

Pulmonary consumption considered as a neurosis : being two of a series of evening lectures given by the Faculty of the Philadelphia Polyclinic in the course of 1888 and 1889 / by Thos. J. Mays.

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Publication/Creation

Detroit, Mich. : George S. Davis, 1888.

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PULMONARY CONSUMPTION

CONSIDERED AS A NEUROSIS.

Being two of a Series of Evening Lectures given by the
Faculty of the Philadelphia Polyclinic in the
Course of 1888 and 1889.

BY

THOS. J. MAYS, M.D.,

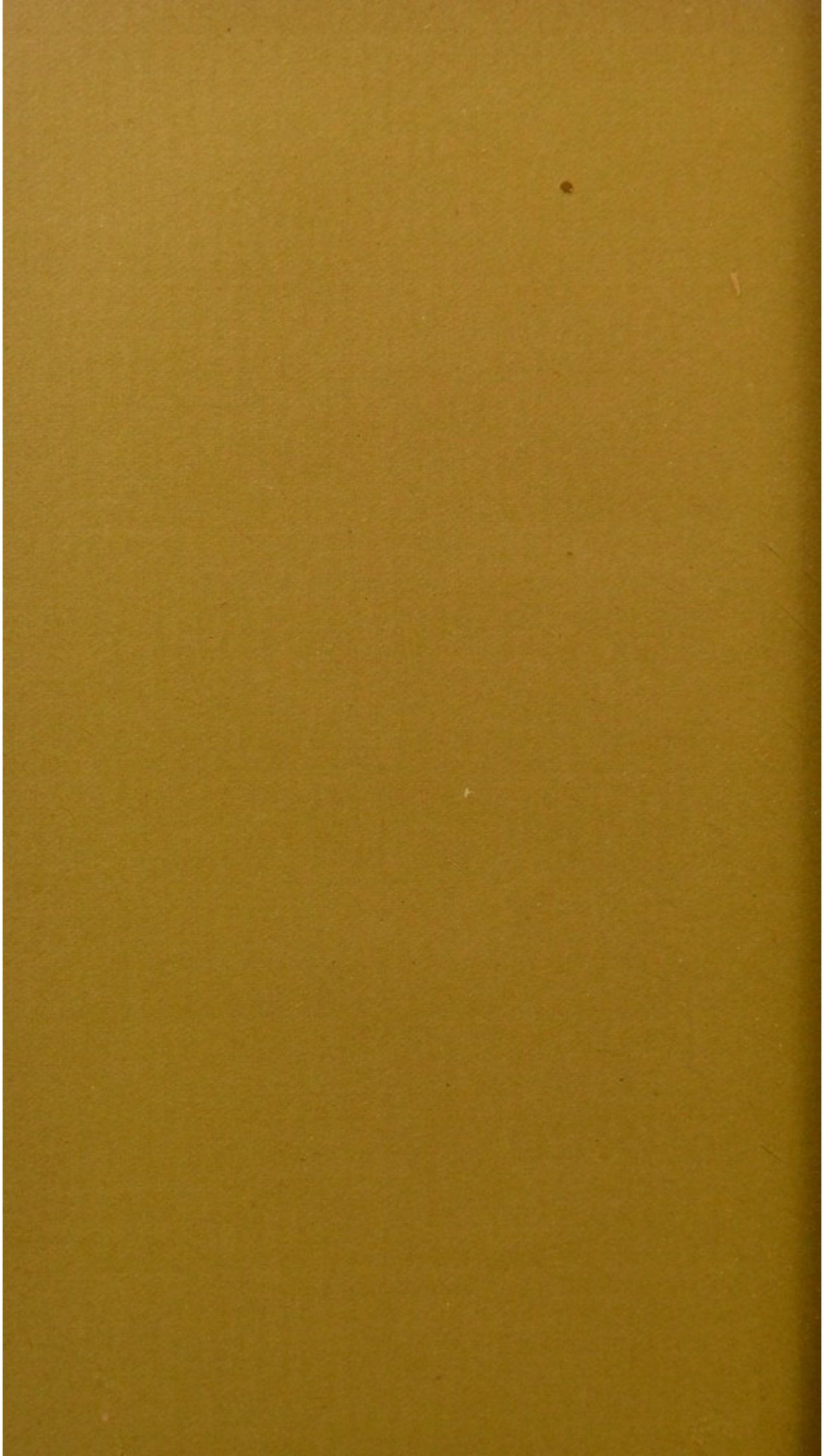
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*REPRINTED FROM THE THERAPEUTIC GAZETTE, NOVEMBER 15 AND
DECEMBER 15, 1888.*

DETROIT, MICH.:

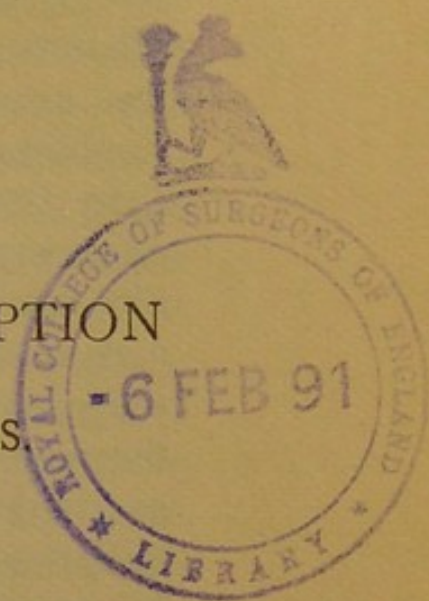
GEORGE S. DAVIS, PUBLISHER.

1888.



PULMONARY CONSUMPTION

CONSIDERED AS A NEUROSIS.



LECTURE I.*

THAT pulmonary consumption is not due to one single cause is but too apparent to any one who takes a clear and an unbiassed view of its origin. The evidence already collected shows pointedly enough that occupation, want of exercise, insufficient food, inheritance, excesses of all kinds, sex, order of birth, dampness, and change of climate are powerful factors in the production of the disease; and in carefully watching the progress of consumption one cannot help but be impressed with the fact that in many patients, and perhaps in all, a disturbance of the nervous system, too, plays either a causative or a concomitant rôle in its history. It would be strange if the nervous system remained normal alongside of a disease whose ravages are so general, and it has seemed to me that the following observations might be of some

* Delivered October 30, 1888.

service in helping to recognize the intimate relation which undoubtedly exists between the nervous system and pulmonary consumption.

In June, 1885, M., a female, aged 26, became my patient, with the following history: She was confined the previous December, and apparently made a good recovery, with the exception of a violent attack of pain in the region of the right ovary, and some fever, as she described it, about ten days after the baby was born. She remained well until the following January, when she became chilly occasionally, and began to have night-sweats. When I saw her she had lost some flesh, no hæmoptysis, poor appetite, irregular bowels, and a whitish expectoration, not at all profuse. Her menses reappeared one month before (May). She never had malaria, nor rheumatism, but she complained of an ill-defined and shooting pain throughout the body, which localized itself especially behind the right ear, right side of the neck, and right costal portion of the chest. She also perspired very profusely around the back part of the head.

Physical examination showed body somewhat emaciated; heart normal. Right lung: diminished respiratory motion throughout, and a slight impaired percussion resonance in apex, associated with a few mucous râles in same area. Left lung: want of proper expansion, otherwise normal. There is a family history of the disease. At the same time I also had her examined by an expert gynæcologist, who discovered nothing wrong in her generative organs. Under treatment her appetite, cough,

and expectoration gradually improved, and the mucous râles had all disappeared by the middle of the following August; and, with the exception of several attacks of pain in the right ovarian region, which, during their greatest intensity, radiated upwards to the stomach and intestines, she apparently felt better. Her menses failed to appear after September, and from this time on her case developed the most uncommon nervous symptoms. Her temperature, which did not vary much from the normal hitherto, now began to rise. The ovarian pain became very much aggravated, and tenderness began to show itself along the whole spine. The pain in the right side of the head, neck, and chest, of which she complained at her first visit, also became worse. In November there was slight dullness in right apex, subcrepitation in same area, extending to third rib in front, and to angle of scapula behind. Evening temperature, 101° . The ovarian pain appeared now at more frequent intervals, and nothing but large doses of morphine would relieve it. In December her arm and lower limbs became so painfully stiff that she was only able to move them with the greatest difficulty. This spell lasted for four or five days, when it entirely disappeared. The pain in the ovarian region and that in the right chest often came on alternately. She frequently said that when she had pain in her right lung there was none in her abdomen, so *vice versa*. The application of a hot poultice to the chest would relieve the pain there, but would drive it below, and the reverse of this was also true. By applying one pole of a galvanic battery between

the shoulders and the other on the sternum the pain would at once disappear in the chest, but would reappear in the pelvic region ; but the application of both poles along the spine—the one in the neck and the other over the sacrum—removed the pain altogether. In fact, the galvanic current was the only means which afforded her any relief, and this was decided and instantaneous. After the manifestation of these nervous symptoms she became rapidly worse, and died in a short time. At no time was there any œdema or paralysis of the extremities in her case ; and at no time, except when she was so stiff, did she suffer from any well-marked pain in these portions of her body.

The question which presents itself here for discussion is as to the precise nature of the relationship between the nervous and the lung affections : was one dependent on the other, or not ? and if so, which was primary and which was secondary ? or were both morbid conditions but manifestations of a still deeper-lying disorder ? This is, of course, very difficult to determine, but it is very certain that, so far as time was concerned in this case, the nervous symptoms antedated those of the lung, and that the former aggravated the latter. The special interesting features of the case were the confinement of the disease to one side of the body until up to within a short time of her death, and the close sympathy which existed between the pain in the right ovary and that in the right side of the chest. It seemed as if the pain in the right side of the head, neck, and chest was reflex in character, and depended on the ovarian

disturbance as its primary source of irritation, and that in time a reciprocal channel of communication was established between the two through which they reacted one on the other.

The literature on the subject of the relationship between phthisis pulmonalis and the nervous system is, so far as my knowledge extends, very scant. Most writers on phthisis, and on diseases of the nervous system, ignore it entirely, while many of those who do recognize it strangely regard the two conditions as being antagonistic to each other. As early as the year 1850 Dr. J. C. Holland defined pulmonary consumption as "a disordered condition of the nervous system." (See "On the Nature and Cure of Consumption," cited from Ancell's "Treatise on Tuberculosis," p. 556.) Dr. Copland looked upon tuberculosis and scrofula as depending on abnormal conditions of the nervous system ; that the accompanying disturbances of digestion, of assimilation, of the circulation, and even the local determination of these diseases, he refers to the state of the nervous influence of these parts. (See "Dict. Practice of Medicine," part xv. p. 750, March, 1852 ; abstracted from Ancell's "Treatise on Tuberculosis," p. 564.) Walshe ("Diseases of the Lungs," 4th edition, p. 455) states that "hysteria is, on the whole, repulsive of phthisis as a coexistence,—that is, if a woman with hysteria becomes genuinely phthisical, the nervous affection falls into abeyance ;" and again, on p. 479, in qualification of the above he says that "an hysterical woman may have frequent, shallow respiration, impaired percussion-tone, cough,

expectoration, peculiar watery hæmoptysis, and night perspirations ; she may lose flesh, and this even especially about the chest, and yet be non-phthisical. The existence of well-marked hysterical conditions of the spine, intercostal nerves, and skin, coupled with the peculiar watery hæmoptysis and the inordinate frequency of breathing, are valuable guides to the diagnosis. . . . And, again, though hysteria and phthisis be, in the main, antagonistic diseases, the antagonism is assuredly not absolute, and faith too confident in its reality has more than once led to serious error. It has every now and then happened that an hysterical woman, whose alleged chest-ailments were treated as pure figments, has died of genuine phthisis, while supposed to be simulating the disease."

Pidoux says that "neuroses, hysteria, melancholia, the proteiform neuropathic state known as 'neurosism,' often act as moderating agents. Phthisis in neurotic subjects has a very slow development, and periods of long intermission. I have no doubt that such subjects, among whom the disease is not rare, offer to it an extraordinary and almost indefinite resistance ; and in treating them we must not pay too much attention to their abnormal nerves. . . . If a pulmonary consumption is combined with a neurosis, the organic lesion will evolve very gradually ; gastralgias and enteralgias have often this effect. I look upon this statement as an axiom" ("Études sur la Phthisie," p. 151). And Largaud says, "We shall show how consumptives, even when most threatened, may live, thanks to hysteria ; . . . the neurosis appears to play the part of a pro-

tector, as if in its presence the pulmonary complaint had its symptoms mitigated and its progress arrested. . . . Hysteria in a consumptive is not a symptom of tuberculosis ; it is not a complication ; it is only a new morbid state without casual relation with it" ("Thesis," Montpellier, 1882).

In a very interesting and in some respects a remarkable series of papers on "The Relation of Hysteria with the Scrofulous and the Tubercular Diathesis," by Professor J. Grasset, M.D., published in *Brain*, vol. vi. p. 433, and vol. vii. pp. 13 and 161, and to which my attention has been drawn by Dr. Mills, the author advances the following views in explanation of the bearing between phthisis and hysteria : "Hysteria is the manifestation of the tubercular diathesis just as much as chorea is a manifestation of the rheumatic, and angina pectoris that of the gouty diathesis." By this he does not mean that hysterical subjects suffer from tubercles, but that the scrofulous and tubercular diatheses are constitutional states found in a series of generations of the same family, and among a certain number they are represented as neuroses. Thus, for instance, in a phthisical family you will see, of the children, one dying from tubercular meningitis, another become an ordinary consumptive, and the third escape the diathesis ; or the last may be neurotic, hysterical, or a lunatic even. But, according to Professor Grasset, the last has escaped the hereditary diathesis in appearance only. He is tubercular, like the rest, though he has no tubercles anywhere. It is his neurosis which represents the diathetic affection.

He adduces forty-four cases, which he divides into two groups. First group : Hysteria, with tubercular heredity without pulmonary manifestations. Second group : Hysteria of a tubercular nature, with pulmonary manifestations ; reciprocal influence of the two orders of localization.

On account of the intrinsic interest of the subject, as well as of the cases here recorded, I take the liberty of quoting some of the most representative ones of each group.

FIRST GROUP.

"CASE I.—*Neuropathic and Diathetic Heredity*.—Hystero-epilepsy, beginning at three years of age, with scrofulo-herpetic manifestations. J. C., 3 years old.

"*Neuropathic Heredity*.—Sister died at eight or nine months from meningitis, with violent convulsive attacks ; brother died from cerebral accidents during a laborious dentition at thirteen to fourteen months. Maternal grandmother had severe attacks (epileptic?), and died insane. Mother very nervous. Maternal aunt has had violent attacks after strong emotion (fear of drowning).

"*Diathetic Heredity*.—Maternal grandfather had cancrroid of the upper lip. Mother very lymphatic ; ganglionic enlargements, with attacks of eczema behind the ear. Maternal uncle : marked scrofulo-herpetic eruptions. The sisters and brothers of the mother are all scrofulous, lymphatic, or of slow intellect. They are all below the average mentally, but those whose constitution is the best are the least developed in intelligence. Father lymphatic. Paternal grandmother rheumatic.

"*History of Patient.*—Has had lymphatic enlargements of the neck sometimes. An emotional shock, brought on by falling into a tub, was followed by an eczematous eruption. Three months after was seized with a vertigo, which attack repeated itself for a few weeks every two or three days. Two months after the beginning of these attacks of vertigo they were succeeded by loss of consciousness, retraction of thumbs, and convulsion of eyeballs. The attacks became more frequent. No convulsions."

"CASE II.—*Scrofulous Diathesis ; Hysteria of a Sudoral Nature chiefly.*—On October 13, 1882, a girl of 14 was brought to me, who has menstruated since the age of eleven and a half years, and who for the last three days presented extraordinary local sweatings. All the external clothing is soaked around the waist. She saturated twelve napkins in a day, and wears the third flannel of the day. Suddenly she feels a very violent pain, which constricts the lower part of the thorax, and immediately afterwards she feels herself inundated by an enormous flux of perspiration at the stomach, the liquid flowing to the ground. These sudoral attacks began three days ago after a violent beating given by her aunt.

"Her father died from abdominal cancer and the mother from consumption.

"She had during childhood disorders of the ears, protracted suppurations, chilblains, impetigo of the scalp, ganglionic enlargements, etc. No thoracic symptoms, except a very slight dulness towards one of the external clavicular regions."

"CASE IV.—Mrs. G., aged 38. Mother and

brother died from consumption. She had first hysterical fits at the age of twenty, which were grave, sometimes cataleptic, and occurred repeatedly. Violent pain in the spine and thorax. The rachinalgia is so great that she is unable to tolerate any pressure on the spinous apophyses. Nothing in the chest except some roughness at the apices."

"CASE XVIII. — *Tubercular Heredity; marked Hysteria.*

"*Heredity.*—Marie H., female; whose father became alcoholic after the death of her mother. Drunkenness very prevalent among the paternal ancestors. Her mother died of consumption at the age of thirty-six, and was free from nervous disease. The grandmother and two maternal aunts also succumbed to pulmonary phthisis. Patient has two sisters; one died ten days old, the other, aged twenty-nine, is alive, but in weak health, very nervous, and liable to frequent outbursts of anger, complaining of continual cardialgia and of leucorrhœa, which may be referred to a chlorotic and nervous state. She has two children, one a feeble-looking boy and an idiot girl. Her husband is alcoholic.

"*Previous History.*—She had measles at the age of five, which was followed by symptoms of scrofula. Menstruation began when eighteen years old; periods irregular, with lumbar and abdominal pains, nausea, and vomiting.

"*Present History.*—At the age of twenty-one or twenty-two had a nervous attack after some provocation, which was followed by chorea, incessant vomiting, with gastralgia, followed still later by true outbursts of mania."

SECOND GROUP.

"CASE XXVI.—*Tubercular and Neuropathic Heredity; Hysteria, then Pulmonary Tuberculosis; Disappearance of the Hysterical coinciding with the Appearance of the Pulmonary Phenomena; Death and Autopsy.*

"L., florist, female, 18 years of age. Her father, who died of pleurisy when forty-two years old, was very nervous and a drunkard. Paternal grandfather neurotic; mother subject to bronchitis. Maternal grandfather died in an apoplectic fit, aged sixty; maternal grandmother died from phthisis, aged forty-six; had twenty-one children.

"During childhood patient was scrofulous and had bronchitis. In July, 1871, she was attacked with hysteria, from which time on fits occurred with all their typical characteristics,—aura, hemianæsthesia, ovarian hyperæsthesia, etc. She was always chlorotic, and in January, 1876, she began to lose strength, and had vomiting and diarrhœa. In the following May there occurred an aggravation of these symptoms, with rapid loss of flesh and signs of pulmonary phthisis, which carried her off on the 21st of July.

"No hysterical attacks occurred in 1876. In the beginning of May of that year she had; however, well-marked hemianæsthesia and ovarian hyperæsthesia on the right side. On June 1 hyperæsthesia less intense; pinching, pricking, cold, etc., perceived, but less acutely than on the left. Sight, smell, and taste pretty equal on both sides; hearing less distinct on the right. On July 13 spontaneous hyperæsthesia has disappeared; ova-

rian pressure still produced pain, but no longer gave rise to the sense of strangulation. General and special sensibility almost equal on both sides.

"*Autopsy*.—Nervous system normal ; supernumerary pseudo-ovaries on the right ; adhesions at the apices of both lungs. Left lung : cavities in the upper third, granulations disseminated throughout the remainder. Right lung : several small cavities in the upper lobe ; numerous tubercular masses elsewhere.

"An interesting feature of this case is the influence of tuberculosis upon the permanent symptoms of hysteria, hemianæsthesia, and ovarian hyperæsthesia, the latter symptoms disappearing synchronously with the progress of the pulmonary lesions."

"CASE XXVII.—*Tubercular Heredity probable ; Partial Epilepsy, Hysteria, Concomitant Pulmonary Phthisis, retrograding while the Neurosis persists.*

"B., female, born in 1839, and admitted April, 1862. Father was a drunkard and died dropsical. Mother had hæmoptysis and died of bronchitis. Father and mother second cousins. Six brothers and sisters, all dead except one brother. She had several attacks of bronchitis during childhood. First fit at thirteen ; in 1860 had painful hemiplegia. Coughs since four and a half years ; had slight hæmoptysis twelve months ago. Frequent pains between shoulders and under clavicles. Expectoration abundant and mucopurulent in character, and somewhat fetid since three or four months. Occasionally marked dyspnœa and fits of coughing, espe-

cially morning and night. Percussion is painful, and shows dulness on the right side, in subclavicular and suprascapular regions. Humid râles at both apices, especially on inspiration more marked on right side ; sonorous ronchi elsewhere ; nocturnal sweats. In 1871 the state of the limbs varied. Left leg rigid, which is the seat of occasional spontaneous trepidation, and this is accompanied with tonic contraction of arm and rotation of head to the left. This is the incomplete seizure. In the complete attack the phenomena are more accentuated, and combine with rhythmical clonus. Flexion of the foot determines incomplete attacks. The patient sometimes passes whole days in a state of ecstasy, with occasional tremors of the limbs, but no general convulsion.

"In 1872 seizures occur in which loss of consciousness is not complete, the eyes closing upon the approach of the finger. On one occasion no fit, but a peculiar state of abstraction, and hallucinations of ear and eye. From 1872 to 1877 similar hysteriform fits took place. In 1878 a physical examination of the chest showed only a slight diminution of resonance in right apex, back and front, with a rough vesicular murmur, and she coughed but rarely."

"CASE XXVIII.—*Neuropathic and Diathetic Heredity ; Hysteria ; Stercoraceous Vomiting ; Convulsions ; Pulmonary Tuberculization ; Alternations between the Nervous and Thoracic Phenomena.*

"*Heredity.*—Her father's death was caused by an accident Her mother is very nervous. One of her sisters died phthisical at eighteen.

Another had two attacks of acute rheumatism.

"History of Patient.—She is twenty years of age; face yellowish, pale; characteristic aspect of chlorosis. Very nervous; laughs and cries without motives. Hysterical fit, with stercoraceous vomiting. Very evident crepitations at the apex of right lung. Later on convulsive epilepsy, with left ovaritis and hemianæsthesia.

"A fact worthy of notice is that when her attacks came back, the cough was less troublesome, and the state of the lungs seemed to improve; then, as the nervous accidents diminished in intensity, the state of the lungs grew worse again. In 1876 the two lungs were attacked, and in April, 1877, the patient died. She had no hysterical accidents during the last six months of her life."

"CASE XXIX.—Neuropathic Heredity; Hysteria; Tuberculosis; Death from Marasmus; Tubercular Granulations in Apices of Lungs.

"The mother, whose health was delicate, died in early life of a disease which may have been a nervous or a cancerous affection of the stomach. The father died when fifty-five years old, after two months of mental alienation with incipient paralysis of the lower limbs. His sister suffers from a nervous affection.

"Always impressionable and easily moved, he has from twenty-five to thirty-two years of age been exposed to much worry. When thirty-five years old he had convulsions, which left weakness and numbness in the left side of the body and permanent pain in the middle of the back. He is admitted to 'La Charité' when thirty-seven, in 1851.

"The thorax is about normal; resonance deficient under the right clavicle, and the vesicular sound is a little weak in that spot. From time to time there occur attacks of dyspnœa. No cough, no expectoration. When he exerts himself to cough, to swallow, or to move about freely, we hear during inspiration a kind of stridor, resembling that of the first stage of a fit of whooping-cough; suffocation seems imminent. At that time very frequent convulsive attacks, anæsthesia, etc.

"Gradually the nightly attacks became less frequent, but the patient got weaker and lost flesh notably. The difficulty experienced in the act of deglutition increased, the ingestion of food became more and more difficult. Gradually the respirations became embarrassed, the laryngeal sounds increased, and at the same time the weakness rendered the cough, the expectoration, and the breathing more and more difficult. The continual epigastric pains and the nightly attacks gave rise to a feverish condition. Anæsthesia and paralysis came back again more marked than before. The intellect remained unimpaired. Death occurred on the 4th of May, after being four months in the hospital.

"At the autopsy nothing was found in the nervous centres except a little adhesion of the arachnoid and the pia mater (thickened but transparent) to the brain.

"The lungs contained at the apices some miliary tubercular granulations."

"CASE XXXI.—*Pulmonary Tuberculosis; Hydrotherapy; Hysteria; Disappearance of Pulmonary Phenomena; Cure.*

"Miss X. had frequent hæmoptyses, obsti-

nate cough, intercostal pains, decline, and dyspeptic troubles. Physical examination proved crepitation at both apices. All ordinary treatment failed to relieve her. The attending physician ordered cold lotions to the extremities against the recurrent hæmoptysis, which ceased after a few days. The general state of the patient remained bad, and the phthisis seemed to advance. Miss X. was submitted to a hydrotherapeutic course. After a shower-bath a formidable hysterical fit broke out. A true neuropathic state manifested itself, and lasted a whole year, during which the morbid pulmonary phenomena improved in a marked way. A new affection then appeared in the shape of a sciatica, which cut short the hysterical neurosis. The sciatica resisted every form of treatment for eight months, but ceased on the occurrence of a furuncular eruption, and the patient after this showed nothing special with reference either to the lungs or nervous system."

"CASE XXXV.—*Pulmonary Phthisis and Hysteria; Alternating Predominance of the Two Orders of Symptoms; Tubercular Cachexia; Diarrhœa; Death.*

"Patient remained in the hospital of Carpentras for nervous attacks. Her age is 20, and during her youth she has been pale, puny, and presented sure signs of scrofula.

"During her one year's stay at the hospital she has presented alternations of obstinate cough and hysterical fits. There were either powerful attacks, with globus and convulsive movements, or mere adumbrations of fits. The whole course was very irregular. She left the hospital very much better, as far as

the cough and the neurosis were concerned, but her general state was still very bad.

"Patient married some time after, and gave birth to a child, which only lived a few days.

"She was lost sight of up to the day when she was admitted into the hospital for an obstinate diarrhœa (January 3, 1880).

"She says that since her confinement she has had a few fits, which have diminished in number and in intensity from the time when the cough has come back stronger and the diarrhœa manifested itself.

"She is very much thinner, very pale, and her courses have stopped. Crepitation at both apices, especially on the right side, and prolonged expiration. At night, when the respite given her by the cough allows her to sleep a little, she is at once bathed in perspiration. She has as many as ten motions a day, especially in the morning, and the fæces present the appearance of clay, and are of the consistence of pap. They are almost odorless, and contain neither shreds of false membranes nor any traces of blood. As to the neurosis, its only manifestation is a certain mental alternative. She chatters incessantly, tells lies at every opportunity, and passes without reason from laughter into sobbing fits. No convulsive attacks.

"The hysteria remained hardly noticeable for three months, and would, perhaps, have been overlooked but for the previous history; but auscultation and expectoration give us daily fresh evidence of the progress of the phthisis, so much so that from day to day a fatal termination is apprehended. On April

10 we are called at midnight. The following is the state in which we find her: She is shaken by movements so inordinate that all the nurses can do is to keep her in bed. She is unable to speak, but she puts one of her hands to her throat, and seems to beg that the assistants would tear away something which grasps and chokes her. The eyes are haggard, respirations noisy and stertorous. Then begin clonic convulsions, which last for about a quarter of an hour, after which the patient, exhausted, falls to sleep till morning.

"There we have evidently a return of the hysteria with a regular attack. From that day she has nothing but fits, declining in intensity, and we notice with astonishment that all the phthisical symptoms are daily improving. On the 1st of September the lungs have nearly recovered their natural action, and the patient has regained a little stoutness and strength, although the diarrhœa persists (three to six motions in twenty-four hours), resisting all the treatment directed against it.

"In the month of March of the following year the patient leaves the hospital, still with her diarrhœa, and goes back to her occupation.

"We have since learned that the patient, again considerably weakened by the diarrhœa, has once more been admitted into the hospital during the first days of the succeeding January. Her hysterical attacks had completely ceased, and the diarrhœa had given place to a generalized œdema, to which she succumbed on the 1st of March, without other characteristic symptoms of tuberculosis. No autopsy."

"CASE XXXVI.—*Pulmonary Phthisis at the Beginning; Hysteria displacing the Thoracic Symptoms.*

* "Marie X., age 27, admitted into the hospital of Carpentras the 3d of February, 1881. Cannot give any information concerning her heredity. Seems to have had syphilis when twenty-one years old, but no trace of it is found at the time of her admission, except a chronic laryngitis, with very harsh voice. Rheumatic pains (?) for the last two months. She has taken a violent cold, degenerating into an acute bronchitis, which assumes a tubercular character; first sanguineous expectoration, then veritable hæmoptysis; abundant nocturnal sweatings; noticeable weakening and loss of flesh. Auscultation reveals dry and very harsh crepitations at both apices and prolonged expiration. Percussion yields a great difference of resonance between the apices and the bases, especially on the right side. Fever.

"Patient was growing worse daily, when, about the middle of April, she was suddenly taken with a violent hysterical fit. She became so weak that she had to be carried to bed. She then experienced an abnormal weight in the epigastric region, as if something were rising, clutching her at the throat, and choking her. She became extremely agitated, screamed aloud, and fell as if she were lifeless. Convulsions supervened, consisting of pretty regular alternations of contraction and of flexion of the legs and arms, then movements of pelvis. After a few moments she was exhausted and fell asleep.

"The next day a second fit at the same

time ; then a third and a fourth one, all identical. Since that time the state of our patient has altogether changed. The pulmonary affection improved very rapidly, so that after a month every trace of phthisis seems to have disappeared.

"The hysteria goes on, but is of a benignant type, and the patient leaves the hospital in September, retaining nothing else of her neurosis than certain mental peculiarities."

"CASE XXXVII.—*Incipient Pulmonary Tuberculosis replaced by Hysteria.*

"Louise B., 17 years old, was admitted into the hospital of Carpentras on March 4, 1881, with all the symptoms of chloroanæmia. Douches and ferruginous preparations. After sixteen days of this treatment she is taken with violent cough and sanguineous expectoration ; at the time of admission auscultation had revealed nothing. She coughs more and more, and crepitation is heard in the apex of right lung, as well as harshness of the respiratory sounds, and prolonged expiration on both sides. Hæmoptyses and nocturnal sweats. The patient, very much weakened, can no longer leave her bed. The diagnosis made is tubercular bronchitis.

"Things grew worse till the 1st of May, when she is suddenly taken, during the morning visit, with slight convulsions, followed by deep prostration. On the same day, at 3 and 10 P.M., she was taken with similar fits.

"During the next two weeks she had aphonia, slight convulsive fits every day, constriction of the throat, together with anæsthetic and hyperæsthetic symptoms, and during the

same time there occurred a marked improvement in the respiratory system and in the general state. About the middle of June the hysterical condition improved in its turn, and on the 1st of July she seemed quite well, and asked permission to leave the hospital. On the 1st of September, when she was discharged, the symptoms of pulmonary phthisis had disappeared, and of the neurosis nothing remained but a great tendency to lying and chattering.

"She is seen again in March, 1882, when nothing was found in her lungs, but she then manifested fresh neurotic symptoms. Hysterical fits every other day, with globus, tonic and clonic convulsions, erotic in character, and with loss of consciousness. Compression of one ovary calms the fit almost instantly, while compression of the other increases its intensity, and draws loud screams from the patient."

"CASE XXXIX.—*Heredity Unknown; Hysteria; Beginning of Pulmonary Tuberculosis, which makes no Progress.* (The observation includes a space of eight years.)

"L., female, 29 years old, was admitted into the hospital Cochin the 29th of May, 1873. Patient had typhoid fever about 1870, and pneumonia in April, 1873. Persistent anuria after the application of blisters. In June had symptoms of pelvi-peritonitis. Her general state is disturbed, and the patient becomes whimsical, etc. The vague nervous troubles become very pronounced. Pains in abdomen; vomiting. In November she slept for three days.

"In January, 1874, left hemianæsthesia;

anuria and vomitings; recurrence of pelvi-peritonitis. In June, paralysis of left leg. On the 16th of August, beginning of pleurisy on the left side, with effusion. In October, anæsthesia and paralysis, and becomes paraplegic. Sometimes, in the beginning of December, a few fits of coughing, followed by slight hæmoptysis, accompanied by thoracic pains. Anuria and paraplegia persist.

"*January 1, 1875.*—Patient has a tired look, is thin, some cough, and hæmoptysis; auscultation reveals a few dry crepitations in right apex. Voice harsh, almost toneless for more than three months. Vomiting and ischuria; paraplegia and anæsthesia continue. The hysterical state shows itself also by a marked mental peculiarity, by diffuse neuralgia, by feelings of suffocation, which, for some weeks past, have taken the characters of the usual globus; profound anæsthesia of the ocular and pharyngeal mucous membranes. Semicataleptic sleep in March. Later on pulmonary congestion of the left side, with fever. In April, long fits of sleep. Left the hospital in July, when she showed signs of pulmonary tuberculosis.

"The patient does fairly well for four years. On March 10, 1880, she is taken with pains in the throat and with aphonia, and the urinary troubles reappear; vomits; bilateral ovaritis; right hemianæsthesia. April 28 the patient looked well, but always perspires very freely. She had a slight cough, but auscultation reveals nothing but a little respiratory harshness at the apices. On May 13 she leaves the hospital, suffering only from aphonia."

"CASE XL.—*Tubercular Heredity ; Pulmonary Tuberculization ; Hysteria beginning with exaggerated and obstinate Sweatings.*

"Locksmith, 25 years old, admitted for bronchitis ; dulness in right apex ; expiration prolonged and jerky, and crepitation. Very abundant sweating during the night (not on the hands). Usual treatment of tuberculosis and granules of atropine. After four days generalized sweatings have disappeared, but now the palmar surfaces of each hand begin to sweat. Hydrosis very abundant, constant, and increased by the slightest emotion. Failure of atropine internally ; partially successful when used subcutaneously. Duboisia more effective. The sweatings reappear, and resist other treatment. The mind becomes impressionable, irritable, and anxious. He is moved by nothings, cries easily, and presents various nervous phenomena, such as epigastric constriction, strangulation, and repeated hysterical attacks. Right hemiplegia and hemianæsthesia, with contractions, aphonia, etc. The general health during the intervals is perfect."

"CASE XLI.—*Hereditary Neuropathic Antecedents ; Personal Scrofulous Antecedents ; Pulmonary Tuberculosis ; Convulsive Hysteria.*

"R., a soldier, admitted June 29, 1880, into the hospital St. Eloi. Brother died of convulsions ; sister has curious nervous disturbances at each menstrual period.

"Patient is delicate and scrofulous ; had measles, which left a hypersensitiveness of the respiratory mucous surface, which gives rise to bronchitis, and his expectorations are often bloody.

"Since he was ten years old he has had

convulsive attacks of a hysteriform character, and on admission there is obtuse sensibility over whole body, with some painful vertebral spots. In the chest he shows signs of a tuberculous beginning in right apex, and a few dry crepitations, with harsh respiration and prolonged expiration in right supraspinous fossa. Stenosis of the pulmonic valve. The hysterical attacks continued. On the 15th of August the pulmonary lesions had made no appreciable progress, and he was dismissed on the 1st of September in a better state of health than when he entered it, without, however, being completely cured."

"CASE XLIII.—*Hystero-Epilepsy; Pulmonary Tuberculosis.*

"Marie F., 55 years old, admitted March 11, 1880. Nervous temperament; frequent headaches, which are preceded by vertigo; syphilitic. Subject to hystero-epileptic attacks, which have been observed to disappear by compressing the ovary. In her attacks she loses consciousness entirely, falls, foams, passes her urine, etc.

"On admission she complains of numbness in the right side, especially in the right hand. There is notable diminution of general and special sensibility on the right side. On the 22d of March there is found under the right clavicle very plain dry crepitations, and a slight dulness in same area. The following day she became subject to blood-spitting. She had, however, expectorated blood before.

"*March 29.*—Right ovarian pain under pressure; subdulness under the right clavicle; slight humid crepitations in upper third of that side; from time to time dry crepitations

under the left side ; behind and on the left, dry crepitations under the left side ; behind on the right side, slight humid crepitations, less marked than in front ; expectoration yellow and tinged with blood."

The histories of these cases, which have been collected by Professor Grasset from many sources besides his own, simply form an invaluable contribution to medicine, and I have taken the liberty of quoting some cases in full, and others in a condensed form, for the purpose of directing renewed attention to them. So far as my knowledge goes, it is the first systematic effort to show the intimate relation between hysteria and pulmonary phthisis. This much its facts establish beyond a doubt. From this it does not follow, however, that Dr. Grasset is correct in his primary assumptions when he states that hysteria and pulmonary phthisis are but the manifestations of a still deeper-lying diathesis, which he calls the tubercular ; nor does it follow that these two diseases frequently alternate in intensity, or act antagonistically, because they are both believed to be rooted in this same diathesis. The erroneousness of these views, as well as that of the other, that hysteria is the only nervous state with which pulmonary consumption is associated, will, I think, become quite evident on closer examination of the factors involved in the problem.

From the facts already cited it must be admitted that hysteria and phthisis frequently occur and displace each other in the same individual. It is by no means certain, however, that these two diseases alternate in this man-

ner because there is an inherent antagonism between them. Such a substitution is no more remarkable than many other similar phenomena which are constantly met in practical medicine. Do we not frequently see cases of pulmonary phthisis in which the cough and expectoration improve after the onset of diarrhoea, or in which the two former symptoms become aggravated when the latter ceases? Is it not also true that the gravest symptoms and physical signs of this disease will be moderated by the appearance of a delayed catamenial flow? or will be called into entire temporary abeyance by the pregnant state? To account for these interchanges on the score of an underlying diathesis would be in no greater harmony with the real state of affairs than it is to hold that hysteria and phthisis are the outcroppings of some still more fundamental disorder. The most consistent interpretation of these phenomena, so far as I can see, is, that they occur in accordance with the well-known empirical, though well-established, law, which implies that no two pathological processes occur with equal intensity in the body at the same time.

Indeed, it seems very probable that both hysteria and consumption are but a two-sided expression of a diseased state of the nervous system, and it will be seen that, after a frank and straightforward examination and construction of data, still further afforded by clinical and experimental medicine, the assumption that pulmonary consumption is a neurosis is more genuine than appears on the surface. And in carrying out my line of argument, in which I shall strive to show its

truthfulness, I shall in the first place enter into a critical examination of the most common symptoms of the latter disease, and afterwards I shall discuss its relation to those nervous diseases with which it is often associated.

LECTURE II.*

FATIGUE AND EXHAUSTION.—Probably one of the earliest manifestations of the advent of pulmonary consumption is a tendency to premature bodily fatigue. While it is true that members of phthisical families are, as a rule, vivacious, intellectual, and indeed sometimes precocious, it is also true that their nervous system is in an unstable equilibrium, and is, therefore, easily disturbed; and that they lack that reserve power of physical endurance which is present in individuals not so predisposed. This want of energy is generally attributed to muscular weakness, and there is no doubt that the muscles participate in the debility; but there is good reason, too, for suspecting that the principal difficulty is not located in these structures, but in their supplying nerves. If this defective power is absent at the beginning, it seldom fails to appear throughout the course of the disease, and it frequently becomes one of its most prominent symptoms. There are some cases of phthisis who apparently are doing well so far as cough, expectoration, and appetite are concerned, but are unable to perform the least physical exertion. In spite of these good signs mentioned, they are on a constant decline. Walking, or going up a flight of stairs, saps their strength at once.

* Delivered November 6, 1888.

Such patients I have known to suffer from violent vertigo, tremors, numbness in the hands and feet, as well as from the most agonizing pains in the back and extremities, clearly showing that there was present either a neuritis or a neuralgia.

LOSS OF APPETITE.—The dyspepsia of pulmonary consumption has been attributed to a great variety of causes, and it constitutes one of the most annoying features in the treatment of this disease. The persistent failure to eat is so marked that one is often tempted to ask whether the real seat of the trouble does not reside in the stomach instead of in the respiratory organs! That the real difficulty lies deeper than simply a defective gastric or pancreatic secretion, and is in close affiliation with the nervous system, may possibly be inferred from the powerful influence which emotional and peripheral impressions possess over the digestive power of a consumptive's stomach. Nothing proves more deleterious to his appetite than fright, disappointment, pain, etc. ; and nothing makes him eat better than when he is humored, coaxed, and encouraged.

When we come to consider that the lungs, and the stomach, the liver, and the small intestines, are largely supplied by the pneumogastric nerves, it requires no effort of the imagination to apprehend how disease in the former organ, leaving out of consideration a disorder of the pneumogastrics, may readily produce a reflex disturbance in the process of digestion. The experiments of Bernard and others show that on section or irritation of the pneumogastric nerves the walls of the

stomach cease to contract, the gastric mucous membrane becomes pale and flaccid, the secretion of gastric juice is arrested, the secreting function of the liver is deranged, and the small intestines are paralyzed. When these experimental facts, which demonstrate that the complex function of digestion is wonderfully dominated by the nervous system, are taken in connection with the post-mortem changes which have been found in the nervous structures of individuals whose deaths were caused by phthisis, especially the alterations in the pneumogastric nerves described by J. Heine in 1827, as well as the lesions of the great sympathetic observed by Eichmann in 1844, there remains but little doubt that the neurotic element plays a most prominent rôle in the process of phthisical dyspepsia.

The dyspepsia of pulmonary consumption may, therefore, in common with many other symptoms, be regarded as one of the signposts which discloses the state of the nervous system. This induction tallies fairly well with that which is found in the practice of every physician. It is always well understood that the prospects of a phthisical patient who retains or recovers his appetite permanently are brighter than if the opposite held true. This is not alone due to the fact that he eats and assimilates more food-stuff, but because his innervation is fairly good, and because his vital forces are but little impaired.

WASTING.—The problem of nutrition has an important bearing on the pathology of pulmonary consumption. Wasting is one of the earliest symptoms to present itself in the development of this disease, and while a great

deal of this is undoubtedly directly due to a diminution in the amount of ingested food, so common in this disease, no one will, I think, claim that the whole defect is due to this single cause alone. There are many cases of incipient phthisis which, though they show no perceptible morbid changes in the lungs, and no symptoms of dyspepsia, still undergo a gradual loss in flesh and strength ; and there are others which, during the course of the disease, retain a tolerable good appetite, and yet their tissues become flabby and emaciate. From the general evidence already adduced that serious functional and structural changes occur in the nervous system throughout this disease, and from the proof which will be offered in support of the doctrine that the processes of waste and repair of the body are largely influenced by the nervous system, I think it will become very obvious that the latter play an essential rôle in the emaciation of pulmonary consumption.

The tendency of modern physiology is pre-eminently towards specialization. This is particularly true of the researches which relate to the nervous system. The nerves and centres of motion and of sensation are already well demonstrated ; the same may probably be said of the nerves and centres which preside over the production and dissipation of bodily heat ; and, although their exact nature is still in doubt, there can be no question about the existence of nerves, be they spinal or ganglionic, which preside over the nutritive processes of the body. The existence of such nerves is well established by the following clin-

ical data :* In his "Lectures on Nutrition," Sir James Paget relates the case of a patient in which the median nerve was compressed by the callus thrown out to repair a fractured radius. Ulceration of the thumb and middle fingers took place, which resisted all treatment until the wrist was so bound that the parts on the palmar aspect were relaxed and the pressure on the nerve removed. So long as this was done the ulcers became and remained well, if not, the ulceration returned.

Dr. John H. Packard records a very interesting case of trophic nerve lesion in the *American Journal of the Medical Sciences*, April, 1870. A girl 11 years old was brought to him with a large splinter of wood under the ulnar side of her right thumb-nail, which had entered three days previously. Poultices had been applied and pus was beginning to form. He at once removed the splinter, and incised the thumb to afford a free exit to the pus. Relief followed, and the wound healed kindly, although the swelling was slow in subsiding. Three months after, the child was brought to him suffering under very grave general symptoms of nervous irritation. She had choreic movements of the whole body, of all the limbs, and of the jaw, the right half of her person being somewhat more affected than the left. She had lost flesh and strength, was peevish, irritable, and unable to fix her attention on anything. Her appetite was bad.

* Some of the instances which I give here are drawn from a paper entitled "The Influence of the Nerves on Nutrition," contributed to the *Practitioner*, vol. x. pp. 91, 138, by Dr. Henry Power.

Locally there was sensitiveness of the affected thumb, which she could not use in grasping, writing, or sewing. Iron, quinine, and arsenic were ordered as general remedies; the thumb was protected by an opium and belladonna plaster, and she was sent to the seaside. She improved some, but the chorea continued as before, and on her return she again began to lose condition, and now there appeared one point of special sensitiveness at the ulnar edge of the thumb-nail. Exsection of the implicated nerve-filament relieved the child in a short time. In a few days she was steadier, she gained in flesh and strength, and in two months was perfectly well.

In the same number of the *American Journal of the Medical Sciences* Dr. Harrison Allen reports the case of a cavalry captain who received a pistol wound in the left side of the neck, one inch above the clavicle, a little to the outer side of the sterno-cleido-mastoideus. On recovering after a four hours' unconsciousness, there was found paralysis of both lower extremities, with intense burning pain in the left hand. The power of movement in the lower extremities was regained to such an extent that he could walk with crutches in five months, but the burning pain in the hand remained for ten months. This upper limb was numb, its nutrition much impaired. Three years from the date of the wound he died, and a particle of lead was found between the left brachial plexus and the corresponding subclavian artery, and the ball was lying on the side of the spinous process of the second dorsal vertebra. The spinal cord was congested, but free from lesion.

Messrs. Mitchell, Morehouse, and Keen, in their work on "Gunshot Wounds and other Injuries of Nerves," found the following trophic lesions due to nerve injuries : atrophy of muscles, thickening of the cuticle, cracks and fissures of the skin, bed-sores, curved nails like talons, etc.

Lesions of the spine are frequently followed by trophic changes below the seat of injury. Charcot has collected a great many cases of this kind. Sir Benjamin Brodie observed sloughing of the heels twenty-four hours after a lesion of the spine. Jeffreys mentions a case where a man fell and crushed the fourth dorsal vertebra, and on the fourth day an eschar made its appearance on the sacrum. Colling relates a case of dislocation of the seventh cervical on the first dorsal vertebra. Here also eschars formed on the sacrum on the eighth day, and on the heels on the fifteenth day.

The experimental evidence also points very strongly in the same direction. The most notable, and the only one of these examples to which I shall refer, is that of division of the trigeminus. Section of this nerve within the cranium is followed by a loss of sensation of that part of the face to which it is distributed, the cornea becomes cloudy, the nasal chambers are inflamed, and ulcers appear on the lips and gums.

The interdependence of the process of nutrition and the nervous system is, I think, very clearly made out by these instances. The illustration, however, which shows better than any other, not only that denutrition is the resultant of disturbed nervous action, but

also that pulmonary consumption is a frequent outcome of such derangement, is found in the case of diabetes. The intimate relationship between consumption and diabetes has been fully investigated by Prout, Rayer, Copland, Grisolle, Walsh, Reynoso, and others, and it is claimed by some of these learned authorities that the two conditions are scarcely met separately. In nineteen post-mortem examinations of diabetic patients, Bouchardat found pulmonary tubercles in every instance ("Etiologie de la Tuberculisation pulmonaire," in the supplement to *L'Annuaire de Thérapeutique* for 1861, p. 4).

Although diabetes may be classed among those diseases which are due to an error in the chemical changes of the body, it is in most, if not in all, cases dependent on disordered nerve action, and is essentially, like pulmonary consumption, a wasting disease. In explaining the salient points of its physiology and pathology, it may be briefly stated that destruction of sugar occurs in the blood, brain, glands, muscles, etc. The liver converts sugar into glycogen, and glycogen back into sugar again. The muscles probably possess the same power, and additionally that of changing sugar into lactic acid and glycerin (Brunton). Now, puncture of the floor of the fourth ventricle, irritation of the roots of the vagi, an injury to the medulla oblongata or to the head, a general nervous shock or a nervous affection, excessive mental emotion, the administration of curare, etc., all interfere with this glycogenic metabolism, or, in other words, these measures and condi-

tions render the body unable to transform its ingested sugar into working force, and it, therefore, remains in the blood, and as such is secreted by the kidneys.

There can be no doubt that the wasting of diabetes is traceable to this defective glyco-genic metamorphosis, and that the phthisical process which is such a frequent accompaniment of this disease, and which pursues precisely the same course as the non-diabetic form, owes its inception in most cases directly to this malnutrition, as I shall attempt to show in discussing the subject of hæmoptysis.

HOARSENESS AND APHONIA.—Hoarseness often precedes as well as accompanies affections of the lungs, and especially is this the case in pulmonary consumption. In many, if not in most, instances this symptom is of a purely neurotic character, although it occasionally excites the suspicion that serious structural changes occur in tissues other than the throat. Since my attention has been drawn to the frequent implication of the nervous system in diseases of the respiratory organ, I have observed several cases of hoarseness, amounting to partial aphonia, dependent upon paralysis of one or of both vocal cords, which on examination were found to be suffering simultaneously with an inflammatory consolidation of the posterior and lateral bases of both lungs, and which, together with the hoarseness, disappeared upon the administration of remedies which were almost entirely addressed to the nervous system and to the building up of the constitution. In all probability both of these affections, or symp-

toms of a single disorder, depended on defective pneumogastric innervation, since both of the involved areas are supplied by the same nerve-root. Sir Morell Mackenzie says that debility and hysteria are undoubtedly the most frequent causes of aphonia. This is common in the second and third stages of phthisis, and it is very often erroneously ascribed to structural changes, which, on examination, are shown to be non-existent. In thirty-seven cases of phthisis, in which the voice was affected, he found that in eleven the affection was purely functional, in twelve there was thickening of the mucous membrane, and in fourteen there was congestion. He holds that in these cases of functional aphonia the nerve force is feebly or imperfectly evolved, or is not directed in the proper channel.*

DYSPNŒA.—In speaking of the dyspnœa of pulmonary consumption I do not refer to that form which arises on account of extensive inflammation of the lungs, or of an accumulation of catarrhal material in the small bronchial tubes, and which act as an obstruction to the normal aeration of the blood, nor of that which is due to emphysema, or pseudo-asthma; but of that form which manifests itself as an oppression of, or a tightness in, the chest, and which is as much a neurosis as a genuine attack of asthma. According to my experience, this symptom is most prevalent in those cases of phthisis which suffer from the

* "Use of the Laryngoscope in Diseases of the Throat," Morell Mackenzie, M.D. Second edition. Philadelphia, 1869.

effects of excessive physical labor, from those of indulgence in alcohol, or of other modes of dissipation. It is not so intense, nor are its limits so sharply drawn, as is the dyspnœa of asthma, but it seems to depend on the constitutional condition of the patient, being very much exaggerated when he is weak, and disappearing almost altogether when he is strong. I have seen such patients too debilitated to walk up-stairs without panting who, after a few days of well-directed medication, and that solely applied to the nervous system, became so much relieved that they were able to walk quite long distances without any well-marked dyspnœa. The very fact that this condition is susceptible of being changed through the agency of measures addressed only to the nervous system is evidence that the whole disturbance is probably due to atony of the pneumogastric nerve.

SWEATING.—It is quite obvious that, as a rule, perspiration is accompanied by dilatation of the cutaneous blood-vessels, but the experiments of Goltz, Luchsinger, Ott, and others point out that this capillary expansion is but a passive factor in the production of sweat. These authors show that stimulation of certain nerves calls the sudoriparous glands into action independent of any vascular widening. Thus, in the dog and cat, increased sweating takes place when the sciatic nerve is stimulated, even though the aorta is divided or ligatured. These nerve-fibres are probably regulated or co-ordinated by a centre or centres located in the spinal cord or brain, although the researches of Ott render it exceedingly likely that the sweat-glands may

be excited through peripheral stimulation.* The profuse perspiration which accompanies the death-agony, or violent emotional excitement, and many other pathological facts, likewise point out that the sweat-glands are dominated by the nervous system. Now, while sweating is not a specific symptom of pulmonary consumption, it is still one of its earliest and most persistent companions, and from the above premises it is quite certain that we are justified in believing that the exhausting cold and clammy sweats of this disease indicate profound disturbance of at least the peripheral portion of the nervous system.

DIARRHŒA.—The persistent diarrhœa of pulmonary consumption is generally regarded as good proof of intestinal ulceration. While this may be true in a great many instances, I am quite certain, from a moderate amount of post-mortem experience, that diarrhœa may continue stubbornly for many months in this disease without showing the least evidence of intestinal ulceration after death. Indeed, I think it is a debatable question whether tubercular ulceration is ever the original cause of the diarrhœa, or whether both the ulceration and the diarrhœa are the natural sequences of a common and more deeply-seated cause. Without venturing an opinion as to the nature of this cause, it must be admitted, on the score of common experience, that diarrhœa does occur both in children and in adults, which is attributable to nothing

* "Sweat-Centres: the Effect of Muscarine and Atropine on them," Dr. Isaac Ott, *Journal of Physiology*, vol. i. p. 193.

but disordered innervation of the bowels. The dominating influence of the nervous system over intestinal excretion is still further demonstrated by the experiments of Moreau, and of Brunton and Pye Smith, which show that, after destruction of the inferior ganglia of the solar plexus and the superior mesenteric, the intestinal canal fills with an abundant serous secretion. In view of these facts, are there not strong grounds for believing that the diarrhoea of pulmonary consumption may, in many of its phases, be due to a weakened and relaxed tone of the intestinal vaso-motor nerves?

HÆMOPTYSIS.—The hæmoptysis to which reference is made here is that which occurs during the initial period of pulmonary consumption, and not that which accompanies the later stage of the disease. During the former period either hæmoptysis or blood-spitting is rarely absent, and it usually marks the first step in the process of disintegration. Patients of this class come before you with the assurance that they are in perfect health, and to them this attack of blood-spitting is wholly unaccountable. On inquiry it will generally be found, however, that they have been losing flesh for some time, have a poor appetite, are employed in-doors, are overworked, and, perhaps, intemperate, have an active circulation, a florid complexion, and, above all, are of an excitable, nervous temperament. It may be pertinently asked, Why does pulmonary consumption make its overt beginning in a rupture of the lung capillaries? Why is the strong tendency in this disease towards a break in the continuity of the pulmonary cir-

culatation, while in acute pneumonia, where the blood-pressure is much greater, it is extremely exceptional to find more than a simple extravasation of blood in the air-cells? Inference leads one to suspect greater weakness in the walls of the blood-vessels in the former than in the latter disease, and we shall see that this suspicion is well borne out by the facts. The state of denutrition, which is the great bane of pulmonary consumption, and which, as we have already learned, is probably in a great measure brought about through the instrumentality of the nervous system, implicates the walls of the lung capillaries, as well as the other textures, and these in consequence give way to the slightest excess of pressure. That defective nutrition of the capillary walls plays a most important part in this disease is well supported by the testimony of Dr. Anderson, given in his excellent little work on "Phosphates in Nutrition." He says (page 125), "In all cases of death from consumption or analogous diseases that I have yet had chances of examining, this deficiency (of inorganic matter) has been well-marked, and leads me to look upon it as an invariable characteristic of the wasting organic diseases, and if the symptoms, points of analogy, and general pathology of these diseases be considered, it will be seen that the theory of capillary inefficiency can be made to explain many of the phenomena of these diseases."

If we accept the theory of the close relationship between disordered innervation and pulmonary consumption, which I have endeavored to trace thus far, it is quite prob-

able that the influence of the trophic nerves have something to do with the defective nutrition of the blood capillaries and hæmoptysis, which are referred to by Dr. Anderson in the work above quoted. Certain it is, according to the experiments of Brown-Séquard, that injury to the base of the brain in animals produces hemorrhage in the lungs. There is probably very little doubt, then, that the weakened walls of the lung capillaries determine the first organic lesion in pulmonary consumption; and when this is taken in connection with the fact that inactivity of the apices predisposes the blood-vessels of these parts to early congestion and rupture, it becomes quite clear why the beginning of this disease is almost universally confined to the apex and not to any other portion of the lung.

ŒDEMA.—Still further evidence that disordered innervation is a prominent feature in pulmonary consumption is furnished us by the pathological condition known as dropsy. This complication generally develops itself most fully during the later stage of the disease, and it is, therefore, regarded as the sequence of cardiac exhaustion or of constitutional collapse. There are good reasons, however, for believing that this is in great part an error, and that the œdema is only the final culmination of a process which had been less obviously active throughout the whole course of the disease. It is quite certain that every practitioner sees cases of consumption in which dropsy supervenes, when no greater circulatory, respiratory, or secretory defect can be detected than had existed for months before the attack manifested itself.

A study of the pathology of dropsy* teaches us that this condition depends on an accumulation of serous fluid in the lymph-spaces of the body. In health these spaces are fed with lymph derived from the capillary arteries, which is absorbed again by the venous radicles and lymphatics. Either the lymphatics or the venous radicles, according to Brunton, are capable of carrying away all the lymph that is poured into the lymph-spaces by the arterioles, so that in case there is an obstruction in one of the former channels, the other takes on a compensatory action and performs the work of both. Thus Ranvier, Cohnheim, and Brunton have shown that ligature of the inferior vena cava sometimes produces no œdema whatever in the lower limbs of the dog or the cat. Cohnheim believed the absence of œdema under these conditions to be chiefly due to the establishment of a collateral venous circulation, while Brunton holds that it is on account of increased action of the lymphatic circulation. Both Ludwig and Brunton found that ligature of a vein at once increases the lymphatic stream in that district. As has already been stated, tying the vena cava ascendens does not always produce œdema, but the case is usually different when the sciatic nerve of one side is divided at the same time. Œdema generally follows in this, but not in the opposite leg, although the venous circulation is equally obstructed in

* See the interesting article by Dr. Brunton, "On the Pathology of Dropsy," in vol. xxxi. p. 177 of the *London Practitioner*, which mainly furnishes the inspiration for my remarks on this subject.

both legs. These experiments show, then, that œdema is greatly dependent on want of nerve-power; and that *this* defect is owing to paralysis of the vaso-motor and *not* of the motor nerves, Ranvier, again, showed by cutting the roots of the motor nerves of one limb in the spinal canal before they had joined the sympathetic branches; while in the other limb the whole sciatic nerve—including the motor and vaso-motor branches—was divided. The limb in which the motor roots were divided was paralyzed, but did not swell, while the other limb became very œdematous. From the results of these observations we must conclude that the vaso-motor nervous system plays a most important part in the production of œdema, although it must not be overlooked that the state of the blood and of the blood-vessels, the impaired sucking power of inspiration and of the cardiac diastole, also play a subsidiary rôle in bringing about the same end.

THORACIC PAIN.—Pain and tenderness in the chest-wall are some of the most common attendants of pulmonary consumption. Such patients frequently say that they always have felt weaker on the affected side, and that these are the only symptoms which give them any intimation that there is something wrong within their chests. That the pain is situated no deeper than the parietes of the chest-wall is evident from the fact that the lungs are not supplied with sensory nerves, nor is it probable that the pain is a mere capricious or incidental accompaniment, without any direct relationship to the disease in the lungs, because it is generally located over the subjacent

diseased lung. More than this, it is often found that the whole half of the head or neck, chest, and abdomen on the side of the affected lung is more or less hyperæsthetic, or comprises painful spots ; while the other half of the trunk is comparatively normal. Such patients, especially of the female sex, are apt to show tender spots along the spine, and may be suffering from what is commonly called an "irritable spine."

By recognizing this phase of the neurotic element in pulmonary consumption we can also account for the source of the thoracic reflex which is met so frequently, although, perhaps, not exclusively in this disease. This reflex, which is capable of being excited by immediate percussion of the chest-wall muscles, especially of the affected side, undoubtedly depends on such a peripheral irritability or hyperæsthesia of the intercostal nerves as has been outlined here.

Having now discussed the most important symptoms of pulmonary consumption in their bearing on the nervous system, I shall, before proceeding any further, briefly review the changes which take place in the lungs on section or on disturbance of their supplying nerves, as well as the morbid changes in the vagi which are found after death from pulmonary consumption. Thus simple division of the vagi is followed by a pneumonia marked by hyperæmia, infiltration of the alveoli, and elevation of temperature, but Bischofswerder* has shown that simultaneous ex-

* "Vagus und Sympathicus, die Vasomotorischen Nerven der Lunge. Dissertation. Greifswald, 1875.

tirpation of the uppermost thoracic ganglion and both vagi gives rise to a much more intense pulmonary hyperæmia and infiltration than division of the vagi alone. Brown-Séquard's observations, which are confirmed by Nothnagel, show that injury to the base of the brain is frequently followed by hæmoptysis, oedema of the lungs, and pulmonary solidification. Löwit relates an interesting case,* in which pressure of a tonsillar abscess on the underlying vagus produced a pulse frequency of from 244 to 252 per minute, as well as a broncho-pneumonia at base of lung on same side. Pneumonia, especially the basic variety, is very prone to develop in the cerebral palsies of the aged, as well as in the subjects of chronic alcoholism, in consequence of a deteriorated state of the nervous system. In a post-mortem examination of phthisical subjects Dr. F. L. Hahn† found alterations of the pneumogastric and phrenic nerves. The nervous symptoms which attended these cases during life were facial, sciatic, and intercostal neuralgias, pains in the sternum and at points along the spine, arthralgia, muscular pains, hyperæsthesia, analgesia, contractions, paresis, reddening of cheeks, cutaneous pigmentations, and dilatation of pupil on affected side.

In an extremely valuable paper entitled "The Pulmonary Pathology of General Pa-

* *Prager Vierteljahrschrift*, lxiii., 1879, s. 28; *Centralblatt für die Med. Wissenschaften*, 1880, s. 61.

† "Nervous Complications of Phthisis," F. L. Hahn (*L'Union Médicale*, February 9, 1874); *Chicago Journal of Nervous and Mental Diseases*, vol. ii. p. 448, 1875.

ralysis,"* Dr. J. Chrichton-Browne reports the post-mortem pulmonary changes which he found in cases of general paralysis. In all he examined the bodies of one hundred general paralytics,—eighty males and twenty females,—and found that pulmonary congestion was most common, and present to a much greater degree, in general paralysis than is found after slow death from exhausting bodily disease. Congestion was present to a marked extent in forty-nine out of the one hundred cases, and in many of these "it was such that it was difficult to say that it did not amount to pneumonic consolidation. In thirty-eight of the forty-nine cases it existed in both lungs, in eleven cases it was limited to the right lung, and in six to the left, and whether involving one or both lungs, it was invariably more extreme and extensively diffused in the male than in the female sex. The congestion of the lungs in general paralysis is of course hypostatic in character, and is almost invariably most marked posteriorly and in the lower lobes." But in twenty-five out of the forty-nine cases it extended throughout the whole lung. The congestion was also associated with bronchial catarrh. In seventeen cases there was pus in the bronchii, in thirty cases frothy mucus with increased vascularity of bronchial mucous membrane.

Pneumonia was present in thirteen out of the one hundred cases. Two were acute and eleven were broncho- or hypostatic pneumonia. Both lungs were involved in eight cases, the right lung alone in four cases, and the left

* Contributed to *Brain*, volume vi. p. 317, 1883.

lung alone in one case. Twelve were males and one a female. The fact that both lungs were inflamed in a large majority of the instances shows that the pneumonia of general paralysis has a striking resemblance to the ordinary pneumonia found in practice.

Phthisis was observed in twenty-five out of the one hundred cases. "In six of these cases only the remnants of past phthisical diseases were found in the lungs, which consisted of earthy or chalky matter, situated at the apex in every case, occupying one apex in four and both in two cases." These lesions undoubtedly occurred previous to the outset of the paresis. In the remaining nineteen cases the changes were recent. The lesions were confined to the right lung in three cases (males), to the left in seven cases (four males and three females), and to both lungs in nine cases (five males and four females). The disease consisted of gray miliary tubercles in nine cases, of caseous masses in five cases, and of mixed gray granulations and yellow cheesy masses in five cases. Cavities were associated with the miliary tubercle in three cases, and with the mixed tubercular and caseous degeneration in four cases. The vomicae, which in five cases were confined to the upper and in one to the lower lobe, were always of small size, with ragged walls and without false membranes. There can be no question that in the nineteen cases the phthisis had arisen during the course of the general paralysis, and was cut short by the fatal termination of the latter.

Now, when the teaching of experimental physiology is taken in connection with that

of clinical medicine, and with the results furnished by the post-mortem room, it becomes quite clear that the pulmonary lesions which accompany nervous disease are not mere incidentals, but in all probability the necessary outgrowth of the latter condition.

These post-mortem findings clearly show that insanity and phthisis are closely affiliated, yet it does not appear that a central or cerebral disturbance is a necessary element in the evolution of the latter disease. A proper interpretation of all the facts undoubtedly shows that pulmonary consumption is a peripheral disease, and the probable reason why it is so closely associated with insanity is on account of the depreciation of the whole nervous system caused by the central lesion. That pulmonary consumption is such a peripheral affection becomes still more obvious when its co-existence with other well-known peripheral neuroses is more fully studied, as will be seen from the following abstracts of cases of peripheral or multiple neuritis and herpes zoster.

CASE.—*Multiple Neuritis and Pulmonary Consumption.* (F. C. Müller, *Archiv für Psychiatrie*, B. xiv. s. 669).—A 60-year-old patient, addicted to alcohol, had been suffering with articular rheumatism for four months before her admission. After the joint affection disappeared paralysis of a large part of the body set in, especially of the muscles of the forearm and lower legs. Microscopic section of the brain and spinal cord showed no changes except those due to senile atrophy; on the contrary, it was found that the large nerve-

trunks had undergone marked degeneration. Broncho-pneumonic nodules, cheesy masses, and tubercles were found in the lungs, and ulcers in the duodenum.

CASE.—*Multiple Degenerative Neuritis*. (O. Vierordt, *Archiv für Psychiatrie*, B. xiv. s. 678.)—A female patient, 23 years old, was suddenly attacked two and a half months before her death with paresis of the lower extremities, which was followed by severe pain in ankles, knees, and shoulder-joints. In a few weeks there occurred anæsthesia and atrophy of all the extremities, a rise of temperature, and an increased pulse frequency. Section showed but very little change in the brain or spinal cord, while the nerve-trunks, especially those of the sciatic and vagi, were very much degenerated. There was evidence of incipient phthisis in the lungs. The author also draws attention to Frankel's discovery, and contributes two instances in confirmation of the same, that in well-advanced phthisis there is found paresis of the lower extremities, as well as an absence of the knee-jerk.

CASE.—(A. Joffroy, *Archiv de Phys. Norm. et Path.*, 1879, pp. 172-198 ; abstracted from Dr. M. Allen Starr's Middleton Goldsmith Lectures, *Medical News*, February 5, 1887, p. 143.)—A washerwoman, aged 33, in the last stage of phthisis, was admitted to the hospital on March 5. In February she had noticed a rapidly-increasing weakness in her legs, and at the time of her admission was unable to walk or lift her feet from the bed. Could flex the knees but not extend them. Sensations to pain and temperature impressions were nor-

mal, but the reflexes were diminished. She was mentally weak, but had no shooting-pains, no loss of control over bladder and rectum, no bed-sores, and in two weeks later the arms became paralyzed, after which she shortly died. Section showed a chronic meningitis, which explained the mental symptoms. Cord was normal. Microscopic examination showed very marked degeneration in all the nerve-trunks.

CASE.—(Oppenheim, *Zeitschrift f. Klin. Med.*, 1886, p. 230; abstracted from Dr. M. Allen Starr's Middleton Goldsmith Lectures, *Medical News*, February 19, 1887, p. 199.)—A phthisical young girl, who had had syphilis, complained of pain in the joints, weakness, and numbness of the lower extremities. The latter became atrophied, and the same symptoms soon developed in the arms. Four weeks later a total paralysis of the legs, and nearly complete paralysis of the arms, were present. The paralysis finally invaded the muscles of the trunk and the diaphragm, and the beginning of rapid heart-action was believed to be indicative of pneumogastric paralysis.

Autopsy.—High degree of degeneration of the peripheral nerves, including the phrenic and pneumogastric.

Drs. A. Pitres and L. Vaillard ("Les Nevrites périphériques chez les tuberculeux," *Revue de Médecine*, 1886, Mars, p. 193; *Neurologisches Centralblatt*, B. v. p. 378, 1886) describe a number of old and six new cases which occurred in their own experience of extended degeneration of the peripheral nerves in pulmonary consumption. In every case a careful

microscopic examination was made, and it was found that the brain and cord were normal, while the peripheral nerves, especially those of the extremities, the vagi, and the phrenic nerves were affected. The authors are convinced that the closer cases of phthisis are watched the more intimate will be found the relationship which exists between this disease and peripheral neuritis.

From these quoted instances it may be seen that degeneration of the pneumogastric, phrenic, and other peripheral nerves is quite commonly connected with pulmonary consumption. But the question may arise in the minds of some whether the nerve or lung degeneration is the primary affection, or, in other words, whether or no the changes in the lungs depend on the nerve disintegration? In view of the fact, however, that many other peripheral nerves are simultaneously involved in this disease, I think it must be accepted that the lung-trouble is a secondary lesion, if there is any relation of cause and effect between the two. Moreover, phthisis under these circumstances is, in all probability, the result of a slow and chronic degeneration of the nerve-supply of the lungs, since in the more acute form of peripheral, or multiple neuritis, commonly known as Beri-Beri, or Kak-ke, the lung affection, which, so far as I can ascertain, is always present in some form, is more acute in character, and generally consists in the nature of œdema and congestion of the base, while emphysema is developed at the apex in consequence of the basal congestion and of a want of diaphragmata respiratory motion. Thus Dr. Scheube, formerly of

Tokio, Japan, but now a privatdocent in the University of Leipzig, relates* twenty cases of this disease in which he made autopsies and microscopic sections, and found that œdema and congestion were present at the bases, and emphysema at the apices, in every case save one (No. 5), and in this both lungs were in a state of phthisical disintegration. The degeneration in some of the peripheral nerves was also evident, although less marked than in the chronic form of the disease. In speaking of the cause of the lung affection Dr. Scheube truly says, "I am very much disposed to attribute this to the weakness of the nerves which supply the lung."

Herpes zoster, although its intimate anatomy is not fully worked out, is undoubtedly a neuritis, which principally affects the endings of the intercostal nerves, and which is accompanied by a catarrhal inflammation of their cutaneous coverings; is a frequent concomitant of pulmonary consumption; and is one more example of the close affinity which exists between the latter disease and the nervous system. This affiliation is demonstrated in a very able paper† "On Neuritis in Herpes Zoster," by Dr. A. Dubler, in which he cites two cases of herpes zoster of his own, and nineteen others from various sources, many of which had been subjected to a minute investigation, and the result showed that the twin offspring of probably the same parent-

* *Deutsches Archiv f. Klinische Medicin*, Bd. xxxi. s. 141, 307; Bd. xxxii. s. 83, and *Virchow's Archiv f. Path. Anat. u. Physiologie*, Bd. cxv. s. 146.

† *Virchow's Archiv*, Bd. xcvi. s. 195.

age—pulmonary consumption and herpes zoster—was present in all but six cases.

We must not presuppose from these premises that degeneration of the peripheral nerves is always followed by pulmonary embarrassment, for pathological facts appear to show that such a degeneration is quite common in many diseases independent of any pulmonary disintegration. This is especially true of the septic diseases, like typhoid fever, diphtheria, and syphilis,—diseases in which the degeneration is produced through the influence of poisons introduced from without ; but, on the other hand, when the degeneration results from some natural, inherent weakness of the nervous system, or, in other words, from some idiopathic cause, as in progressive locomotor ataxia, in multiple or peripheral neuritis, the organs of respiration are almost invariably involved in some way or another.

This opinion is fully confirmed by the laborious researches made by Drs. Oppenheim and Siemerling on the relation between diseases of the peripheral nerves and other diseases.* These gentlemen report the post-mortem examinations of forty-six bodies, in most of which cases a careful microscopic inspection of the peripheral part of the nervous system was made. Of these, thirteen deaths were caused by progressive locomotor ataxia, one by multiple neuritis, one by multi-

* " Beiträge zur Pathologie der Tabes Dorsalis und der Peripherischen Nervenerkrankungen," von Dr. H. Oppenheim und Dr. E. Siemerling ; *Archiv für Psychiatrie u. Nervenkrankheiten*, Band xviii. pp. 98 u. 487, 1877.

ple sclerosis, one by chorea, one by dementia paralytica, one by dementia senilis, three by cerebral apoplexy, one by cerebral abscess, one by Addison's disease, one by spinal caries, six by alcoholism, two by lead-poisoning, two by typhoid fever, two by diphtheria, two by carcinoma, one by sarcoma, one by glioma of the brain, one by syphilis, two by phthisis pulmonalis, and one by septic pulmonary gangrene.

In nearly all of these cases were there found atrophic or destructive changes going on in the peripheral nerves, but it appears that the lung affections were most prevalent in those cases which may be termed purely nervous diseases. Thus, of the thirteen cases of locomotor ataxia there were three cases of pulmonary phthisis, one each of pulmonary œdema, gangrene, hemorrhage, hyperæmia, pneumonia, and double pleurisy, three in which the lungs were normal, and one in which the lung condition is not stated ; the cases of multiple sclerosis, multiple neuritis, and chorea, one of each, were associated with phthisis. But, on the other hand, the cases of typhoid fever, diphtheria, carcinoma, sarcoma, and syphilis, the lungs appeared to be free from disease beyond the occurrence of an occasional hypostatic hyperæmia.

From the foregoing deductions it must, I think, be conceded that he who looks at the disease which goes under the name of pulmonary consumption solely from a pulmonary stand-point obtains but a very limited and distorted conception of its magnitude and nature ; but that he who takes the view here indicated will realize that the lung affection is only a

special manifestation of the disease which invades the whole body ; and that all its diversified symptoms, such as fatigue and exhaustion, anorexia, dyspepsia, wasting, dyspnoea, sweating, diarrhoea, hæmoptysis, intercostal tenderness, hoarseness, aphonia, and œdema, are not the consequences of the pulmonary disease, as is commonly believed, but in all probability find a common bond of union in a general disorder of the peripheral nervous system.

That it is possible for a neurosis of the vagus to give rise to all the lesions which are generally found in phthisical lungs is not beyond the bounds of legitimate reasoning, although it may not be demonstrable by experiment. For it has already been shown, as in the case of herpes zoster, that disturbed innervation is capable of leading to a catarrhal inflammation of the skin, and if a herpes or a catarrhal inflammation can be produced in the skin through nervous influence, it is also within the limits of logic to hold that the same may occur in a mucous membrane,—the morphological counterpart of the skin. And, after the catarrhal condition is once permanently established in the bronchial tubes and in the air-cells, all the other pathological changes which are characteristic of phthisis follow as a necessary consequence. A catarrhal process in these surfaces implies a proliferation of epithelial cells, and, on account of the sacculated form of the alveoli, the catarrhal material, unlike on the free skin surface, where it may be removed as soon as it forms, is very liable to accumulate in and pack these structures and form small nodules,

which are commonly but erroneously called tubercles. These smaller nodules coalesce and form larger masses, which finally impinge on the surrounding circulation, and thus cut off their own nutritive supply. After this takes place they undergo a cheesy degeneration, soften, communicate with a bronchus, are expelled, and leave a cavity behind. We see, therefore, that when the process is once started how natural it is for one event to follow another until the lung is completely disrupted.

That it is not a wild flight of fancy to call pulmonary consumption a neurosis, even barring the evidence which has been brought forward in these lectures supporting such a view, may be surmised from its close relation to other diseases of the respiratory organs which are well recognized neuroses of the vagus. Of this character are asthma and pertussis, both of which, especially the former, frequently, lead to consolidation and phthisical destruction of the lungs. I have now under my care a lady who has been an almost incessant sufferer from asthma for seven years, and who of late is showing signs of apex infiltration, and the only treatment which has been of any avail in her case has been that which has been directed towards a restoration of her nervous system.

Now, then, as to the therapeutic side of this problem. For, if we view pulmonary consumption as a neurosis, it is very obvious that, in order to be consistent in practice, it is necessary to remodel and revolutionize some of our ideas concerning the treatment

of this disease. This part of my subject is so comprehensive, however, that the limited time forbids me to do more at present than merely to touch the most salient points which are involved in the question. Briefly, I may say it has been established beyond the cavil of a doubt, and that, too, chiefly through the excellent practical researches of Dr. S. Weir Mitchell, that rest, absolute or an approach to it, is one of the most vital factors in the successful treatment of serious nervous disease. But the idea of rest is contrary to the orthodox methods of managing this disease. Custom has handed down from time almost immemorial the dictum that exercise is the one indispensable consideration in its treatment, and I apprehend that, on account of this universal impression, the recommendations which I am about to make will be received with a feeling of cold indifference, or, perchance, with opposition. Notwithstanding these risks to which I expose myself, I am constrained to say, in the interest of truth, so far as I am able to see it, that I believe that the prevailing opinion that consumptives must have plenty of exercise and fresh air are two of the greatest stumbling-blocks in the successful management of this disease. So deeply-rooted are these ideas in the mind of the public, that patients persist in walking out for the purpose of getting fresh air until their vital energies are completely exhausted, when they give up, go to bed, and usually to die. This is no fanciful drawing, and it pathetically illustrates the truthfulness of the familiar expression, "that a consumptive never goes to bed for good unless it is to die."

I do not by any means wish to be understood that I disapprove of exercise in the treatment of this disease. Exercise is undoubtedly beneficial to those who are already strong, but I contend that it weakens those who are weak already as much as it strengthens the strong. Probably this whole question can best be practically and briefly illustrated by taking an example from the field of finance. It is an old and true saying that money makes money. A man who has a certain amount of capital can make money much more easily than he who has none or very little. If the latter spends as much as he takes in, his finances will be in a crippled condition during his whole life; but if he halts,—that is, if he diminishes his outflow, and maintains or increases his former income,—his capital will accumulate, and in time he will be able to compete with other capitalists. So the taking of exercise, which is to be beneficial, implies pre-existing strength, and by putting this strength out at proper interest or to proper use, it will grow and accumulate; but he who has no or very little strength at the outset, must reduce his expenditure and enlarge his income, or else he will go into physiological bankruptcy. In pursuance of this principle I have of late insisted on my patients either going to bed, or to remain in the recumbent posture, during at least seven-eighths of the twenty-four hours. Those who become tired on the slightest physical exertion must go to bed, and remain there constantly for a month or six weeks, or longer, if it is considered necessary. They will often demur against this protracted rest

in bed merely because they do not realize the seriousness of their condition. But if they once comprehend this fully, there are very few who do not appreciate the practicability of the proposal. You can confront them with the argument that with such a desperate disease the question of getting well is principally one of an accumulation of strength; that this point is gained much more readily if the whole body is kept quiet and in a longitudinal or stretched-out position, when every nerve and muscle are as near absolute rest as they can get during the waking hours.

But, in spite of any appeal on the part of the physician, some patients will urge the necessity of exercise in order to cultivate an appetite. This illogical deduction is made from their knowledge of what exercise is capable of doing in health, when, it is true, muscular activity produces a luxurious appetite. But it is also true that even in the best of health the body can become so thoroughly fatigued through physical exercise that the appetite disappears entirely, and returns only after a short period of rest. This is an approach to the condition of fatigue which obtains nearly constantly among consumptives. If the body is not in a chronic state of exhaustion already, every organ will become so on the veriest exertion, and the appetite disappears because the stomach is too tired to carry on the process of digestion. By exercising, the patient will, therefore, defeat the very end he has in view. I have known such cases who had absolute anorexia so long as they persisted in taking moderate exercise, but who had the

return of a vigorous appetite so soon as they were placed at rest in bed.

In regard to fresh air similar erroneous ideas exist, as has already been intimated. Impure air is considered everywhere as one of the most potent causes of pulmonary consumption, and while I do not underrate the value of fresh air, I repeat what I have said on several other occasions, that the purity of the air plays but a very much smaller part in the production of this disease than is usually supposed. If it were true that pulmonary consumption is the legitimate result of breathing vitiated air, why is it that this disease is unknown among the natives of Iceland, Greenland, Lapland, and of other cold countries, who live in dwellings the atmosphere of which reeks with filth and body exhalations, owing to the crowding which is necessary to maintain a tolerable degree of warmth during the sleeping hours ; while, on the other hand, the people of the tropical regions, who enjoy a continuous revelling in fresh air both day and night, winter and summer, are by no means free from this disease.

The truth is, it is not so much a question of pure or fresh air as it is one of mechanical expansion of the lung apices. Here it is where consumption makes its beginning in the vast majority of instances, and merely because these parts are insufficiently used. The patient who lies down, or even sits quiet in his room or in the open air, and expands his chest well, either by voluntary breathing or by taking compressed air every few hours, is infinitely better off than he who exhausts himself through his efforts to get fresh air by fast

walking or other physical exercise. Again, it is well understood that greater apical expansion occurs in the lying than in the upright posture of the body, hence, independent of the rest which this position secures, it is to be highly recommended on this account.

In order to supplement the active physical exercise of which the patient is deprived by this method of treatment, general massage and electricity must be employed once or twice a day, both of which will be found most valuable adjuvants in making the rest-cure of consumption a success. Of course, in addition to all this, we must not lose sight of the inestimable value of good nutritious food, given either by the mouth or rectum, or by both, and of well-directed medication,—a subject too voluminous to be entered into at the present time.

From the evidence which has thus been collected, it appears very certain that pulmonary consumption is not a local disease ; that it is essentially a neurosis of the peripheral nerves ; that the neurosis in all probability establishes a herpes of the vagi, in the same manner as a similar affection is produced in the skin, which gradually leads to all the characteristic lesions of the disease ; that the reason why a neurosis of the vagi is so much more disastrous in its effects than it is of other nerves is that, on account of the peculiar anatomical construction of the lungs, the pathological products are less easily gotten rid of in these than on the skin or in other organs ; and, finally, we will no longer be forced to admit that the disease originally

diagnosed as pulmonary consumption has been superseded or is accompanied by paresis, dropsy, intercostal neuralgia, peripheral or multiple neuritis, loss of knee-jerk, herpes zoster, and a multiplicity of other diseases, if we accept the neurotic nature of this disease, which implies that all these complications are but the legitimate results, and that the lung affection is but one of the many manifestations of the fundamental disorder.



