing various diseases consisted in the rest and exposure to the sunshine and fresh air which was to be obtained by a residence at one of the health temples of Asklepios. Of these shrines, some 200 were to be found scattered throughout Greece at different periods, the largest being situate at Epidaurus. Here the phthisical patient, like the rest, was able to perform his oblations to the God of Healing, to recline in marble shelters by which he was protected from the wind, to sleep by night in the fresh air, and to occupy his mind throughout the day by means of plays and spectacles performed in the magnificent open-air theatre and stadium which formed prominent features of the health resort outside the temple precincts.

When we come to the period at which Rome was mistress
of the world, we find the great Augustan medical writer, Celsus, possessed of what appears to be a sound appreciation of the lines on which treatment should be conducted in order to alleviate a case of phthisis. He recognised as of great importance a change of air, particularly by a long sea voyage like that to Alexandria, or if the patient was too weak for this, by shorter voyages, or by carriage in a litter. He also lays particular stress upon a proper dietary, recommending milk, gruel, rice, brains, fish, flour mixed with mutton suet or goat's suet, and light wine. As medicine, he prescribes plantain juice or turpentine mixed with butter and honey. Regarding glands in the neck or strumæ, which, however, he entirely fails to connect with phthisis, he is thoroughly alive to their liability to recur after treatment, and he favours the idea that they should be handled by surgical operation.

Pliny, a slightly later writer (23-79 A.D.), who goes on the principle of including in his cyclopedic work everything which had been mentioned by any authority as a remedy, has nothing to add to this beyond stating that some in his time had found goat's suet an advantageous article of diet, and that others recommended the inhalation through a reed of the smoke from dried cow-dung—a sufficiently disgusting remedy upon which some mediæval methods apparently have been based.

Galen (131-200 A.D.), the greatest medical writer of antiquity, recommended milk as a diet of particular importance so long as it suited the digestion of the patient. He lays great stress upon the point that milk should be warm, and for this purpose he says that the ass, whose milk he specially commends, should be brought to the dwelling of the consumptive patient. Human milk he also regards as a valuable remedy, and he mentions that the digestion of any form of milk is increased by mixing it with a little honey. He also recommends change to a dry climate such as that of Upper Egypt or of Libya, but, like most of the early writers, he considers that the cure is in all cases difficult or impossible.

It is interesting to note that in the earliest medical work of any Germanic people, a leech-book, prepared in Wessex about the time of King Alfred, for a physician who rejoiced in the name of Bald, chronic lung disease is mentioned several times. For its treatment, the inunction of oil is specially recommended, together with various herbal remedies which formed the chief resource of the old English leeches. After directing that the man should be smeared with oil, and that the sides and ribs should be warmed with a little new wool, the leech goes on to say that blood should
be let from the sound elbow, but adds, “If thou lettest him too much blood, there will be no hope of his life.” The medicine was prescribed as follows:—“Work him a brewit from roots of wallwort and from fleathwort and hoarhound and dill seed. Seethe these in butter. Give him this brewit to eat cold in the morning, and at night dress his meat with oil, and let all his drink be cold.”

Like Galen, he indicates his despair of any advantage to be derived from even the best of treatment by adding, “In many a man the lung decayeth.”

In the Middle Ages a curious superstition arose, and has lasted almost to our own times, regarding the cure of consumption and its allied diseases. While in the time of St. Gregory of Tours (600 A.D.) the power of the Church to confer recovery from curable diseases was openly claimed equally with the right to remit sins, the position as regards the former was gradually given up. Nevertheless kings, as an adjunct of their divine prerogative, were for a much longer time supposed to possess a peculiar healing virtue by the laying on of hands. Clovis, the first Christian king of the Franks (465-511 A.D.), and Edward the Confessor in England (1002-1066 A.D.) both attempted the cure of every kind of disease; but at a later time the royal power to heal was confined to “touching” persons afflicted with strumous glands and sores. These accordingly received the popular name of “King’s Evil,” a term which, in the seventeenth century, became the recognised expression employed by medical writers to designate this disease. The privilege was exercised by various kings of France and England, but by none so much as Charles II., under whom the physicians and clergy combined to encourage the king in its practice. It is noteworthy that although Charles I. had assiduously exercised this supposed divine prerogative, so shrewd a man as Sir Thomas Browne, the Norwich physician, who exposes many popular superstitions of his time in his Vulgar and Common Errors, either did not care, or did not dare, to attack a practice which so obviously lent itself to sarcastic commentary. His namesake, John Browne, Chirurgeon to His Majesty, published in 1684 a work on glandular swellings entitled The Adenochoiradelogia, of which the third book, or Charisma Basilicon, gives a most interesting account of the healing as practised by the Merry Monarch. John Browne, while he never doubts the reality of the cures, entertains with some favour the explanation that they are due “to the power of fancy and an exalted imagination”—what we should call the “mental factor.” A more distinguished contemporary, Richard Wiseman,
Serjeant-Surgeon to the King, will not, however, tolerate such an explanation, and points out, to prove the remarkable healing power of the sacred, royal hand, the fact that children and infants benefit equally with adults from its gracious application. It is to be noted that at this time, however, public opinion was not by any means unanimous as to the efficacy of the cure, for Browne finds it necessary to devote a chapter for the purpose of "Several Doubts Resolved about this Curative Method made by Atheists, Sadducees and Ill-Conditioned Pharisees." The cure was carried out with great system and ceremony. In the first place, such as were to appear before the king came to Whitehall or Windsor with recommendations from physicians of good repute all over England. To obtain access to the royal presence a ticket was required, and was only to be obtained after examination by the surgeon of the king, who satisfied himself that the case was really one of scrofula. Provided with the necessary ticket, the patients, rich and poor alike, presented themselves at Court on a day, usually a Sunday, which had been duly advertised as one for the ceremony of "touching," and the following procedure was enacted:

The king, having taken his seat, attended by the Lord Bishop of Durham and other persons, certain prescribed passages of Scripture were read. The patients were then brought forward singly by the surgeon, and the bishop, on his knees, presented for each a small gold medal strung upon a white silk ribbon. This medal, intended to be a permanent memento and a protection against future onset of disease, was placed by the king upon the neck of each sufferer, and at the same time the affected part was stroked. Passages from the Book of Common Prayer followed, and the ceremony ended when the king publicly washed his hands in a basin and ewer brought forward by two noblemen.

John Browne's work is particularly interesting by reason of some of the cases that he records, and it appears that the patients recovered not at once, but slowly after the "touching" ceremony, while many required a second application. The present of the gold piece, too, it seems, proved a frequent source of fraud, and, to combat this, the examination by the royal surgeon, and the admission by ticket, had been devised. One can well believe that, as Browne writes, there was "scarce any city, town or country that could not speak well of his curative faculty," for between May 1660 and September 1664 Charles had "touched" no fewer than 23,621 cases. In 1665-1666, the years of the Plague and Great Fire in London, no records were made by the Keeper of His
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Majesties Closet, and there was probably no "touching." Between 1667 and 1682, however, the practice grew even more popular than before, and it is recorded that in all 92,107 cases were ceremoniously "touched" by this monarch. These figures, when we take into account the relatively small population of England at the time, give an idea of the enormous prevalence of the disease.

Various cases are recorded also as having been cured by Charles I. during his lifetime and by handkerchiefs that had been dipped in his blood after his demise. James II. occasionally tried this healing method, but William III. would have none of it. Under Anne, however, the practice was revived, and by her Dr. Samuel Johnson was "touched" for the scrofula from which he suffered. Since, however, he was but two years old at the time, the responsibility for encouraging the superstition rests, not with the Great Cham of literature, but with his mother and with Sir John Floyer, the physician who had recommended a visit with the child to Court.

Sydenham (1624-1689), the great apostle of the return to simple and obvious methods in treatment of disease, we may presume had no sympathy with this courtly superstition. He advised a method which presented great originality and which he regards as having been curative of phthisis in several cases of his practice. One of these is given in the Anecdota Sydenhamiana as follows:—

"Mr. Lawrence Dr. Sydenham's Nephew after a fever fell into a Cough, & other signs of an incipient Phthisis, (the Morbifick matter being violently translated in upon his Lungs) and at length ye Diarrhoea colliquativa came on: then ye Dr sent him into ye Country on Horseback, (tho he was soe weak yt he could hardly walk) & ordered him to ride 6 or 7 miles ye first day (wch he did), & to encrease dayly his Journey as he shd be able, untill he had rid 150 miles: When he had travell'd half y't way his Diarrhoea stopt, & at last he came to y'e end of his Iourney, & was pretty well (at least somewhat better) & had a good appetite; but when he had staid at his Sister's house some 4 or 5 days his Diarrhoea came on again; The Dr. had ordered him not to stay above 2 days at most; for iff they stay before they are recovered this spoils all again; & therefore he betook himself to his riding again, & in 4 days came up to London perfectly cur'd. The same course hath y't Dr put others upon, especially in Pulmonick Diseases, & w'th y'e like Success when all things elce had failed him: & he was not ashamed to own y't he was fain to borrow a cure
from this way now & then when he found himself puzzled with some lingering Distemper not reducible to a common & know (sic) Disease." This "riding cure" of Sydenham may be regarded as a type of early fresh-air treatment.

Cullen 30 (1710-1790) was one of the most influential teachers of the eighteenth century, and his method of treatment may be taken as the type which prevailed universally throughout the eighteenth and early nineteenth centuries. He accepts the view introduced some half a century before his time by Sylvius, that tubercles are small glands scattered through the lung, and that the disease is accordingly to be lessened by preventing in every way their inflammation. The methods he adopts are:—(1) Blood-letting; (2) the administration of a lowering diet, especially of vegetables, together with lowering medicines, of which tartar emetic continued for a century and a half to be the favourite; (3) the avoidance of irritation to the affected lung such as might be caused by great exercise, by any position of the body which produced a compression of the chest, and by the access of cold air to the surface which was apt to cause, he thought, inward congestion. Thus the patient was reduced as much as possible by this "antiphlogistic" treatment, and was kept heaped with clothing and enclosed in a warm room, where he respired over and over again the emanations of his own body.

A curious method of treatment, which owed its origin to a special theory as to the nature of tubercles, and which obtained a considerable amount of acceptance, was that introduced by Reid 40 in his essay on "Phthisis Pulmonalis" in the year 1785. As he insists that tubercles are composed of a viscid secretion wedged in the termination of the bronchial tubes, it is natural that he should recommend a "vomit" for their expulsion. "Patients," he says, "at first are apt to be alarmed at the novelty of the practice, fearing that by taking pukes every day the tone of their stomachs will be injured, and such ideas never want support from the ignorant and interested; but I can safely affirm, and I am warranted to do so by the best of all tests—experience—that I never saw any bad effects from a course of this kind continued for several months with proper precautions: on the contrary, I have scarcely met with one instance where the general health was not materially improved." Ipecacuanha is therefore his great remedy for consumption, administered to cause vomiting morning and evening every day, while he attributes the well-known success of sea voyages to the sea-sickness entailed!
Surgical treatment by the knife was recommended, as we have seen, by Celsus, for enlargement of the glands. For this purpose the Arab surgeon, Abulcasim (circa 1000 A.D.), adopting the instrument favoured by the prophet, used a hollow tube-shaped cautery. Towards the end of the eighteenth century the method of treating tuberculous areas with "issues" produced by caustics or by setons was introduced by Pott for the cure of that spinal disease which still bears his name. With regard to the "white swelling," a name given by Richard Wiseman to the serofulous disease of joints, Sir Astley Cooper, in the 1830 edition of his work on the Principles of Surgery, states only the alternatives of amputation and of expectation with good diet and counter-irritation; though Syme, the Edinburgh surgeon, in the following year (1831) brought out his Treatise on Excision of Diseased Joints.

Treatment continued much on Cullen's lines till late in the nineteenth century. In 1840 a village doctor, named George Bodington, published an essay on the result of his treatment of numerous phthisical patients at Sutton Coldfield in Warwickshire. Bodington lived at Driffield House in this town from 1836 to 1868, and during this period he attracted so many patients that he was obliged to take in addition Maney House, with a large garden attached, which may therefore be regarded as the first real sanatorium for open-air treatment. Its novelty, which included a stimulating regimen and the respiration of a maximum amount of dry fresh air, will be indicated by two extracts from his treatise:

"In order, then, to restore a consumptive patient, it will be necessary especially to attend to the following matters:—We shall find, first of all, a rapid and weak pulse, ranging from 120 to 140 beats in a minute, clearly indicating a deficient supply of blood, and the heart and arteries irritable in proportion to this deficiency. This condition must be met at once, not by the means termed 'antiphlogistic,' but with frequent supplies, in moderate quantities, of nourishing diet and wine; a glass of good Sherry or Madeira in the forenoon, with an egg, another glass of wine after dinner, fresh meat for dinner, some nourishing food for supper, such as sago, or boiled milk, according to the taste and digestive powers of the patient. This will be supplying means to rectify the morbid condition of the nutritive functions, and to allay the irritability of the heart and arteries. I have generally succeeded in the course of a few days, or perhaps a week, in reducing the pulse from 130 or 140 down to 90, by means of this diet, and by
a systematic use of sedative medicines, and other means. ... I come now to the most important remedial agent in the cure of consumption, that of the free use of a pure atmosphere; not the impure air of a close room, or even that of the house generally, but the air out of doors, early in the morning either by riding or walking; the latter when the patients are able, but generally they are unable to continue sufficiently long in the open air on foot, therefore riding or carriage exercise should be employed for several hours daily, with intervals of walking as much as the strength will allow of, gradually increasing the length of the walk until it can be maintained easily several hours every day. ... The cold is never too severe for the consumptive patient in this climate; the cooler the air which passes into the lungs, the greater will be the benefit the patient will derive. Sharp frosty days in the winter season are most favourable. The application of cold pure air to the interior surface of the lungs is the most powerful sedative that can be applied, and does more to promote the healing and closing of cavities and ulcers of the lungs than any other means that can be employed."

His method, however, was received with adverse criticism and ridicule, and though he continued to practise it himself in his private sanatorium, it never obtained much recognition from his contemporaries. The method was practically revived by Henry MacCormac of Belfast in 1865, the keynote of his system being given in his words:—"Tubercle is simply impossible in the case of persons who respire habitually air not pre-respired, and who sleep in an atmosphere incessantly renewed. ... Pure respiration is the law of life, impure respiration is the law of death. ... The materials for the possible recovery from phthisis, I repeat, lie round every door." Upon the foundation, laid by these pioneers, has been built up the modern sanatorium system. One of the greatest steps in advance upon this line was recently taken by the German Legislature, which made it possible to bring fresh-air treatment within reach of the humblest dwellers in crowded towns by permitting insurance companies to found large sanatoria in that country for the more economical treatment of work-people insured with them.

Another essential adjunct in the attainment of this end was found in the Consumption Dispensaries which sprang up in the large towns during the last two decades of the nineteenth century, for the purpose of systematically investigating the conditions of the disease in the dwellings of the poorer classes, and of forming controlling
centres to advise the sick and their friends, to select those suitable for hospital, and to supervise patients after their return home. To Edinburgh belongs the credit of having been the first city to possess a large institution of this type in the Victoria Dispensary for Consumption, founded there by Philip in 1887.

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The Victoria Jubilee Cullen Prize for the greatest benefit done to practical medicine by a Fellow, Member, or Licentiate of the College, which is awarded by the Royal College of Physicians of Edinburgh once in four years, has this year been awarded to Dr. R. W. Philip, for his work on tuberculosis.